

CRICKLEWOOD PROPCO LTD

400 EDGWARE ROAD

AIR QUALITY ASSESSMENT

REPORT REF – 2303910-R07A

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1.0 INTRODUCTION

Proposed Development

- 1.1 Ardent Consulting Engineers Ltd (ACE) have been commissioned by Cricklewood PropCo Ltd to carry out an Air Quality Assessment (AQA) in support of a planning application for a proposed erection of rear extension to provide additional self-storage floorspace (Use Class B8) with associated car and cycle parking, landscaping and other works ancillary to the development at Edgware Road, within the London Borough of Barnet (LB Barnet).

Scope

- 1.2 This report describes existing air quality within the study area and considers both the suitability of the Site for the proposed development and the potential impact of the development on local air quality during both the construction and operational phases.
- 1.3 The main air pollutants of concern related to the demolition and construction phase are dust and particulate matter (PM₁₀ and PM_{2.5}) from on-site demolition and construction activities and as a result of material tracked out by demolition and construction vehicles, as well as emissions of nitrogen dioxide (NO₂), PM₁₀ and PM_{2.5} from demolition and construction vehicles. The main air pollutants of concern related to operational traffic generated by the proposed development are emissions of NO₂, PM₁₀ and PM_{2.5}, which may potentially impact on existing properties. The air pollutant of concern in terms of the suitability of the Site for its proposed use during the operational phase is NO₂.
- 1.4 The proposed energy strategy will be entirely electric, comprising a VRF/DX System, electric panel heaters, as well as PV array being provided. The strategy will therefore not have any associated on-site emissions. As such, the overall effect of these plant can be screened out as being 'not significant'.
- 1.5 An assessment has been carried out to determine whether the development is "air quality neutral" in terms of transport and building emissions to ensure compliance with the London Plan Policy SI 1 (Mayor of London, 2021).

Consultation

- 1.6 ACE contacted LB Barnet's Environmental Health Department via email correspondence in October 2023 in order to discuss and agree the scope and methodology of this AQA. LB Barnet agreed to the outlined scope and methodology in which this AQA follows.

2.0 LEGISLATION, POLICY AND GUIDANCE

National Air Quality Legislation and Strategy

The Air Quality Strategy

- 2.1 The Air Quality Strategy (Defra, 2007) established the policy framework for ambient air quality management in the UK, with the objective of ensuring a quality of ambient air for all that would not pose a significant risk to health or quality of life. This document set out the National Air Quality Objectives (NAQOs) and the policy for achieving them. A revised Air Quality Strategy (Defra, 2023) has since been released, updating the strategy to include consideration of new and revised conditions, legislation and policies, including the PM_{2.5} targets as published in 2023. The Air Quality Strategy was produced as a requirement of part IV of the Environment Act (UK Government, 1995) and amended in The Environment Act (UK Government, 2021) which set out a system of Local Air Quality Management (LAQM) requiring local authorities to regularly review and assess air quality within their boundary and appraise plans in light of these assessments.
- 2.2 Where a NAQO is unlikely to be met, the local authority must designate an Air Quality Management Area (AQMA) and draw up an Air Quality Action Plan (AQAP) which should include measures expected to ensure that the NAQOs are met within the AQMA.
- 2.3 Whilst the PM_{2.5} targets are considered a regional or national responsibility and are therefore excluded from the requirements of monitoring and management as set out within Local Air Quality Management, Local Authorities are expected to control emissions of PM_{2.5} where possible in order to support wider policies and national actions.

National Air Quality Objectives

The Air Quality Strategy

- 2.4 The assessment of potential air quality impacts associated with the proposed development has been evaluated with respect to the current air quality standards for the protection of human health, as set out in the Air Quality Standards

Regulations 2010 (Statutory Instrument, 2010, No 1001) and The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 (Defra, 2020b).

- 2.5 In the context of the proposed development, the key pollutants of concern are nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}), which, in the LB Barnet, are primarily associated with road traffic emissions and construction works.
- 2.6 It is widely accepted that there is no safe level for PM_{2.5} and on 31st January 2023, the Government published an Environmental Improvement Plan, which includes an Annual Mean Concentration Target (AMCT) of 10 µg/m³, to be achieved by the end of 2040. The Plan also includes an interim target of 12 µg/m³, to be achieved by the end of January 2028. The 10 µg/m³ target for PM_{2.5} has been adopted into UK law via the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (Statutory Instruments, 2023).

Pollutant	Time Period	Objective	To be achieved by and maintained thereafter
NO ₂	1-hour mean	200 µg/m ³ not to be exceeded more than 18 times a year ^(a)	31 December 2005
	Annual mean	40 µg/m ³	
PM ₁₀	24-hour mean	50 µg/m ³ not to be exceeded more than 35 times a year ^(b)	31 December 2005
	Annual mean	40 µg/m ³	
PM _{2.5}	Annual mean	20 µg/m ³	1 January 2020
	Annual mean	12 µg/m ³	21 January 2028
	Exposure reduction target	10 µg/m ³	31 December 2040
<p>(a) Equivalent to the 99.8th percentile of 1-hour means.</p> <p>(b) Equivalent to the 90.4th percentile of the 24-hour means.</p>			

Table 2-1: NO₂, PM₁₀ and PM_{2.5} Objectives

2.7 Analysis of long-term monitoring data suggests that if the annual mean NO₂ concentration is less than 60 µg/m³ then the 1-hour mean NO₂ objective is unlikely to be exceeded where road transport is the main source of pollution (Defra, 2022). This concentration has therefore been used in this AQA to screen whether an exceedance of the 1-hour mean objective is likely. Similarly, an annual mean PM₁₀ concentration of 32 µg/m³ is used to screen whether an exceedance of the 24-hour mean PM₁₀ objective is likely.

2.8 The London Local Air Quality Management Technical Guidance 2019 (LLAQM.TG(19)) (Mayor of London, 2019) provides guidance to local authorities in London as to where objectives apply. These are summarised in Table 2-2.

Table 2-2: Relevant Exposure

Averaging Period	Relevant Locations	NAQOs should apply	NAQOs don't usually apply
Annual mean	Where individuals are exposed for a cumulative period of 6 months in a year	Facades of residential properties, schools, hospitals and gardens of residences	Facades of offices, hotels and shops or kerbside sites
24-hour mean	Where individuals are expected to be exposed for 24-hours or longer	As above, with the addition of hotels	Kerbside sites and areas where the public is unlikely to spend significant time
1-hour mean	Where individuals are expected to spend one hour or longer	As above, with the addition of parts of car parks, bus stations, railway stations etc. which are not fully enclosed, and any outdoor locations where members of the public might reasonably be expected to spend one hour or longer	Locations not publicly accessible or where occupation is not regular

National Air Quality Legislation; Ecology

2.9 Poor air quality can have a negative impact on ecological habitats as well as human health. The Conservation of Habitats and Species Regulations (Statutory Instrument, 2017) was put in place in order to protect ecological sites following the publication of European Directive 92/43/EEC (European Economic Community (EEC), 1992) regarding the designation of Special Areas of Conservation (SACs) and 2009/147/EC (European Community, 2009) regarding the designation of Special Protection Areas (SPAs). These regulations require that the competent authority (the planning authority in this case) consider whether a development will have a likely significant effect on an SAC or SPA (known as 'European Sites'). Should this be considered to be likely then an 'appropriate assessment' is required

to identify whether the new development will indeed have a significant adverse effect on the ecological site(s).

- 2.10 The Wildlife and Countryside Act (UK Government, 1981) sets out the requirement for the identification of areas of land that are considered to be of 'special interest' (due to flora, fauna and / or geological or physiographical features) as Sites of Special Scientific Interest (SSSIs), and the Countryside and Rights of Way (CROW) Act (HM Government, 2000) sets out the specific protections afforded to SSSI, stating that where a development is 'likely to damage' a SSSI then the appropriate conservation body must be consulted.
- 2.11 The Environment Act (UK Government, 1995) and the Natural Environment and Rural Communities Act (HM Government, 2006) set out a general requirement for conservation of biodiversity.

Critical Levels

- 2.12 Critical levels have been set for a number of gaseous pollutants. These are the concentrations of pollutants below which there is no known harmful effects on vegetation or ecosystems. These levels have been set by UK government and are considered to be relevant objectives for all internationally designated sites such as SACs and SPAs, as well as for nationally designated sites such as SSSIs, and locally designated sites such as Sites of Importance for Nature Conservation (SINCs). The relevant critical levels are set out in Table 2-3.

Table 2-3: Ecological Critical Levels

Pollutant	Time Period	Objective
Nitrogen Oxides (expressed as NO ₂)	Annual Mean	30 µg/m ³
Ammonia (NH ₃)	Annual Mean	3 µg/m ³ (unless lichens or bryophytes are present, then 1 µg/m ³)

Planning Policy

National Planning Policy

- 2.13 The National Planning Policy Framework (NPPF) (Department for Levelling Up, Housing and Communities, 2023) sets out the Government's planning policies for England and how they expect these to be implemented. Consideration of air quality within planning is considered an important element of this framework which recommends that transport and the potential impact on the environment should be considered at an early stage in order to allow for mitigation or even avoidance of impacts through location and layout of developments.
- 2.14 It is recommended that both the impacts of a potential development on the environment and the risk to new development from existing pollution be taken into account when planning policy is drafted. Furthermore these should contribute to compliance with relevant limit values or objectives and should be consistent with any local AQAP.
- 2.15 The NPPF also recommends that "existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."
- 2.16 The NPPF also states that:
- "Planning policies and decisions should contribute to and enhance the natural and local environment by:
- Protecting and enhancing...sites of biodiversity or geological values...
- minimising impacts on...biodiversity..."
- 2.17 The Planning Practice Guidance (PPG) provides guidance on how planning can enact the policies set out in NPPF. It is set out as separate papers for different sectors and therefore the 'Air Quality' PPG (Ministry of Housing, Communities and

Local Government, 2019) is aimed at addressing policy relating specifically to air quality. This document gives guidelines for when air quality is likely to be relevant to a planning decision:

"Concerns could arise if the development is likely to have an adverse effect on air quality in areas where it is already known to be poor, particularly if it could affect the implementation of air quality strategies and action plans and/or breach legal obligations (including those relating to the conservation of habitats and species). Air quality may also be a material consideration if the proposed development would be particularly sensitive to poor air quality in its vicinity."

- 2.18 The 'Air Quality' PPG also states that more detailed information such as whether the development could have a significant impact on air quality, baseline air quality and whether occupiers of the development could experience poor air quality may be required in order to make an informed decision. Further, it notes that any assessment should be proportionate, taking into account the scale of the proposed development, as well as any potential impacts.
- 2.19 Some suggestions on mitigation measures are set out within the PPG, such as separation distances, filtration/ventilation, green infrastructure, promotion of low emission forms of transport, control of dust and emissions from construction and, finally, contributing funding to measures such as those identified in AQAPs to offset impacts from the development.

Regional Policy

The London Plan

- 2.20 In London, a London Plan has been developed (Mayor of London, 2021). This includes a number of references to air quality, however, these are all incorporated into policy SI1: Air Quality, which 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; and
- 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; and
- 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.”

The London Environment Strategy

- 2.21 The London Environmental Strategy (Mayor of London, 2018) considers policies aimed at improving the environment in London, across a number of different areas such as air quality, noise and climate change. There are a number of objectives but notable in relation to air quality is the objective: "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.”
- 2.22 Chapter 4 of the Environmental Strategy relates specifically to air quality and identifies a number of key issues to be addressed:

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.

Local Policy

LB Barnet Local Plan

2.23 LB Barnet published the Barnet Draft Local Plan in June 2021 (LB Barnet, 2021), which seeks to review and update the Borough's planning policies, forming a 15-year strategy covering the period from 2021 to 2036 and sets out a vision for how the Borough will change as a place during that time. The draft Plan includes the following policies:

Policy ECC02: 'Environmental Considerations' states the following:

"The Council expects development proposals:

- a) to improve air quality and ensure:
 - i. where there is a localised source of air pollution, development is designed and sited to reduce exposure to air pollutants.
 - ii. that development is not contributing to poor air quality, providing air quality assessments where appropriate.
 - iii. that where it is demonstrated that on-site provision is impractical or inappropriate and air quality neutrality is not achieved then proportionate, off-site measures to improve local air quality should be considered, provided that equivalent air quality benefits can be demonstrated. Where such measures are insufficient or not possible a MAC payment will be secured through s106...
- c) Development should provide Air Quality Assessments ... in accordance with Table 15 [of the draft Local Plan] together with Barnet's suite of design guidance SPDs...
- f) All developments should comply with the Considerate Constructors Scheme and comply to the terms of their Demolition and Construction Management Plan which includes further mitigation measures."

2.24 Until the new Local Plan is adopted, the current Local Plan (LB Barnet, 2012) is in place. The current Plan (Core Strategy) was adopted in September 2012 and

aims to deliver positive social, economic and environmental outcomes and provide the overarching local policy framework for delivering sustainable development in Barnet. The current Plan includes the following policies:

Policy CS13: 'Ensuring the efficient use of natural resources' states the following:

"We will improve air ... quality by requiring Air Quality Assessments ... from development in line with Barnet's SPD on Sustainable Design and Construction."

LB Barnet Sustainable Design and Construction Supplementary Planning Document (SPD)

2.25 The Sustainable Design and Construction SPD recognises the principal sources of emissions in Barnet (LB Barnet, 2016). These include emissions from traffic, industrial activities, boilers and mechanical plant within buildings, and traffic and plant supporting construction activities. The SPD notes that emissions from traffic incur by far the greatest impact on local air quality. The following 'Air Quality Principles' are outlined below:

1. "Location – Ensure that development type suits development site. In areas of poor air quality, for example next to some major roads, it may not be appropriate to build residential accommodation or schools or other types of development (so called sensitive receptors) where people, in particular vulnerable people, will spend a substantial amount of time in the accommodation and thereby be exposed to continuous high levels of air pollutants. If there is no other potential use for a site, then the design will be required to prevent exposure to air pollutants both within buildings and in accessible outdoor areas proximate to buildings.
2. Siting and design – Ensure that where there is a localised and proximate source of air pollution, buildings are designed and sited to reduce exposure to air pollutants. Buildings themselves can be used as barriers between sources of air pollution and those areas where people will linger in the outside environment, such as private, communal or public gardens and public realm. New or existing trees and planting may also help

provide a barrier. Buildings should be actively ventilated allowing air to be drawn from the less polluted side of the building (where a balance needs to be achieved between air quality and energy consumption required for active ventilation). Consideration should also be given to ensuring that buildings façades, which face directly onto a pollution source, are sealed.”

- 2.26 The SPD also sets out the requirements of an air quality assessment in order to suitably demonstrate the changes in air quality or exposure to air pollutants as a result of a proposed development and identify mitigation as necessary. The scope of the assessment required should be commensurate to the potential impacts. As a minimum an air quality assessment should set out the following:

“The basis of determining the significance of the impacts;

Details of the assessment methods including the model and the input data used for the assessment and any assumptions that have been made;

Identification of sensitive locations;

Description of baseline conditions;

Assessment of impacts;

Description of construction phase impacts;

Mitigation measures; and

Summary of assessment results.”

LB Barnet AQAP

- 2.27 Under LLAQM (Mayor of London, 2019), LB Barnet are required to regularly review and assess air quality within the Borough and determine whether or not the air quality objectives are likely to be achieved.
- 2.28 In April 2001, the entire Borough was declared as an Air Quality Management Area (AQMA) as a result of exceedances of the annual mean NO₂ objective and the 24-hour mean PM₁₀ objective. In July 2010, the order was amended to include the 1-hour mean for NO₂ due to exceedances within the Borough.

- 2.29 Following the declaration of the LB Barnet AQMA, an AQAP was developed in order to tackle poor air quality in the Borough. LB Barnet's most recent AQAP covers the period from 2017 to 2022 (LB Barnet, 2017) which outlines how the Council will effectively use local levers to tackle air quality issues within their control. The actions have been grouped into six categories: emissions from developments and buildings; public health and awareness raising; delivery servicing and freight; borough fleet actions; localised solutions; and cleaner transport.

Assessment Guidance

- 2.30 This assessment has been based on a number of guidance documents, the most significant of which are set out below:

Local Air Quality Management Technical Guidance (LAQM.TG(22))

- 2.31 The LAQM guidance (Defra, 2022) was published for use by local authorities for review and assessment work, but also includes a number of technical guidelines on carrying out modelling assessment and management of monitoring data which set out best practice and are, therefore, relevant to all air quality assessments.

London Local Air Quality Management Technical Guidance (LLAQM.TG(19))

- 2.32 The LLAQM.TG(19) guidance (Mayor of London, 2019) was published for use by London local authorities for review and assessment work and includes a number of technical guidelines on carrying out modelling assessment and management of monitoring data which set out best practice and are, therefore, relevant to all air quality assessments.

Land-Use Planning and Development Control: Planning For Air Quality

- 2.33 The Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) have published joint guidance on the assessment of air quality impacts for planning purposes (EPUK & IAQM, 2017). This includes information on when an air quality assessment is required, what should be included in an assessment and the assessment of significance.

The Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance (SPG)

- 2.34 The Greater London Authority (GLA) have produced an SPG (GLA, 2014) which includes a methodology for identifying the risk of potential dust sources associated with demolition, construction, earthworks and trackout in London. This is then used to identify the level of mitigation necessary in order for the overall residual effect to be 'not significant'.

Guidance on the Assessment of Dust from Demolition and Construction

- 2.35 The IAQM have produced guidance which includes a methodology for identifying the risk magnitude of potential dust sources associated with demolition, construction, earthworks and trackout (IAQM, 2023). This is then used to identify the level of mitigation necessary in order for the overall residual effect to be 'not significant'. 'The Control of Dust and Emissions During Construction and Demolition' SPG (GLA, 2014) published by the GLA is based on the previous iteration of this guidance, however, the IAQM document is more detailed and, therefore, has been used to provide additional information where necessary.

A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites

- 2.36 The IAQM guidance 'Assessment of Air Quality Impacts on Designated Nature Conservation Sites', (IAQM, 2020) sets out the appropriate approach for this element of assessment. Due to the complexity of ecological impacts, an air quality professional alone can only identify whether emissions are unlikely to have a significant impact when compared against the relevant critical load / level. Where it cannot be ascertained that emissions are below this level, the combined input of both an air quality professional and an ecologist is required; the former to identify any changes to concentrations of deposition and the latter to consider the overall effect taking into consideration the location and sensitivity of any given habitat.

London Plan Guidance; Air Quality Neutral

- 2.37 In February 2023, the 'London Plan Guidance; Air Quality Neutral' (GLA, 2023) was published by the GLA following a period of consultation. This guidance sets out the updated methodology for considering the 'air quality neutrality' of new developments, including details of updated 'air quality neutral' benchmarks (see Appendix B), as well as recommendations regarding mitigation and offsetting.

3.0 METHODOLOGY

- 3.1 The methodology set out in the following sections has been identified as being the most appropriate approach to assess potential impacts associated with the proposed development and whether these impacts are acceptable, along with any required mitigation.

Baseline Air Quality

- 3.2 'Current'¹ baseline air quality has been determined by collating the results of monitoring carried out by LB Barnet, referring to identified AQMAs and AQFAs, considering any exceedances of the EU Limit Values predicted by Defra's Pollution Climate Mapping (PCM) model (Defra, 2020a) or measured by any nearby Automatic Urban and Rural Network (AURN) monitoring site(s), and considering predicted background concentrations defined based on the national pollution maps published by Defra (Defra, 2020b).

Demolition and Construction Dust Impacts

- 3.3 There is a potential for dust and PM₁₀ from on-site activities and off-site trackout during the construction phase to have an impact on sensitive human and ecological receptors within the study area.
- 3.4 The suspension of dust and PM₁₀ is related to weather conditions and wind direction, ground and particle characteristics and on-site activities. There is a potential for impacts to occur when dust generating activities coincide with dry, windy conditions and where sensitive receptors are located downwind of the dust source.
- 3.5 Separation distance is an important factor as large particles (>30 µm) which are responsible for most dust annoyance largely deposit within 100 m of sources. Intermediate particles (10-30 µm) can travel 200-500 m but are less likely to trigger annoyance. Significant annoyance is therefore generally limited to a few

¹ The 'current' baseline year for the purposes of this assessment has been taken to be 2019 as this is the most recent year for which representative local monitoring data are available, taking into consideration the Covid-19 pandemic.

hundred metres of the source. Small particles (<10 µm) are deposited slowly and may travel up to 1 km. Whilst these particles are responsible for most impacts on human health, impacts are not likely to be experienced at significant distance due to dispersion effects.

3.6 The assessment of construction dust impacts has been carried out following the GLA 'The Control of Dust and Emissions During Construction and Demolition' SPG (GLA, 2014), which is based on the previous iteration of the IAQM 'Guidance on the Assessment of Dust from Construction and Demolition' (IAQM, 2023). Within the IAQM guidance, an 'impact' is described as a change in pollutant concentration or dust deposition and an 'effect' is described as the consequence of an impact.

3.7 The assessment considered three potential dust impacts:

Loss of amenity due to dust soiling;

Human health effects due to an increase in concentrations of PM₁₀; and

Harm caused to ecological receptors due to dust deposition.

3.8 Full details of the approach taken to assessing dust are provided in Appendix C, the stages of the assessment are:

Identify whether there are sensitive receptors within the relevant distances (study area) for site activities during the construction phase;

Assess the risk of dust impacts for each site activity type (demolition, earthworks, construction and trackout) – this includes identifying the emissions magnitude for each activity type, the sensitivity of the area and then combining these factors to identify risk;

Identify mitigation measures, based on assessed risk, sufficient to ensure off-site effects are 'not significant'; and

Assess impacts with mitigation in place. This should normally result in residual effects which are 'not significant'.

- 3.9 The IAQM guidance makes it clear that no assessment of the significance of effects without mitigation should be carried out as mitigation measures will be required due to planning conditions as well as best practice for construction companies. The IAQM guidance also states that the residual effect, taking into account the proposed mitigation, will usually be 'not significant'.

Demolition and Construction Traffic Impacts

Screening; Human Health

- 3.10 The IAQM/EPUK guidance 'Land Use Planning and Development Control: Planning for Air Quality' (IAQM and EPUK, 2017) includes a list of indicative criteria for where a detailed air quality assessment is likely to be needed. The criteria relating to screening air quality impacts in relation to additional traffic are:

An increase in Light Duty Vehicle (LDV) traffic of >500 annual average daily traffic (AADT) (or >100 AADT within or adjacent to an AQMA); and/or

An increase in Heavy Duty Vehicle (HDV) traffic of >100 AADT (or >25 AADT within or adjacent to an AQMA).

- 3.11 The above criteria apply to any individual link and therefore, a development generating >500 AADT (or >100 AADT within an AQMA) may be considered to fall below the screening criteria where the increase is spread over a number of different road links.
- 3.12 In addition to the above screening criteria, the assessment of potential impacts as a result of demolition and construction traffic generated by the proposed development also takes into consideration the anticipated duration of the demolition and construction period and any anticipated mitigation measures that are likely to be applied.
- 3.13 Where it is not possible to screen out significant effects from road sources, detailed modelling is then generally required.

Operational Impacts

Development-Generated Traffic Screening; Human Health

- 3.14 The potential impacts as a result of operational traffic generated by the proposed development on existing sensitive properties have been assessed based on the screening criteria set out in the EPUK / IAQM guidance (IAQM and EPUK, 2017) (see Paragraphs 3.10 and 3.11)
- 3.15 Where it is not possible to screen out significant effects from road sources, detailed modelling is then generally required.

Development-Generated Traffic Screening; Ecology

- 3.16 Based on the IAQM guidance (IAQM, 2020) there is a potential for 'significant' effects on ecology as a result of transport emissions in cases where sensitive designated ecological sites are located within 200 m of a road with an affected road where a development alone, or in combination with other committed developments, will increase traffic flows by >1,000 total AADT and / or >200 HDV AADT.
- 3.17 Where it is not possible to screen out significant effects from road sources, detailed modelling and / or additional assessment in conjunction with an ecologist is then generally required.

Site Suitability Screening

- 3.18 The potential for exceedances of the relevant objectives at sensitive locations within the proposed development has been screened qualitatively, taking into consideration the location of the Site in relation to nearby emission sources (e.g. local roads and railway lines), the layout of the proposed development and baseline air quality conditions within the Site and the surrounding area.
- 3.19 Where it is not possible to screen out the potential for significant effects, then further detailed assessment is generally required.
- 3.20 The potential for significant effects as a result of emissions associated with moving locomotives using the nearby railway line has been assessed using the screening

criteria outlined within the LAQM.TG(16) (Defra, 2016). This guidance outlines that there is only a risk of exceedances of the annual mean NO₂ objective as a result of moving locomotives in instances where:

there is relevant exposure within 30 m of rail lines with a heavy traffic of diesel passenger trains (as set out within the guidance); and

background annual mean NO₂ concentrations are >25 µg/m³.

Air Quality Impacts Significance Criteria

- 3.21 In the absence of official guidance on the assessment of the potential for existing emissions sources to impact the proposed development, this assessment has been limited to a comparison of predicted annual mean concentrations within the development, against the NAQOs (as set out in Table 2-1 and Table 2-2).

Air Quality Neutral

- 3.22 The approach set out within the Air Quality Neutral Planning Support Update (GLA, 2023) has been followed in order to assess whether the proposed development is air quality neutral in terms of both building and transport emissions.

4.0 BASELINE CONDITIONS

Site Context and Study Area

- 4.1 The Site is set within urban surroundings, predominantly consisting of residential properties, commercial buildings, green space, and a nearby railway line. The Site is bound to the south by Roman Road and Edgware Road, to the east by the railway lines and Cricklewood Traincare Depot, to the west by Edgware Road and Cricklewood Bus Garage (Stop BS), and to the north by an aggregate materials yard.
- 4.2 The study area in relation to air quality has been defined as:

For the demolition and construction dust risk assessment, the study area is the area up to 350 m from the development Site boundary and up to 50 m of the route(s) used by demolition and construction vehicles on the public highway (up to 500 m from the Site entrance(s)). This is based on the IAQM guidance (IAQM, 2014);

For the assessment of the effect of construction and operational development-generated traffic on human health, the study area incorporates all main roads (and adjacent sensitive human receptors) along which vehicles generated by the proposed development may travel; and

For the assessment of Site suitability, the study area has been identified as the area within the boundary of the Site and sources which will influence this area.

EU Limit Values

- 4.3 The Site is within the 'Greater London Urban Area' which has been reported to the EU as exceeding the annual mean NO₂ Limit Value. As such, the area requires the implementation of a Clean Air Zone. Two charging Clean Air Zones have been implemented in Greater London; the Low Emission Zone (LEZ) and the Ultra-Low Emission Zone (ULEZ).

- 4.4 The Site is located within the LEZ which currently charges Heavy Goods Vehicles (HGVs), Light Goods Vehicles (LGVs), buses / minibuses and coaches that do not meet Euro VI (NO_x and particulate matter (PM)) standards. The Site is not located within the ULEZ.
- 4.5 The Site is located approximately 3.8 km to the northwest of the Camden Kerbside (UKA00259) AURN kerbside monitoring site. The measured annual mean NO₂ concentration was above the EU Limit Value in 2021. The Camden Kerbside AURN monitoring site also measured PM₁₀ and PM_{2.5} concentrations in 2021, which were both well below the EU Limit Value.
- 4.6 Defra's PCM model predicts no exceedances of the NO₂ annual mean EU Limit Value on Edgware Road in close proximity to the site in 2021.

LLAQM

- 4.7 LB Barnet has assessed air quality within its area as part of its responsibilities under LLAQM. A whole borough AQMA (Barnet AQMA) was declared as a result of exceedances of the annual mean and 1-hour mean NO₂ objectives and the 24-hour mean PM₁₀ objective. The Site is located within this AQMA.
- 4.8 London Borough of Brent (LB Brent) also assessed air quality within its area as part of its responsibilities under LLAQM. A whole borough AQMA (Brent AQMA) was declared as a result of exceedances of the annual mean and 1-hour mean NO₂ objectives and the 24-hour mean PM₁₀ objective. The Site is located within this AQMA.

AQFA

- 4.9 The Greater London Authority (GLA) has declared 187 AQFAs within Greater London. AQFAs are locations that exceed the annual mean NO₂ EU Limit Value as well as being locations with high levels of human exposure. The Site is located approximately 670 m northwest of the 'Cricklewood Junction A407 Cricklewood Lane/A5 Broadway' AQFA.

Monitoring

- 4.10 LB Barnet carried out NO₂ monitoring at two automatic and 15 diffusion tube monitoring sites in 2021, as well as PM₁₀ monitoring at two automatic monitoring sites in 2021. Considering the location of the Site, and its proximity to LB Brent, monitoring from LB Brent has also been included. The closest and most representative locations are identified in Figure 4-1 and measured concentrations from 2016 to 2021² are shown in Table 4-1 and Table 4-2.
- 4.11 Exceedances of the annual mean NO₂ objective have been measured at the PBN20 LB Barnet diffusion tube monitor in 2018, and at the 29 and 30 LB Barnet diffusion tube monitors in 2017.
- 4.12 Overall, there is a strong trend of decreasing NO₂ concentrations apparent at all monitoring sites.

² As a result of the Covid-19 pandemic and associated behavioural changes and measures implemented by the governing authorities (e.g. lockdowns, travel restrictions etc.) measured concentrations during 2020 are not considered to be representative of 'normal' conditions. As such, measured 2020 concentrations are presented for information only, and have not been discussed or given weight in determining the conclusions of this report.

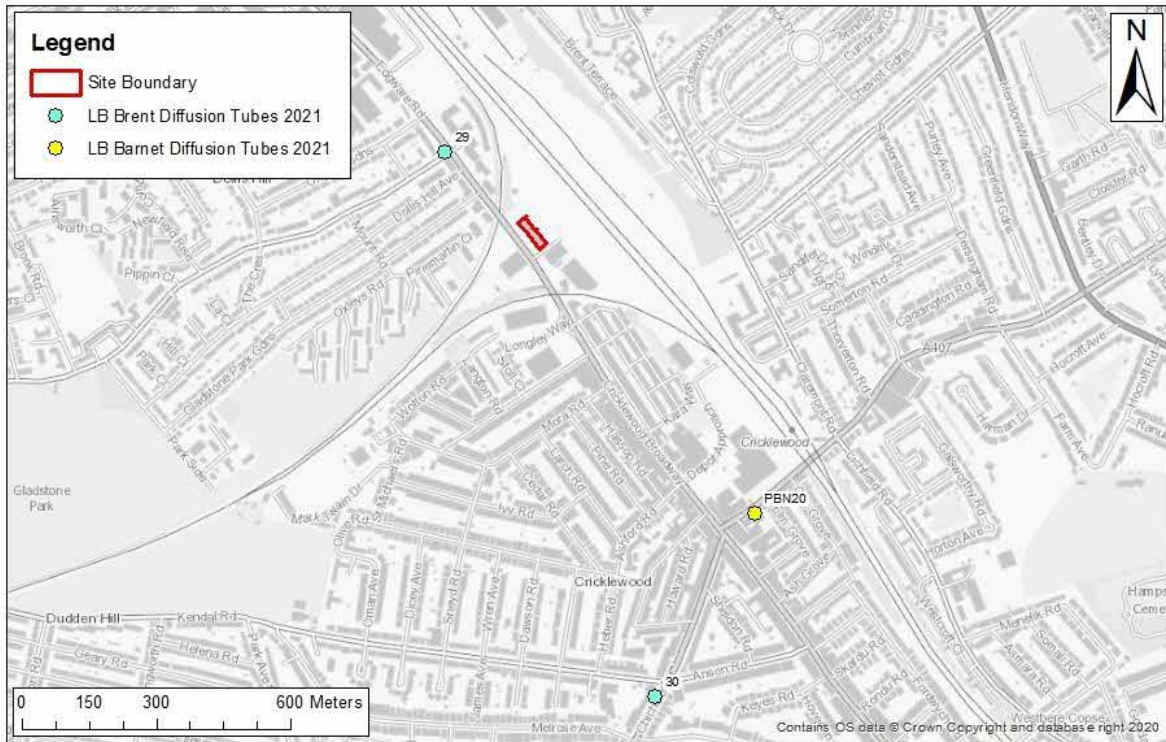


Figure 4-1: Local Monitoring Locations

Table 4-1: Measured Annual Mean NO₂ Concentrations (µg/m³)

Site ID	Site Name	Site Type	2017	2018	2019	2020	2021
LB Barnet							
PBN20	Flats above 16 Cricklewood Lane	Urban Centre	- *	43	39	31	30
LB Brent							
29	Junc. Dollis Hill Lane/Cricklewood B/W	Roadside	56	- *	35	27	29
30	Chichele Rd near Melrose Ave	Roadside	51	- *	31	26	29
Objective			40				

Exceedances of the annual mean objective are shown in BOLD.

Data taken from LB Barnet's 2021 Air Quality Annual Status Report (ASR) (LB Barnet, 2022).

Data taken from LB Brent's 2021 Air Quality Annual Status Report (ASR) (LB Brent, 2022)

-* No Data

Predicted Background Concentrations

- 4.13 Predicted annual mean background concentrations of NO₂, PM₁₀ and PM_{2.5} have been obtained from national maps provided by Defra (Defra, 2020b).
- 4.14 The mapped NO₂ and PM₁₀ backgrounds have been compared against concentrations recorded at local background monitoring sites. Details of the calibration are shown in Appendix D.
- 4.15 It was not possible to calculate a specific PM_{2.5} adjustment factor as there are no suitable nearby PM_{2.5} monitoring sites. However, taking into account the typically strong relationship between background PM₁₀ and background PM_{2.5}, it is considered appropriate to apply the PM₁₀ calculated adjustment factor to mapped background PM_{2.5}.
- 4.16 The adjusted backgrounds are shown in Table 4-4. The predicted background concentrations are all well below the relevant objectives at the Site. Specifically,

it is worth noting that concentrations of PM_{2.5} are also below the interim target of 12 µg/m³

Table 4-2: Predicted Annual Mean Background Concentrations (µg/m³)

Year	Location	NO ₂	PM ₁₀	PM _{2.5}
2019	Development Site	15	13	9
Objectives		40	40	20

Predicted concentrations are rounded as appropriate taking into consideration the level of accuracy of the data source as well as the relevant objectives.

5.0 PREDICTED IMPACTS

Demolition and Construction Dust Impacts

Screening Assessment

- 5.1 The primary potential effects during the construction phase relate to annoyance and loss of amenity caused by dust soiling, health impacts relating to PM₁₀ and ecological impacts due to dust deposition. Based on the screening criteria set out by the GLA, it is considered necessary to carry out a construction dust risk assessment as there are sensitive human and ecological receptors located within 50 m of the Site boundary and within 50 m of the roads along which dust may be tracked out by construction vehicles.
- 5.2 There are no ecological sites located within proximity of the site in which dust may be tracked. Therefore, the assessment of dust deposition on ecological sites has not been considered as part of this construction dust risk assessment.

Further Assessment

Dust Emission Magnitude

- 5.3 The dust emission magnitude relating to demolition, earthworks and construction activities and as a result of trackout have been determined based on the GLA and IAQM guidance (as set out in Appendix C).
- 5.4 Proposals include the partial demolition of existing buildings with an estimated total building volume of <20,000 m³. The dust emission magnitude associated with demolition activities is therefore considered to be 'small'.
- 5.5 Proposed earthworks activities could extend up to approximately 1,300 m² (the approximate area of the Site). The soil composition at the Site is deep, with a clayey to silty loam texture, and a prequaternary marine / estuarine sand and silt subsoil. Grains are argillaceous in size (UK Soil Observatory, 2023). As such the soil composition is considered to have the potential to be slightly dusty. Based on the above, the dust emission magnitude associated with the earthwork activities is considered to be 'small'.

- 5.6 The proposed development will involve the slight extension of the existing building, to provide a self-storage facility. The total building volume associated with the application is estimated to be < 25,000 m³, with the dust emission magnitude associated with construction activities is therefore considered to be 'small'.
- 5.7 The peak number of HDV movements exiting the Site which may track material onto roads is anticipated to be between 10 - 50 per day³. The dust emission magnitude associated with trackout activities is therefore considered to be 'medium'.

Area Sensitivity

- 5.8 The sensitivity of the area to dust soiling and human health impacts has been assessed based on the criteria shown in Appendix C.
- 5.9 Commercial properties are considered to be of 'medium' sensitivity to dust soiling impacts. There is > 1 commercial property within 20 m of the Site boundary. The sensitivity of the area surrounding the Site to dust soiling impacts is therefore considered to be 'medium'.
- 5.10 The guidance states that trackout can occur on roads up to 50 m from 'small' sized sites (i.e. the proposed development Site). Construction vehicles are anticipated to travel southeast along Edgware Road from the Staples Corner W Roundabout before then dispersing onto the wider road network, therefore, the assumption has been made that dust and mud may be tracked up to 50 m along these sections of road from the Site exit. There is > 1 commercial property located within 20 m of roads which may be subject to trackout. The sensitivity to dust soiling impacts relating to trackout is therefore considered to be 'medium'.
- 5.11 Commercial properties are considered to be of 'medium' sensitivity in terms of human health impacts. For the purposes of the construction dust risk assessment, the assumption has been made that annual mean concentrations of PM₁₀ within the study area are comparable to background levels in the current year (i.e. 13 µg/m³, as shown in Table 4-2) Taking into account the assumed background PM₁₀

³ Information provided by the project's transport consultant; ACE.

concentrations and the number of sensitive receptors located within 20 m of the Site boundary (see Paragraph 5.9) and within 20 m of the roads where trackout may occur (see in Paragraph 5.10), the sensitivity of the surrounding area to human health impacts is, therefore, considered to be 'medium' for both on-site activities and trackout.

Risk of Impacts

5.12 The risk of construction dust impacts, without mitigation, has been assessed based on the tables provided in Appendix C and the identified risks are shown in Table 5-1.

Table 5-1: Risk of Construction Dust Impacts Without Mitigation

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

5.13 Overall, taking into consideration the risks set out in Table 5-1, appropriate mitigation measures corresponding to a 'low' risk site are required, however where impacts relate to 'trackout' only, mitigation measures corresponding to a 'medium' risk site are required. The recommended list of mitigation measures is set out in Section 6.0.

5.14 The IAQM recommends that no judgement of the significance of construction dust effects should be made without taking mitigation into account. This is due to the fact that mitigation measures are assumed to be secured by planning conditions and legal requirements as well as construction codes of conduct. Following implementation of the recommended mitigation (as set out in Section 6.0), residual effects will be 'not significant'.

Construction Road Traffic Impacts

5.15 The volume of construction traffic generated from the proposed development is currently unknown. However, it is reasonable to assume that the construction traffic generated will be significantly lower than those described in Paragraphs 5.25 to 5.26

- 5.16 Not only this, but impacts resulting from construction traffic will be temporary in nature. Based on the above, it is possible to screen out the impacts of construction road traffic as 'not significant'.

Human Health

- 5.17 The volume of construction traffic falls below the relevant EPUK/IAQM screening criteria (see Paragraphs 3.10 to 3.13).
- 5.18 Additionally, it should also be taken into consideration that any impacts associated with the construction phase will be temporary in nature. Furthermore, it is anticipated that a Construction Environmental Management Plan (CEMP) will be developed and will include measures to minimise emissions associated with construction vehicles, thus further reducing any potential impacts.
- 5.19 On the basis of the above, it is possible to screen out the overall effect of construction traffic on nearby existing sensitive human receptors as being 'not significant' without the need for a detailed assessment.

Ecology

- 5.20 The volume of construction traffic generated by the proposed development in conjunction with committed developments is not available, however, construction traffic volumes are also anticipated to be lower than volumes of operational traffic, as is typically the case for developments of this size and nature. This being the case, it is reasonable to expect that impacts associated with emissions from construction vehicles will be less adverse than those described in Paragraphs 5.25 to 5.26.
- 5.21 It should also be taken into consideration that any impacts associated with the construction phase will be temporary in nature, and that it is anticipated that a Construction Environmental Management Plan (CEMP) is likely to be developed which will include measures to minimise emissions associated with construction vehicles, thus further reducing any potential impacts.

- 5.22 On the basis of the above, it is judged that the overall effects of construction traffic on nearby existing sensitive human and ecological receptors are likely to be 'not significant'.

Operational Road Traffic Impacts

- 5.23 The proposed development is anticipated to generate 62 total AADT during the operational phase³.

Human Health

- 5.24 The volume of operational traffic falls below the relevant EPUK/IAQM screening criteria (see Paragraphs 3.10 to 3.13).
- 5.25 On the basis of the above, it is judged that the overall effect of operational traffic on nearby sensitive existing human receptors will be 'not significant' without the need for a detailed assessment.

Ecology

- 5.26 The 'Dudding Hill Loop between Cricklewood and Harlesden' London SINC is located opposite to the site on Edgware Road, approximately 38 m to the west.
- 5.27 Isolated data on committed development traffic is not currently available, therefore, it is not possible to compare combined proposed development and committed development traffic with the relevant screening criteria (see Paragraph 3.16). However, it is possible to screen out the potential for impacts as a result of operational traffic generated by the proposed development alone, as volumes of traffic are anticipated to be below the alternative screening criteria of roads located within 200 m of all nearby designated ecological sites (see Paragraph 3.16).
- 5.28 On the basis of the above, it is possible to screen out the overall effect of operational traffic on the nearby designated ecological sites as being 'not significant'.

Site Suitability

Screening Assessment

- 5.29 The proposed development will introduce new areas of sensitive exposure which are sensitive to the short-term NO₂ and PM₁₀ objectives (i.e. the proposed fab labs). Whilst these sensitive introduced receptors are located within the 'Barnet AQMA', they are located adjacent to Edgware Road, set back approximately 25 m away.
- 5.30 Sensitive locations within the proposed development are located <30 m from nearby railway lines. However, these lines are not identified by the LAQM.TG(22) as having a heavy traffic of diesel passenger trains. Background annual mean concentrations of NO₂ within the Site are predicted to be 15 µg/m³ in 2019 (see
- 5.31 Table 4-2). As such, according to the screening criteria set out in LAQM.TG(22) (see Paragraph 3.20), it is possible to screen out the potential risk of exceeding the annual mean NO₂ objective as a result of emissions associated with moving locomotives.

Air Quality Neutral Calculations

- 5.32 Air quality neutral calculations have been carried following the methodology set out in the 'London Plan Guidance; Air Quality Neutral' (GLA, 2023).

Building Emissions

- 5.33 The proposed long-term energy strategy is anticipated to comprise an all electric strategy and will therefore not have any associated on-site building emissions.
- 5.34 On basis of the above, the proposed development will be better than 'air quality neutral' in terms of building emissions.
- 5.35 Should the proposed energy strategy include combustion plant that exceeds the relevant screening thresholds, then further assessment of the combustion plant must be assessed in terms of being 'air quality neutral'.

Transport Emissions

5.36 The air quality neutral calculation and comparison of transport emissions and transport emissions benchmarks (TEBs) for the proposed development are described in Table 5-2 to Table 5-4.

Table 5-2: Proposed Development TEBs

Land Use	No. Dwellings or GIA (m ²)	Standard Benchmark Trip Rate (trips / dwelling or GIA (m ²) / annum)	TEB (trips / annum) ^a
Storage and Distribution	5,872	6.5	38,168

^a Calculations are based on unrounded numbers and only rounded numbers are presented.

Table 5-3: Proposed Development Trip Rates

Land Use	Development Trip Rate (trips / day)	Development Trip Rate (trips / annum) ^a
Storage and Distribution	62	22,646

Table 5-4: Comparison of Proposed Development Trip Rates and TEBs

Land Use	Total TEB (trips / annum)	Development Trip Rate (trips / annum)	Comparison (trips / annum)
Storage and Distribution	38,168	22,646	-15,523

Calculations are based on unrounded numbers and only rounded numbers are presented.

5.37 The proposed development trip rate is below the calculated total TEB. Therefore, the proposed development is considered to be better than 'air quality neutral' in terms of transport emissions. Therefore, no additional mitigation is considered to be necessary.

6.0 MITIGATION

Embedded Mitigation

- 6.1 The proposed development is expected to provide the following transport-related mitigation measures which will reduce emissions associated with the proposed operational transport³:

A travel plan has been developed that promotes walking and cycling, the use of public transport and car sharing and ensures the car parking management;

Cycle parking spaces will be provided on-site in accordance with the London Plan standards.

Construction Dust

- 6.2 The following standard mitigation measures have been identified as being appropriate for a 'low' risk site. This is based on the recommendations within the GLA's SPG on 'The Control of Dust and Emissions during Construction and Demolition' (GLA, 2014).
- 6.3 An Air Quality and Dust Management Plan (AQDMP) should be submitted to LB Barnet prior to works commencing on the Site.

Site Management

Display the name and contact details of person(s) accountable for air quality pollutant emissions and dust issues on the Site boundary;

Display the head or regional office contact information;

Record and respond to all dust and air quality pollutant emissions complaints;

Make a complaints log available to the local authority when asked;

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;

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 are being carried out and during prolonged dry or windy conditions; and

Record any exceptional incidents that cause dust and air quality pollutant emissions, either on- or off- site, and the action taken to resolve the situation in the log book.

Preparing and maintaining the site

Plan site layout: machinery and dust causing activities should be located away from receptors;

Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on Site;

Fully enclose Site or specific operations where there is a high potential for dust production and the Site is active for an extensive period;

Avoid Site runoff of water or mud;

Keep site fencing, barriers and scaffolding clean using wet methods;

Remove materials from Site as soon as possible;

Operating vehicle/machinery and sustainable travel

Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone (LEZ);

Ensure all non-road mobile machinery (NRMM) comply with the standards set within the GLA's SPG;

Ensure all vehicles switch off engines when stationary - no idling vehicles;

Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where possible;

Impose and signpost a maximum-speed-limit of 10 mph on any surfaced haul roads 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);

Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

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;

Ensure an adequate water supply on the Site for effective dust/particulate matter mitigation (using recycled water where possible);

Use enclosed chutes, conveyors and covered skips;

Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate; and

Waste Management

Reuse and recycle waste to reduce dust from waste materials; and

Avoid bonfires and burning of waste materials.

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);

Ensure water suppression is used during demolition operations;

Avoid explosive blasting, using appropriate manual or mechanical alternatives; and

Bag and remove any biological debris or damp down such material before demolition.

Construction

Avoid scabbling (roughening of concrete surfaces) if possible; and

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;

Trackout

Regularly use a water-assisted dust sweeper on the access and local roads, to remove, as necessary, to remove any material tracked out of the site;

Avoid dry sweeping of large areas;

Ensure vehicles entering and leaving the Site are securely covered to prevent escape of materials during transport;

Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.

Record all inspections of haul routes and any subsequent action in a site log book.

Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.

Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the Site where reasonably practicable);

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.

Access gates to be located at least 10 m from receptors where possible.

Road Traffic Impacts

- 6.4 The overall effects, without mitigation, of construction and operational traffic generated by the proposed development on existing human and ecological receptors in the study area will be 'not significant'.
- 6.5 Furthermore, any construction phase impacts will be temporary in nature and are expected to be mitigated to some extent by measures outlined within a CEMP.
- 6.6 Based on the above, no further mitigation measures are considered to be necessary.

Site Suitability

- 6.7 Future baseline concentrations of pollutants at sensitive locations within the proposed development Site are predicted to be well below the relevant objectives. Therefore, air quality for the proposed developments future use is considered to be good and no mitigation is recommended as being necessary.

Air Quality Neutral

- 6.8 The proposed development is considered to be better than 'air quality neutral' in terms of both building and transport emissions. Therefore, no additional mitigation is considered to be necessary.
- 6.9 Should the proposed energy strategy include combustion plant that exceeds the relevant screening thresholds, then a further assessment will be required.

7.0 CONCLUSIONS

- 7.1 The potential air quality impacts associated with the proposed development at Edgware Road, in Barnet have been assessed.
- 7.2 There is the potential for dust and PM₁₀ impacts during the construction phase. However, with the proposed mitigation measures in place, the overall residual effect will be 'not significant'.
- 7.3 Taking into consideration anticipated volumes of demolition and construction traffic, the maximum duration of the demolition and construction phase and the anticipated implementation of a CEMP, it is judged that the overall effect of emissions from development-generated demolition and construction traffic is likely to be 'not significant'.
- 7.4 The impacts of operational traffic generation associated with the proposed development have been considered and will fall below the relevant screening criteria for human health. As such, the overall effect of development-generated operational traffic is considered to be 'not significant'.
- 7.5 The impact of local air quality on the future use of the proposed development has been considered. Taking into consideration the proximity of the development Site to nearby emission sources, the layout of the Site and air quality conditions in the local area, it is judged that mitigation is required (as outlined within this report) in order to ensure that sensitive areas introduced by the proposed development will not experience unacceptable air quality where pollutant concentrations are above the relevant objectives.
- 7.6 The development is considered to be better than 'air quality neutral' in terms of transport emissions and better than 'air quality neutral' in terms of building emissions. Therefore, there is no potential for additional mitigation to be required in order to reduce and / or offset the operational transport emissions.

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Appendix A Glossary

Abbreviations	Meaning
AADT	Annual Average Daily Traffic
ACE	Ardent Consulting Engineers
AQAP	Air Quality Action Plan
AQA	Air Quality Assessment
AQDMP	Air Quality Dust Management Plan
AQFA	Air Quality Focus Area
AQMA	Air Quality Management Area
ASR	Annual Status Report
AURN	Automatic Urban and Rural Network
CEMP	Construction Environmental Management Plan
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
Diffusion Tube (DT)	A passive sampler used for collecting NO ₂ in the air
DMP	Dust Management Plan
EPUK	Environmental Protection UK
GIA	Gross Internal Area
GLA	Greater London Authority
HDV	Heavy Duty Vehicle; a vehicle with a gross vehicle weight greater than 3.5 tonnes, includes Heavy Goods Vehicles and buses
HGV	Heavy Goods Vehicle
IAQM	Institute of Air Quality Management
LA	Local Authority
LAQM	Local Air Quality Management
LB Barnet	London Borough of Barnet
LDV	Light Duty Vehicle; a vehicle with a gross vehicle weight equal to or less than 3.5 tonnes, includes Light Goods Vehicles, cars and motorbikes
LEZ	Low Emissions Zone
LGV	Light Goods Vehicle
LLAQM	London Local Air Quality Management
m ²	Squared Metres
m ³	Cubed Metres
NAOQ	National Air Quality Objective as set out in Air Quality Strategy and the Air Quality Regulations
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides, generally considered to be nitric oxide and NO ₂ . The main source is from combustion of fossil fuels, including petrol and diesel used in road vehicles and natural gas used in gas-fired boilers.
NPPF	National Planning Policy Framework
NRMM	Non-road mobile machinery
PCM	Pollution Climate Mapping
PM ₁₀ or PM _{2.5}	Small airborne particles less than 10/2.5 µg in diameter
PPG	Planning Practice Guidance

Abbreviations	Meaning
Receptor	A location where the effects of pollution may occur
SPD	Supplementary Planning Document
SPG	Supplementary Planning Guidance
TEB	Transport Emission Benchmark
ULEV	Ultra-Low Emission Vehicle
ULEZ	Ultra-Low Emission Zone

Appendix B Air Quality Neutral Benchmarks

B1 'London Plan Guidance; Air Quality Neutral'

Building Emissions

B1.1 Table B.1 shows the benchmark emissions rates set out within the 'London Plan Guidance; Air Quality Neutral' (GLA, 2023) based on the type of the type of technology used for various types of development class⁴. Benchmark emissions rates are based on achievable emission rates for the type of technology used.

Table B.1: Benchmark Emissions Rates (g NO_x/m²/annum)

Land Use	Individual Gas Boilers	Gas Boiler Network	CHP + Gas Boiler Network	Heat Pumps + Gas Boiler Network
Residential	3.5	5.7	7.8	5.7
Retail	0.53	0.97	4.31	0.97
Restaurant / bars	1.76	3.23	14.34	3.23
Offices	1.43	2.62	11.68	2.62
Industrial	1.07	1.95	8.73	1.95
Storage and distribution	0.55	1.01	4.50	1.01
Hotel	9.47	15.42	38.16	15.42
Care homes and hospitals	9.15	14.90	36.86	14.90
Schools, nurseries, doctor's surgeries, other non-residential institutions	0.90	1.66	7.39	1.66
Assembly and leisure	2.62	4.84	21.53	4.84

⁴ Separate use classes for commercial uses, including retail and offices, have now been replaced by use class E. If these separate uses are specified in the development proposal, they should be used for this assessment. Where the separate use is not specified, or where use class E has been specified, the benchmark for retail should be used (GLA, 2023).

Transport Emissions

B1.2 Table B.2 shows the benchmark trips rates set out within the 'London Plan Guidance; Air Quality Neutral' (GLA, 2023) based on the number of residences / GIA for various types of development class⁵. Benchmark trip rates are based on data from TRAVL (Trip Rate Assessment Valid for London) and are defined for different land uses and different areas of London.

Table B.2: Benchmark Trip Rates (annual trips/dwelling or m²) ^a

Land Use	Central Activities Zone	Inner London	Outer London
Residential	68	114	447
Office / Light Industrial	2	1	16
Retail (Superstore)	39	73	216
Retail (Convenience)	18	139	274
Restaurant / Café	64	137	170
Drinking establishment	0.8	8	-
Hot food takeaway	-	32.4	590
Industrial	-	5.6	6.5
Storage and distribution	-	5.5	6.5
Hotel	1	1.4	6.9
Care home / hospital	-	1.1	19.5
Schools, nurseries, doctor's surgeries, other non-residential institutions	0.1	30.3	44.4
Assembly and leisure	3.6	10.5	47.2

^a Annual trips / dwelling is applicable to proposed residential land use. Annual trips / m² is applicable to all other land uses.

⁵ Separate use classes for commercial uses, including retail and offices, have now been replaced by use class E. If these separate uses are specified in the development proposal, they should be used for this assessment. Where the separate use is not specified, or where use class E has been specified, the benchmark for office / light industrial should be used (GLA, 2023).

Appendix C London SPG Dust Assessment Approach

C1 Step 1: Screen the need for an assessment

C1.1 Step 1 is the screen the need for an assessment against the following criteria:

'Human receptor' within:

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

'Ecological receptor' within:

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

C1.2 Where there are no sensitive receptors within these distances, it can be concluded that the impact is negligible and no further assessment relating to construction dust impacts is required.

C2 Step 2: Assess the risk of dust impacts

C2.1 The risk of dust at sufficient quantum to cause annoyance/health/ecological impacts should be based on:

The scale and nature of the works (potential dust emission magnitude) (Table C.1); and

The sensitivity of the area to dust impacts based on the matrices shown in Table C.2, Table C.3 and Table C.4.

C2.2 These factors are then combined to determine the risk of dust impacts without mitigation applied for each of the four activities (Demolition, Earthworks, Construction and Trackout) following the matrices shown in in Table C.5, Table C.6 and Table C.7.

Table C.1: Potential Dust Emission Magnitude

Size	Definition
Demolition	
Small	Total building volume <20,000 m ³ , construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10 m above ground, demolition during wetter months.
Medium	Total building volume 20,000 m ³ – 50,000 m ³ , potentially dusty construction material, demolition activities 10-20 m above ground level.
Large	Total building volume >50,000 m ³ , potentially dusty construction material (e.g. Concrete), on-site crushing and screening, demolition activities >20 m above ground level.
Earthworks	
Small	Total site area <2,500 m ² , soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4 m in height, total material moved <20,000 tonnes earthworks during wetter months.
Medium	Total site area 2,500 m ² – 10,000 m ² , moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 4 m – 8 m in height, total material moved 20,000 tonnes – 100,000 tonnes.
Large	Total site area >10,000 m ² , potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >8 m in height.
Construction	
Small	Total building volume <25,000 m ³ , construction material with low potential for dust release (e.g. metal cladding or timber).
Medium	Total building volume 25,000 m ³ – 100,000 m ³ , potentially dusty construction material (e.g. concrete), on site concrete batching.
Large	Total building volume >100, 000 m ³ , on site concrete batching, sandblasting.
Trackout	
Small	<10 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50 m.
Medium	10-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m.

Size	Definition
Large	>50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100 m.

Table C.2: Sensitivity of the Area to Dust Soiling Effects on People and Property

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

Table C.3: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM ₁₀ Concentration	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<350
High	>32 µg/m ³ ^a	>100	High	High	High	Low
		10-100	High	High	Medium	Low
		<10	High	Medium	Low	Low
	28-32 µg/m ³ ^b	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		<10	High	Medium	Low	Low
	24-28 µg/m ³ ^c	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		<10	Medium	Low	Low	Low
	<24 µg/m ³ ^d	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		<10	Low	Low	Low	Low
Medium	-	>10	High	Medium	Low	Low
	-	1-10	Medium	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low

Table C.4: Sensitivity of the Area to Ecological Impacts

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

Table C.5: Risk of Impacts – Demolition

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

Table C.6: Risk of Impacts – Earthworks and Construction

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

Table C.7: Risk of Impacts – Trackout

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

C3 Step 3: Site-specific Mitigation

C3.1 Based on the outcome of Step 2, appropriate mitigation measures are recommended. The guidance includes a list of mitigation measures for Low, Medium and High Risk sites but final recommendations should be based on professional judgement and take into account particular site sensitivities and differences in risk for different activities or areas of the site. The mitigation recommended in the guidance are shown in Table C.8.

Table C.8: Mitigation Measures

Mitigation Measure	Low Risk	Medium Risk	High Risk
Site Management			
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	N	H	H
Develop and implement a Dust Management Plan (DMP).	D	H	H
Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.	H	H	H
Display the head or regional office contact information.	H	H	H
Record and respond to all dust and air quality pollutant emission complaints.	H	H	H
Make the complaints log available to the local authority when asked.	H	H	H
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.	H	H	H

Mitigation Measure	Low Risk	Medium Risk	High Risk
Increase the frequency of site inspections by those accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	H	H	H
Record any exceptional incidents that cause dust and air quality pollutant emissions, either on- or off- site, and the action taken to resolve the situation in the log book.	H	H	H
Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised.	N	N	H
Monitoring			
Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.	D	D	H
Agree dust deposition, dust flux, or real-time PM ₁₀ continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.	N	H	H
Preparing and maintaining the site			
Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	H	H	H
Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	H	H	H
Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.	D	H	H
Install green walls, screens or other green infrastructure to minimise the impact of dust and pollution.	N	D	D
Avoid site runoff of water or mud.	H	H	H

Mitigation Measure	Low Risk	Medium Risk	High Risk
Keep site fencing, barriers and scaffolding clean using wet methods.	D	H	H
Remove materials from site as soon as possible.	D	H	H
Cover, seed or fence stockpiles to prevent wind whipping.	N	H	H
Carry out regular dust soiling checks of buildings within 100 m of site boundary and cleaning to be provided if necessary.	N	D	D
Provide showers and ensure a change of shoes and clothes are required before going off-site to reduce transport of dust.	N	N	D
Agree monitoring locations with the Local Authority.	N	H	H
Where possible, commence baseline monitoring at least three months before phase begins.	N	H	H
Put in place real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly.	N	H	H
Operating vehicle/machinery and sustainable travel			
Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable	H	H	H
Ensure all non-road mobile machinery (NRMM) comply with the standards set out within the SPG	H	H	H
Ensure all vehicles switch off engines when stationary - no idling vehicles.	H	H	H
Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	H	H	H
Impose and signpost a maximum-speed-limit of 15 mph on surfaced haul roads 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)	D	D	H
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	N	H	H
Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)	H	H	H
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.	H	H	H

Mitigation Measure	Low Risk	Medium Risk	High Risk
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	H	H	H
Use enclosed chutes and conveyors and covered skips.	H	H	H
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	H	H	H
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.	D	H	H
Waste Management			
Avoid bonfires and burning of waste materials.	H	H	H
Reuse and recycle waste to reduce dust from waste materials.	H	H	H
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).	D	D	H
Ensure water suppression is used during demolition operations.	H	H	H
Avoid explosive blasting, using appropriate manual or mechanical alternatives.	H	H	H
Bag and remove any biological debris or damp down such material before demolition.	H	H	H
Earthworks			
Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.	N	D	H
Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil.	N	D	H
Only remove the cover in small areas during work and not all at once.	N	D	H
Construction			
Avoid scabbling (roughening of concrete surfaces) if possible	D	D	H
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.	D	H	H
Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.	N	D	H
For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.	N	D	D

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

(H = Highly Recommended, D = Desirable and N = Not Recommended).

C4 Step 4: Determine Significant Effects

C4.1 Recommended mitigation measures should be sufficient to ensure that the impact is normally 'not significant'. There may at times be limitations to appropriate mitigation measures (such as a lack of water) and therefore, an assessment should always be made based on the characteristics of each site and the surrounding area.

C5 Step 5: Dust Assessment Report

C5.1 The dust assessment report should include enough detail to ensure that the basis for the determination of emission magnitude and sensitivity of the area, and therefore the site risk, are clear. The required mitigation so also be set

out within the report, along with a description of the mechanism that will ensure that the appropriate level of mitigation will be implemented (such as through a planning condition).

Appendix D Background Calibration

D1 Background Calibration Inputs and Results

D1.1 To ensure that annual mean background concentrations used in this assessment reflect real-world conditions as accurately as possible, a calibration exercise has been carried out, utilising data measured in 2019 at the ABN2 automatic monitor. Measured concentrations have been compared against Defra predictions at the same location to provide a calibration factor as shown in Table D.1.

Table D.1: Background Calibration (NO₂ & PM₁₀)

	NO ₂	PM ₁₀
Monitor	ABN2	ABN2
Measured Concentration (µg/m ³)	25	17
Data Capture (%)	98	99
Mapped Concentration (µg/m ³)	28	19
Calibration Factor	0.88 ^a	0.90 ^a

Concentrations are rounded as appropriate taking into consideration the level of accuracy of the data sources.

^a Based on unrounded number.

D1.2 The calibration factors suggest that mapped NO₂ and PM₁₀ backgrounds for the area are higher than those measured in the area. Mapped background NO₂ and PM₁₀ have, therefore, been adjusted by the relevant factors for the purposes of this assessment.

D1.3 No background PM_{2.5} monitoring is undertaken within LB Barnet. As such, taking into account the typically strong relationship between background PM₁₀ and background PM_{2.5}, the PM₁₀ adjustment factor has been applied to mapped background PM_{2.5}.