

Highgate Air Quality Assessment

Science Block

Highgate School

Project number: 60580302
M4.11

December 2022

Quality information

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Revision History

Revision	Revision date	Details	Authorized	Name	Position
1.0	19/10/22	Final draft	AS	Anna Savage	Technical Director
2.0	13/12/22	Final - Comments addressed	AS	Anna Savage	Technical Director
3.0	14/12/22	Final	AS	Anna Savage	Technical Director

Distribution List

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1. Introduction

- 1.1 This report sets out the results of an assessment of the likely significant effects on air quality as a result of the proposed redevelopment and extension of the Science Block as part of Highgate School (hereafter referred to as the 'proposed development') in the London Borough of Haringey.
- 1.2 The proposal is to add two new extensions to the existing building, extending towards Science Quad and Garner Quad, on the west and north faces respectively, alongside a full refurbishment of the existing building.
- 1.3 The report covers a qualitative air quality assessment of public exposure and ecological sensitive receptors during operation, with a focus on nitrogen dioxide (NO₂), nitrogen oxides (NO_x) and particulates (PM_{2.5} and PM₁₀). These are the pollutants that are most likely to give rise to pollutant levels near or above air quality objectives due to vehicle emissions. The assessment also considers the impact of particulate matter (PM_{2.5} and PM₁₀) and dust during the construction phase qualitatively. All other pollutants are scoped out of the assessment.

2. Legislation, Policy and Guidance

- 2.1 This assessment has been undertaken taking into account relevant legislation and guidance set out in national, regional and local planning policy (summarised in the sections below). The legislation and policy requirements have informed the preparation of this ES chapter.

Legislation

European Union Ambient Air Quality Directive

- 2.2 The Clean Air for Europe (Ref 1) programme revisited the management of air quality within the European Union (EU) and replaced much of the existing air quality legislation with a single legal act called Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe (Ref 2). This Directive repealed and replaced the EU Framework Directive 96/62/EC on Ambient Air Quality Assessment and Management and its associated Daughter Directives 1999/30/EC (Ref 3), 2000/69/EC (Ref 4), 2002/3/EC (Ref 5), relating to limit values for ambient air pollutants and the Council Decision 97/101/EC (Ref 6) which established a reciprocal exchange of information and data within Member States.
- 2.3 Directive 2008/50/EC is transcribed into UK legislation by the Air Quality Standards Regulations 2010, which came into force on 11th June 2010 and as amended in 2016 (Ref 7). This sets binding limit values or objectives on pollutants with the aim of avoiding, preventing or reducing harmful effects on human health and on the environment.
- 2.4 Air pollution limits set by the EU remain in UK law post Brexit, as EU legislation that applied directly or indirectly to the UK before 11.00 p.m. on 31 December 2020 has been retained in UK law as a form of domestic legislation known as 'retained EU legislation'. This is set out in sections 2 and 3 of the European Union (Withdrawal) Act 2018 (c. 16) (Ref 8). Section 4 of the Withdrawal Act 2018 ensures that any remaining EU rights and obligations, including directly effective rights within EU treaties, continue to be recognised and available in domestic law after exit. However, the EU will no longer have a role in enforcement.

National Air Quality Strategy (AQS)

- 2.5 The UK AQS was initially published in 2000 under the requirements of the Environment Act 1995 (Ref 9). A further revision of the AQS (Ref 10) set objective values to help local authorities manage local air quality improvements in accordance with the EU Air Quality Framework Directive. Some of these objective values have been laid out within the Air Quality (England) Regulations 2000 (Ref 11) and later amendments (Ref 12).

- 2.6 The AQS objective values have been set down in regulation for the purposes of local air quality management (LAQM). Under the LAQM regime, local authorities have a duty to carry out regular assessments of air quality against the AQS objective values and if it is unlikely that the AQS objective values will be met in the given timescale, they must designate an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) with the aim of achieving the objective values. The boundary of an AQMA is set by the local authority to define the geographical area that is to be subject to the management measures to be set out in a subsequent action plan. It is not unusual for the boundary of an AQMA to include within it relevant locations where air quality is not at risk of exceeding an AQS objective.
- 2.7 The AQS objective values for the pollutants of relevance to this assessment are presented in Table 2-1:

Table 2-1: Key National Air Quality Strategy Objectives

Pollutant	Averaging Period	Value	Maximum Exceedances	Permitted	Target Date
Nitrogen Dioxide (NO ₂)	Annual Mean	40 µg/m ³	N/A		31/12/2005
	Hourly Mean	200 µg/m ³	18 times per year		31/12/2005
Particulate Matter (PM ₁₀)	Annual Mean	40 µg/m ³	N/A		31/12/2004
	Daily Mean	50 µg/m ³	35 times per year		31/12/2004
Fine Particulate Matter (PM _{2.5})	Annual Mean	20 µg/m ³	N/A		2020
Nitrogen Oxides (NO _x) for ecosystems	Annual Mean	40 µg/m ³	N/A		31/12/2000

- 2.8 The principal air quality legislation within the United Kingdom is the 2010 Air Quality Standards Regulations (as amended 2016) (Ref 13), which transposes relevant EU Air Quality Directives into national legislation.

Clean Air Strategy

- 2.9 In 2019, the UK government released its Clean Air Strategy 2019 (Ref 14), which is part of its 25 Year Environment Plan. In recent years, air quality management has primarily focused on NO₂, and its principal source in the UK, i.e. road traffic. However, the Clean Air Strategy broadens the focus to other areas, including domestic emissions from wood burning stoves and from agriculture. This shift in emphasis is part of a longer-term goal to reduce the levels of PM_{2.5} in the air to below the World Health Organisation (WHO) guideline level, which is far lower than the AQS objective value.
- 2.10 The Clean Air Strategy included the provision of a clear effective guidance on how AQMAs, Clean Air Zones (CAZ) and Smoke Control Areas interrelate and how they can be used by local government to tackle pollution. The UK Clean Air Strategy sets the following reduction target:
- Nitrogen oxides (NO_x) - reduce emissions against the 2005 baseline by 55% by 2020 and by 73% by 2030.
 - PM_{2.5} - reduce emissions against the 2005 baseline by 30% by 2020 and 46% by 2030.
- 2.11 It is noted within the Clean Air Strategy document that the "current legislative framework has not driven sufficient action at a local level". New legislation will seek to shift the focus towards prevention of exceedances rather than tackling pollution when limits have been surpassed. The shift of focus encourages more of a proactive rather than reactive policy framework at regional and local levels on air quality.

National Planning Policy

National Planning Policy Framework

- 2.12 At a national level, the UK Government published the National Planning Policy Framework (NPPF) in 2012. The NPPF supersedes previous national planning policy guidance (PPGs) and planning policy statements

(PPSs). The NPPF summarises in a single document the Government planning policies for England, and how these are expected to be applied. The NPPF was updated in July 2021 (Ref 16), superseding the previous version published in March 2012 and revised in February 2019.

- 2.13 Air quality is considered as an important element of the natural environment within the NPPF. On conserving and enhancing the natural environment, Paragraph 174 states that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by: ...

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality ..."

- 2.14 Air quality in the UK has been managed through the Local Air Quality Management regime using national objectives. Paragraph 186 of the NPPF states that:

"Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. ... Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan."

- 2.15 Annex 2 of the NPPF provides the following definition of AQMAs: "Areas designated by local authorities because they are not likely to achieve national air quality objectives by the relevant deadlines".

- 2.16 Also, Paragraph 105 of the NPPF states the following:

"The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions and improve air quality and public health".

National Planning Practice Guidance

- 2.17 The Planning Practice Guidance (PPG) (Ref 18) was published on the 6 March 2014 to provide more in-depth guidance to the NPPF. The PPG aims to make planning guidance more accessible, and to ensure that the guidance is kept up to date. As such, the PPG was amended in July 2017 to reflect the updated EIA Regulations, and further updated in 2019.

- 2.18 When deciding whether air quality is relevant to a planning application, the PPG states that the following criteria may be required to be taken into consideration:

"the 'baseline' local air quality, including what would happen to air quality in the absence of the development;

whether the proposed development could significantly change air quality during the construction and operational phases (and the consequences of this for public health and biodiversity); and

whether occupiers or users of the development could experience poor living conditions or health due to poor air quality."

- 2.19 On how detailed an air quality assessment needs to be, the PPG states:

"Assessments should be proportionate to the nature and scale of the development proposed and the level of concern about air quality... Mitigation options where necessary will be locationally specific, will depend on the proposed development and should be proportionate to the likely impact. It is important therefore that local planning authorities work with applicants to consider appropriate mitigation so as to ensure the new development is appropriate for its location and unacceptable risks are prevented."

A Green Future

- 2.20 The 25 Year Environment Plan, published in January 2018, sets out the actions the UK Government will take to help the natural world regain and retain good health (Ref 15). This references several actions that are being taken to improve air quality, most notably the publication of the Clean Air Strategy (referenced earlier) and tighter controls on Medium Combustion Plant. Emphasis is also placed on the 'Future of Mobility', in the establishment of flexible regulatory framework to encourage new modes of transport and encouraging opportunities to move toward zero emission transport.
- 2.21 The 25 Year Environment Plan reinforces the demand for high environmental standards for all new build development. Resilient buildings and infrastructure will more readily adapt to a changing climate, and by extension have a lesser impact on local air quality.

Regional Planning Policy

The London Plan – Spatial Development Strategy for Greater London (2021)

- 2.22 The Mayor's London Plan represents a spatial development strategy for Greater London. It is the overall strategic plan for London, and it sets out a fully integrated economic, environmental, transport and social framework for the development of the capital. It forms part of the development plan for Greater London. London boroughs' local plans need to be in general conformity with the London Plan, and its policies guide decisions on planning applications by councils and the Mayor. This new London Plan was published in March 2021 (Ref 19) displacing the former London Plan 2016 (Ref 20).

- 2.23 The policy Sustainable Infrastructure 1 (SI1) '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 retrofitted 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, this is done on-site. Where it can be demonstrated that on-site provision is impractical or inappropriate, off-site measures to improve local air quality may be acceptable, provided that equivalent air quality benefits can be demonstrated within the area affected by the development."

2.24 The policy Sustainable Infrastructure 1 (SI3) 'Energy Infrastructure also states:

"D) Major development proposals within Heat Network Priority Areas should have a communal low-temperature heating system:

1) the heat source for the communal heating system should be selected in accordance with the following heating hierarchy:

a) connect to local existing or planned heat networks

b) use zero-emission or local secondary heat sources (in conjunction with heat pump, if required)

c) use low-emission combined heat and power (CHP) (only where there is a case for CHP to enable the delivery of an area-wide heat network, meet the development's electricity demand and provide demand response to the local electricity network)

d) use ultra-low NOx gas boilers

2) CHP and ultra-low NOx gas boiler communal or district heating systems should be designed to ensure that they meet the requirements in Part B of Policy SI 1 Improving air quality

3) where a heat network is planned but not yet in existence the development should be designed to allow for the cost-effective connection at a later date."

2.25 The London Plan also notes that whilst developments meeting Air Quality Neutral benchmarks is necessary to control the growth in London's regional emissions, this will not always suffice to prevent unacceptable local impacts, as these may be affected by other factors such as: the location of emission sources, the rate of emissions (as opposed to the annual quantum) and the layout of the development in relation to the surrounding area. Development related impacts such as concentrating emissions, increasing exposure or preventing dispersion in particular locations, therefore, need to be assessed and mitigated if required.

2.26 It is noted that the Greater London Authority (GLA) will produce guidance in order to assist developers and boroughs in identifying measures and best practice to inform the preparation of statements for developments taking an air quality positive approach. This development is not a "major development" and therefore an Air Quality Positive Statement is not required.

Mayor's London Environment Strategy

2.27 The Mayor's London Environment Strategy (Ref 21), published in 2018, sets the ambitious target for London to have the best air quality of any major world city by 2050 and goes one step further than the previous strategy by requiring developments be 'air quality positive', though there is not yet adopted guidance demonstrating what this means from an assessment perspective.

Local Planning Policy

London Borough of Haringey New Local Plan

2.28 Haringey's New Local Plan is currently under development and a draft version is due to be published in 2022. In the meantime, Haringey have produced a first steps Engagement document (Ref 22) where they have outlined their key objectives which they are striving to achieve with their new Local Plan. The New

Local Plan sets out a “vision and objectives for future development of the borough” to 2037 and will be the starting point in terms of the consideration of approval for planning applications. Haringey’s Local Plan, in conjunction with the London Plan, forms the Development Plan against which individual planning proposals are assessed. The Council’s ambition is for the numerous benefits from the opportunities created by the new local plan will extend across the whole borough, and beyond to other areas of North London, with a key focus on reducing inequalities on a large scale and addressing the Climate emergency we all face.

Other Relevant Policy, Standards and Guidance

Local Air Quality Management Guidance

- 2.29 The GLA provides and maintains guidance and tools to support local authorities in carrying out their duties under the Environment Act 1995 (Ref 9) and subsequent regulations. The London Local Air Quality Management (LLAQM) Framework is the statutory process used by local authorities in London to review and improve air quality within their areas. In order to provide consistency with the Council’s own work on air quality, the guiding principles for air quality assessments, as set out in the latest guidance and tools provided by the technical guidance – LLAQM.TG(19) (Ref 23) – are followed in this assessment. Where necessary, the national guidance LAQM.TG(22) (Ref 24) is also used.

Environmental Protection UK and Institute of Air Quality Management Planning Guidance

- 2.30 When determining the significance of the air quality assessment results with the Proposed Development, this assessment follows the non-statutory best practice guidance relating to air quality and development control published by Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) (Ref 25). The guidance ensures that air quality is adequately considered during land-use planning and development control process and is applicable to assessing the effect of changes in exposure of members of the public consequential to residential and mixed-use developments. This is of particular importance in urban areas where air quality is of a poorer standard. The guidance states that:

“Land-use planning can play a critical role in improving local air quality. At the strategic level, spatial planning can provide for more sustainable transport links between the home, workplace, educational, retail and leisure facilities, and identify appropriate areas for potentially polluting industrial development. For an individual development proposal, there may be associated emissions from transport or combustion processes providing heat and power.”

Air Quality Neutral: London Plan Guidance

- 2.31 Air Quality Neutral’ is a term for developments that do not contribute to air pollution beyond allowable benchmarks. The GLA have prepared guidance outlining the acceptable benchmarks within which Proposed Development must lie, based on research and evidence carried out by building and transport consultants (Ref 26).
- 2.32 There are two sets of benchmarks, which cover the two main sources of air pollution from new developments:
- Building Emissions Benchmark (BEB) - emissions from equipment used to supply heat and energy to the buildings
 - Transport Emissions Benchmark (TEB) - emissions from private vehicles travelling to and from the development.

A development must meet both benchmarks separately in order to be considered Air Quality Neutral. If one or both benchmarks are not met, appropriate mitigation or offsetting will be required.

Air Quality Positive: London Plan Guidance

- 2.33 It is a requirement of the GLA that large-scale development sites and masterplan areas prepare an Air Quality Positive Statement (AQPS) in adherence with the GLA’s Air Quality Positive London Plan Guidance (Ref 27). New developments play an important role in improving London’s poor air quality; an AQPS should

be produced as part of the evidence base outlining the Air Quality Positive approach taken, demonstrating consideration of air quality at all stages of a proposed development.

2.34 The guidance states:

“The Air Quality Positive approach maximises the benefits to local air quality in and around a development site or masterplan area and minimises exposure to existing sources of poor air quality. It requires planners, designers, architects and air quality experts to show what measures have been taken during the design stages to achieve the best possible outcomes for air quality. This approach goes beyond compliance with both the Air Quality Neutral benchmarks and the minimum requirements of an air quality assessment and sets out the measures taken to benefit local air quality and reduce exposure to poor air quality.”

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

2.35 The Control of Dust and Emissions during Construction and Demolition SPG (2014) (Ref 29) sets out the requirements for an Air Quality Statement, a dust risk assessment, emission control measures, air quality monitoring and cleaner construction machinery for developments in London. An Air Quality Statement is required to be submitted to the Local Planning Authority during the application stage, prior to works commencing on site.

2.36 Non-Road Mobile Machinery (NRMM) to be used on any construction sites need to comply with the latest European emission standards, as set out in the SPG. This policy is enforced through the planning process, and compliance with the NRMM standards should be secured by the local authorities as a planning condition or s106 agreement. If emissions of NRMM are unknown, developers will be required to provide a written statement of their commitment and ability to meet the NRMM standards as part of the Air Quality Statement. An inventory of all NRMM should be kept, stating the emission limits for all equipment, and be made available to local authority officers.

3. Assessment Methodology

3.1 This air quality assessment has been undertaken based on the following guidance:

- Defra's LAQM Technical Guidance (LAQM.TG (22)) (Ref 24) and LLAQM.TG(19),
- IAQM's Land-Use Planning & Development Control: Planning for Air Quality (Ref 25)

3.2 Following IAQM guidance, a detailed level of assessment is not required due to the limited size of the proposed development. The proposed development will not result in an increase in staffing or student numbers and thus is highly unlikely to have any impact on local highway or transport networks.

3.3 A Dust Risk Assessment has been undertaken by Highgate School, and is attached in Appendix A.

4. Baseline Conditions

Existing Baseline

Local Air Quality Management

4.1 The London Borough of Haringey (LBH) declared a borough wide AQMA in July 2001 for the 24-Hour mean objective for PM₁₀ and the annual mean objective for NO₂. Road traffic has been identified as a prominent source of these pollutants in conjunction with domestic and commercial gas sources.

4.2 The designation of an AQMA requires any development within the AQMA with the potential to impact air quality adversely to carry out an air quality impact assessment and a site suitability study.

- 4.3 The GLA has declared 183 Air Quality Focus Areas (AQFAs) in London, identifying areas of high human exposure which exceed the national / EU air quality objective(s) for NO₂ (Ref 32). The Focus Area designation was designed to address concerns relating to forecasted air pollution trends, or those raised during the LAQM review process. It is noted, however, that this designation does not represent an exhaustive list of London's air pollution hotspot locations, rather where the GLA believe the problem to be most acute. There are eight AQFAs within LBH and the Site is located approximately 960m from AQFA No. 81: Highgate A1 Archway Junction Alymer Road.
- 4.4 LBH undertakes continuous air quality monitoring at three locations: an urban background monitoring location in Priory Park approximately 2.1 km north-west of the Site, a roadside background monitoring location in Wood Green approximately 3.7 km north-west and a roadside monitoring location on Haringey High Road approximately 6.3 km north-west of the site. These locations are not considered to be representative of the conditions at the Site, due to their distance.

2021 Monitoring Data

- 4.5 LBH's monitoring data for 2021 has been reviewed, as it is the most recent full year of available data.
- 4.6 Automatic monitoring of NO₂ was undertaken by LBH at the three monitoring locations during 2021 (Ref 33). The highest recorded annual mean NO₂ concentration was 44 µg/m³ at Site HG005 in Wood Green (3.7km from the site) which is above the annual mean AQS objective. The other two automatic monitoring locations recorded NO₂ concentrations below the annual mean AQS objective. There were no exceedances of the hourly mean NO₂ objective during 2021 at any of the sites.
- 4.7 Automatic monitoring of PM₁₀ and PM_{2.5} was undertaken by LBH at one monitoring location during 2021 (Site HG005 in Wood Green). The PM₁₀ and PM_{2.5} concentrations were 16 µg/m³ and 10 µg/m³ respectively which are below annual AQS Objectives. There were no exceedances of the 24-hourly PM₁₀ objective during 2021.
- 4.8 During 2021, non-automatic (passive) monitoring of NO₂ was undertaken by LBH via a network of 35 diffusion tubes (Ref 33). Of these, 16 sites were located in the vicinity of schools, 11 sites were located along main roads, two sites next to GP Surgeries and the remaining six sites are distributed across the borough. The closest monitoring location to the Site is Tube HR06 (200A Archway Road, N6 5BA) approximately 570 m northwest of the Site. This monitoring location is considered to be representative of the likely conditions at the Site. In 2021, the air quality at this location was good, measuring an NO₂ annual mean of 32.8 µg/m³, below the annual mean AQS objective

Background Pollutant Concentrations

- 4.9 The total concentration of a pollutant comprises those contributions from explicit local emission sources such as roads and chimney-stacks, and those that are transported into an area from indeterminate sources (e.g. by wind from further away). If all the explicit local sources were removed, all that would remain is that which comes from indeterminate sources; it is this component that is called 'background'. A good understanding of background concentrations is important when completing air quality assessments, as it allows for a good understanding of local pollutant sources.
- 4.10 Background data has been sourced from Defra's 2018-based background maps (Ref 34). Defra publishes maps of background pollutant concentrations for each 1 km x 1 km grid square covering the whole of the United Kingdom. The most recent release of the background maps uses 2018 data as the reference year and provides projections of background concentrations of NO₂ and NO_x from 2018 to 2030. The maps generally predict a decrease in concentrations in future years, based on national projections.
- 4.11 Defra mapped background pollutant concentrations in the study area for 2022 are presented in Table 4-1.

Table 4-1: Study Area Background Pollutant Concentrations

GRID SQUARE	2022 ($\mu\text{g}/\text{m}^3$)		
	NO ₂	PM ₁₀	PM _{2.5}
528500, 187500	20.5	16.4	10.9

Future Baseline

- 4.12 Slight decreases in annual mean pollutant concentrations are anticipated to occur across the UK, primarily as a result of the uptake of cleaner and greener vehicles into the fleet and changes in energy policy (Ref 35).

5. Assessment of Effects

Construction Phase Assessment

- 5.1 A Construction Dust Risk Assessment has been carried out by Highgate School in accordance with the GLA's SPG (Ref 29), which has identified the Site as being 'medium risk'. The assessment outlines the appropriate level of mitigation required at the Site (in accordance with the guidance) to either avoid or reduce potential effects to neighbouring sensitive receptors (property and amenity; human health). This document is provided in Appendix 1.
- 5.2 Recommended mitigation measures documented within the Outline Construction and Environment Management Plan (OCEMP) produced by Highgate School based on a medium-risk site are also presented in Appendix 1. Assuming all mitigation measures are effectively implemented and monitored, at the level recommended by the Dust Risk Assessment, dust effects resulting from construction activities are anticipated to be not significant.

Operation Phase Assessment

Operational Phase Road Traffic Emissions

- 5.3 The proposed development will not result in an increase in staffing or student numbers and thus is highly unlikely to have any impact on local highway or transport networks (Ref 30). As such, no significant effects have been identified.

Air Quality Neutral Assessment

- 5.4 In order to address the GLA's policy for new developments to be 'air quality neutral', the development has been assessed in line with the methodology prescribed within the 'Air Quality Neutral' (Consultation Draft November 2021) London Plan Guidance document (Ref 26).
- 5.5 There are two sets of benchmarks, which cover the two main sources of air pollution from new developments:
- Building Emissions Benchmark (BEB) - emissions from equipment used to supply heat and energy to the buildings; and
 - Transport Emissions Benchmark (TEB) - emissions from private vehicles travelling to and from the development.
- 5.6 A development must meet both benchmarks separately in order to be Air Quality Neutral.

Transport Related Emissions

- 5.7 The Proposed Development is virtually car free, with vehicular access to the Site primarily being for servicing and the limited number of blue badge car parking spaces provided across the Proposed Development. No car parking will be provided for staff or visitors within the Proposed Development. The proposals will result in the removal of the existing car parking at Dyne House, which supports the LBH's aspirations in relation to car parking.
- 5.8 The AQN Guidance states that developments that are defined as 'car-free' may include provision for disabled and accessible parking, and can be assumed to meet the Transport Emissions Benchmark (TEB) providing that "maximum parking standards set out in policies T6 and T6.1 to T6.5 of the London Plan are not exceeded".
- 5.9 Taxi, delivery and servicing vehicle trips are not covered by Air Quality Neutral.
- 5.10 The Proposed Development meets the criteria outlined in the AQN Guidance and identified London Plan policies to be considered 'car-free', and therefore a full calculation against Transport Emissions Benchmarks is not required for the Proposed Development.
- 5.11 Therefore, following the simplified procedure outlined in the AQN Guidance, the Proposed Development is considered to be Air Quality Neutral for Transport Related Emissions.

Building Related Emissions

- 5.12 As set out within the Energy Statement submitted with the planning application, energy demand for the Proposed Development is to be met by Ground Source Heat Pumps (ASHP), renewable energy sources (such as photovoltaic (PV) panels) and/ or through the use of off-site waste heat.
- 5.13 The AQN Guidance states that developments can be assumed to meet the Building Emissions Benchmark if "*the new heating system is a heat pump or other zero emission heat source...*"
- 5.14 The Guidance additionally states that "*backup plant installed for emergency and life safety power supply, such as diesel generators, may be excluded from the calculation of predicted building emissions.*"
- 5.15 The requirement for gas-fired boilers is not currently proposed, and therefore has not been assessed. Should gas-fired boilers be proposed, these will need to be assessed.
- 5.16 A full calculation against the Building Emissions Benchmarks has therefore not been undertaken. The Proposed Development is considered to be Air Quality Neutral for Building Related Emissions.

6. Conclusions

- 6.1 The dust risk assessment undertaken by Highgate School has set out the required mitigation in order to ensure there are no adverse effects as a result of the construction of the proposed development.
- 6.2 The air quality in the area is below the air quality objectives, and therefore suitable for the proposed use. The proposals do not give rise to additional vehicle movements, and therefore no off-site impacts on air quality are anticipated. The proposed development is air quality neutral.

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Appendix A

HIGHGATE SCHOOL Science Block Refurbishment

Dust & Emissions Assessment

20/06/2022

The results are summarized on the Dusk Risk table below.

Authorisation Record

This Air Quality and Dust Risk Assessment has received the following sign off:

Authorisation	Authorisation Signature	Date
Estates Director – Chris Birkbeck		Date
Bursar – John Pheasant???		Date
		Date

Revision and Amendment Record

Rev No:	Produced by:	Amendment(s)	Checked by:	Authorised	Date
1	Capital Project Manager – Daniel O'Connell	Draft	DOC		21/06/2022
2	Click here to enter text.				-
3	Click here to enter text.				-

This report has been prepared taking into account the agreed scope of works and referenced to: The Control of Dust and Emissions During Construction and Demolition, Supplementary Planning Guidance, July 2014, Mayor of London.

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1 Introduction

This Air Quality and Dust Risk Assessment has been prepared to assess the impact of the proposed refurbishment and extension of the Science Block. The document follows the methodology described by The Control of Dust and Emissions during Construction and Demolition, Supplementary Planning Guidance (SPG), July 2014, Mayor of London.

1.1 Description of proposed Works

The proposal is to add two new extensions to the existing building, extending towards Science Quad and Garner Quad, on the west and north faces respectively, alongside a full refurbishment of the existing building. Full details of which can be reviewed within the corresponding Design and Access Statement.

Works will include:

- A four storey plus basement extension on the west side of the East Wing (Science Quad Extension)
- A modest extension at ground floor and fuller extension at first and second floor (Garner Quad Extension)
- Create of a boiler room within the existing attic space, including extending the existing dormer roof for access
- Exterior refurbishment, including re-pointing of all masonry walls and cleaning of stone
- Refurbishment and replacement of existing timber windows, including introduction of double glazing
- New fully Part M compliant disabled lift to all floors
- Replacement of life expired mechanical and electrical services throughout
- Introduction of external bris soleil louveres to address existing solar glare and heat gain issues
- New internal joinery doors and skirting throughout
- New acoustic ceilings
- General remodelling of Science laboratories including fixtures and fittings
- New toilets and shower facilities
- External hard and soft landscaping
-

The construction will include underpinning to the existing ground floor and associated piling works for both extensions.

1.2 Operational impact

It is the intention of the proposed development to make improvements compared to the existing building. The building shall remain as a Non-Residential (D1) use educational facility, so it will not result in increased traffic emissions as student and staff numbers shall not increase.

In relation to the impacts of emissions from the proposed Class A gas boiler, it is anticipated that emissions will be reduced compared to the current old centrally serviced installation. The thermal performance of the refurbished building and new extension envelope will be considerably improved resulting in reduced thermal losses. The net effect is an overall improvement in PM10 and NOx emissions compared to the existing building.

2 Dust Risk Assessment

2.1 Introduction

Highgate School has prepared this Dust Risk Assessment (DRA) to be submitted with the planning application as part of the Air Quality Statement. The document includes:

- The Risk assessment for each phase of works (demolition, earthworks, construction, Track-out), which incorporates the risk evaluation process set out below, and identifies suitable mitigation measures (see Chapter 5) for the relevant level of risk.
- Identification of whether each phase of activity on-site represents a low, medium or high risk by following the guidance as set in "The control of Dust and Emissions during Construction and Demolition (SPG)", July 2014, Mayor of London.

A fuller detailed assessment will be carried out by the Main Contractor once appointed to the project. This shall form the Air Quality and Dust Management Plan (AQDMP) and will be submitted to the local authority prior to works commencing on-site following the guidance within the Mayor's Controlling Dust Emissions During Construction (SPG), July 2014.

2.2 Phases

The Air Quality and Dust Risk Assessment considers the following four phases of development:

- Demolition
- Earthworks
- Construction
- Track-out

2.2.1 Dust Emission Magnitude

The dust emission magnitude is based on the scale of the anticipated works and is classified as Small, Medium, or Large. A classification will be noted for each of the four phases.

2.2.1.1 Demolition Phase

2.2.1.1.1 Phase Description

Demolition covers the partial demolition of elements within the building including the removal of existing staircase, apertures for the new staircase, and connection details associated with the two new extensions as indicated on the proposed demolition drawings.

Demolition Phase Dust Emission Magnitude

The proposed development is classified as small and it complies with the relevant criteria:

- Total volume of building to be demolished <20,000m³
- Construction material with low potential for dust release (ie. timber)
- Demolition activities <10m above ground

2.2.1.2 Earthworks phase

2.2.1.2.1 Phase Description

Earthworks primarily cover excavation, haulage, tipping and stockpiling of soil type materials. This includes levelling the site and landscaping.

The proposed development includes partial excavation to form a new basement, but no other external landscaping.

2.2.1.2.2 Earthworks Phase Dust Emission Magnitude

The development is classified as small and it complies with the relevant criteria:

- Total site area <2,500m²
- <5 heavy earth moving vehicles active at any one time
- Total material moved <10,000 tonnes

2.2.1.3 Construction phase

The key issues when determining the potential scale of dust emission during the construction phase include the size of the building(s)/infrastructure, method of construction, construction materials, and the duration of build.

2.2.1.3.1 Construction Phase Dust Emission Magnitude

The proposed development is classified as small and it complies with the criteria below:

- Total building volume <25,000m³
- Construction material with low potential (e.g. metal cladding or timber)

2.2.1.4 Track-out phase

2.2.1.4.1 Phase Description

Factors which determine the risk of dust emissions from Track-out are vehicle size, vehicle speed, vehicle numbers, geology and duration.

Only receptors within 50m of the route(s) used by vehicles on the public highway and up to 500m from the site entrance(s) are considered to be at risk from the effects of dust.

2.2.1.4.2 Track-out Phase Dust Emission Magnitude

The development is considered small and it complies with the following criteria:

- <10 HDV (>3.5t) trips in any one day
- Surface material with low potential for dust release
- Unpaved road length <50 m.

2.2.1.5 Dust Emission Magnitude for all phases

Overall, the Dust Emission Magnitude for each phase is presented on the table below:

2.2.1.5.1.1 Table – Dust emission magnitude during development phases

Activity	Dust Emission Magnitude
Demolition	Small
Earthworks	Small
Construction	Small
Track-out	Small

2.3 Area sensitivity

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 or other vegetation, to reduce the risk of wind-blown dust.

2.3.1 Sensitivity of People to Dust Soiling Effects

It is estimated that there are approximately 3nos 'receptors' 20m of the boundary of the site, 10nos 'receptors' within 50 m of the boundary of the site and no 'ecological receptor' within 50m of the boundary of the site (*the school's owned receptors i.e. Dyne House, Museum & Senior School Campus have been excluded from this calculation*).

All receptors are assumed to have High Sensitivity, under the following criteria:

- Users can reasonably expect an 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 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.

2.3.2 Sensitivities of People to the Health Effects of PM10

All receptors are assumed to have High Sensitivity. Typical criteria include:

- 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.

2.3.3 Sensitivities of Receptors to Ecological Effects

There are no known receptors within 50m. Typical criteria include:

- Locations with a local designation where the features may be affected by dust deposition.

2.3.4 Overall Area Sensitivity

The SPG provides tables to calculate the area sensitivity based on the number of receptors, distance from the proposed development and their sensitivity as presented above.

The area sensitivity will be calculated for the following categories:

1. Dust and soiling effects on people and property
2. Human health impacts (based on PM10 concentration increased due to the proposed development)
3. Ecological Impact

2.4 Dust and Soiling effects on people and property

Receptors and their sensitivity and respective distance from the proposed development are used on the table below to determine the area sensitivity. The area is considered of Medium Sensitivity.

2.4.1.1.1 Table – Sensitivity of the area to dust and 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
		Medium	Low		
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

2.5 Human health impacts

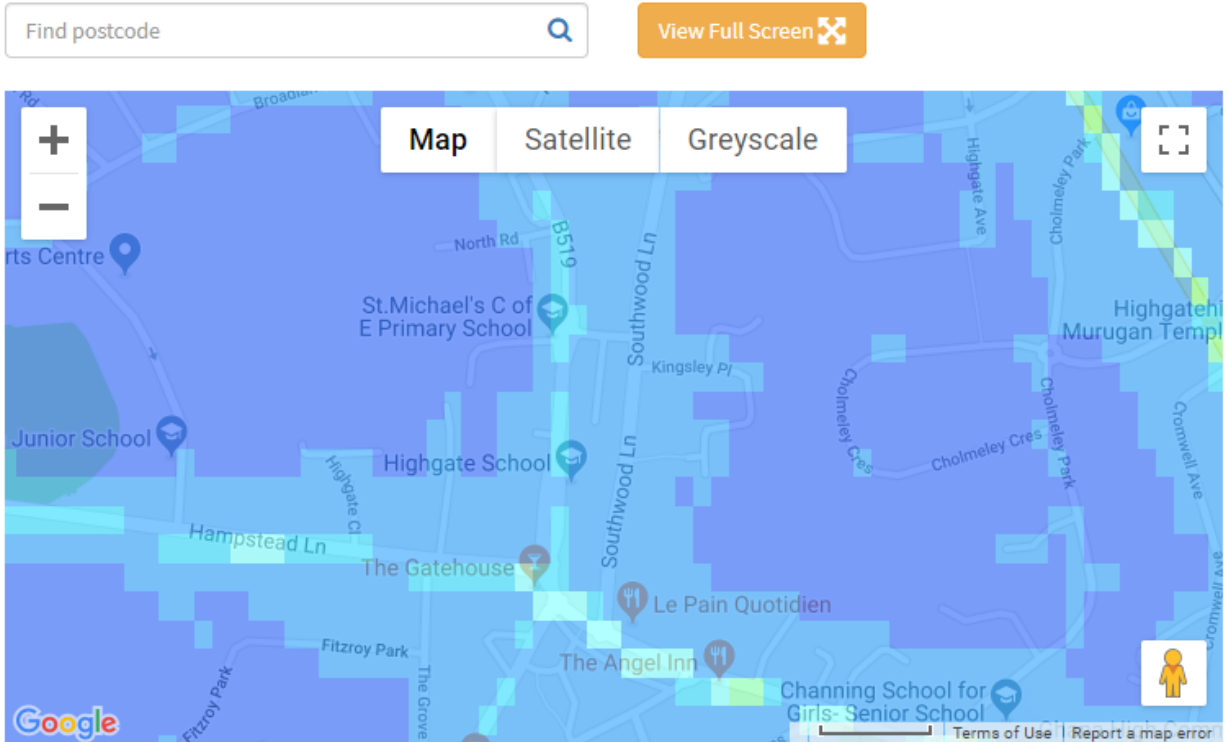
Receptors and their sensitivity and respective distance from the proposed development are used on the table below to determine the area sensitivity. The area is considered of High Sensitivity.

2.5.1.1.1.1 Table - 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	>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	>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	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	24-28 µg/m ³	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	-	>10	High	Medium	Low	Low	Low
	-	1-10	Medium	Low	Low	Low	Low
Low	-	1-10	Low	Low	Low	Low	Low

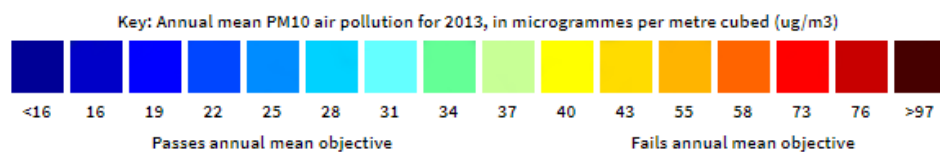
2.5.1.1.1.2 Modelled Annual Mean PM₁₀ Air Pollution Map

Annual Pollution Maps



Modelled annual mean PM₁₀ air pollution, based on measurements made during 2013.

This map was used with permission from The Greater London Authority and Transport for London, who fund, develop and maintain the London Atmospheric Emissions Inventory. For more information please visit data.london.gov.uk



Select species:

Select visibility:

Source: London Air Website: www.londonair.org.uk

2.6 Ecological Impacts

Receptors and their sensitivity and respective distance from the proposed development are used on the table below to determine the area sensitivity. The area is considered of Low Sensitivity.

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

2.7 Risk of Impacts

The dust emission magnitude determined above is combined with the sensitivity of the area to determine the risk of impacts with no mitigation applied.

The SPG provides the Risk tables below which will be used to calculate the Risk of Dust Impacts for each of the four phases, i.e. Demolition, Earthworks, Construction and Track-out.

2.7.1.1.1.1 Table - 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	Low Risk	Low Risk	Negligible

The Demolition phase Risk matrix for the Receptors/Sensitivity of Area/Dust Emission Magnitude is as follows:

2.7.1.1.1.2 Table – Risk of Dust Impacts on Receptors during Demolition phase

Receptors	Area Sensitivity	Dust Emission Magnitude	Risk of Dust Impacts Demolition
Dust Soiling	Medium	Small	Low Risk
Human Health	High	Small	Medium Risk
Ecological	Low	Small	Negligible

2.7.1.1.1.3 Table - 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

The Earthworks phase Risk matrix for the Receptors / Sensitivity of Area / Dust Emission Magnitude is as follows:

2.7.1.1.1.4 Table – Risk of Dust Impacts on Receptors during Earthworks phase

Receptors	Area Sensitivity	Dust Emission Magnitude	Risk of Dust Impacts Demolition
Dust Soiling	Medium	Small	Low Risk
Human Health	High	Small	Low Risk
Ecological	Low	Small	Negligible

2.7.1.1.1.5 Table - Risk of dust impacts – Construction

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

The Construction phase Risk matrix for the Receptors / Sensitivity of Area / Dust Emission Magnitude is as follows:

2.7.1.1.1.6 Table – Risk of Dust Impacts on Receptors during Construction phase

Receptors	Area Sensitivity	Dust Emission Magnitude	Risk of Dust Impacts Demolition
Dust Soiling	Medium	Small	Low Risk
Human Health	High	Small	Low Risk

Ecological	Low	Small	Negligible
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2.7.1.1.1.7 Table - Risk of dust impacts – Track-out

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

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 Track-out phase Risk matrix for the Receptors / Sensitivity of Area / Dust Emission Magnitude is as follows:

2.7.1.1.1.8 Table – Risk of Dust Impacts on Receptors during Track-out phase

Receptors	Area Sensitivity	Dust Emission Magnitude	Risk of Dust Impacts Demolition
Dust Soiling	Medium	Small	Negligible
Human Health	High	Small	Low Risk
Ecological	Low	Small	Negligible

2.7.1.1.1.9 Table – Summary Dust Risk Table with no mitigation measures applied

Potential impact	Risk			
	Demolition	Earthworks	Construction	Track-out
Dust Soiling	Low Risk	Low Risk	Low Risk	Negligible
Human Health	Medium Risk	Low Risk	Low Risk	Low Risk
Ecological	Low Risk	Negligible	Negligible	Negligible

3 Mitigation Measures

The developer will implement the appropriate dust and pollution control measures set out below to ensure the air quality impacts of construction and demolition are minimised and any mitigation measures employed are effective. Best practice methods will be adopted and staff will be trained to ensure these are implemented correctly. This is expected to minimise formation of dust and harmful emissions.

These measures are summarised below, and they are divided according to key construction and demolition stages and site risk. All measures are compulsory for site staff unless not feasible and alternative arrangements are agreed with site management. These measures are intended to be effective and deliverable and in-line with best practice.

The focus of the dust and pollution control measures to be outlined is to reduce health and dust annoyance impacts on existing local receptors. Potential health impacts from dust emissions to site personnel will also be considered and included in the site's health and safety documentation.

Contact details for the person responsible for dust and emissions generated from the site will be displayed on the site boundary so that local residents and businesses are able to contact the main contractor to raise any issues that they may have and report complaints. Site management has the authority to deal with complaints.

3.1 Site inspections

The main contractor will actively monitor the site to ensure the control of dust and emissions. Dry and windy conditions increase the likelihood of dust and emissions being produced and dispersed, so extra site monitoring will take place during these times.

3.1.1 Preparing and maintaining the site

3.1.1.1 Site layout

- Machinery and dust generating activities will be located within the development enclosure and away from receptors
- Solid screens and / or monarflex sheeting will be used to enclose the site. Additional barriers will be provided around dust generating activities
- Materials will be always covered to prevent wind whipping
- Site will be cleaned daily and any loose materials will be removed as soon as possible

3.1.1.2 Site maintenance

The Main Contractor will keep their construction site clean and in good order. Measures will include:

- Eliminate runoff and mud as it can lead to dust once dry
- Hoardings, fencing, barriers and scaffolding will be regularly cleaned as required

3.1.1.3 Dealing with spillages

Spillages can occur with a wide range of liquid and materials. The following measures will address this issue:

- Use bunded areas wherever practicable
- Regularly inspect the site area for spillages
- Have spillage kits readily available
- Vacuum or sweep regularly to prevent the build-up of fine waste dust material, which has spilled on the site and is designated as waste that is no longer fit for use

3.1.1.4 Reducing emissions from vehicles

Emissions from vehicles associated with construction sites can significantly add to levels of local air pollution, so it is important that best practice is employed to reduce these.

All mobile vehicles associated with the demolition / construction will comply with the standards of the London Low Emission Zone. For HGVs, the standard is Euro IV for PM and for heavier vans and mini buses it is Euro 3.

3.1.1.5 Reducing vehicle idling

Site management will work with suppliers and other contractors to ensure that vehicles do not have to wait to park safely.

If vehicles have to load/unload they will not stay idle unless required to safely operate the vehicle.

3.1.1.6 Construction Traffic

A site specific Construction Traffic Management Plan has been developed to evaluate the impact to the local environment. Generally, site management is responsible to ensure deliveries and removals are managed so that they are made when they are most needed, at times when they will contribute less to congestion and at locations where loading and unloading can take place safely. Deliveries will be consolidated so fewer journeys are needed.

These measures will reduce congestion in the local area and inconvenience to local road users.

3.1.2 Operations

3.1.2.1 Diesel or petrol generators

Generators will generally be avoided. Use will be allowed only in emergencies and site management will approve use only when no other option is available.

3.1.2.2 Cutting, grinding and sawing

Cutting, grinding and sawing will be reduced. Where possible, materials will be prepared off-site. In cases where such work must take place, spraying water over the material as it is being cut will greatly reduce the amount of dust generated.

If scabbling (*grinding concrete using a machine tipped with steel or carbide material*) is required the following measures will be in place to comply with best practice:

- Pre-wash work surfaces
- Screen off work area
- sweeping away or use electric vacuum

3.1.2.3 Chutes, conveyors and skips

Skips, chutes and the electric conveyor belt will be completely covered and, if necessary, completely enclosed to ensure that dust does not escape. Similarly, drop heights will be minimized to control the fall of materials.

3.1.3 Waste Management

- No burning of any material is permitted on-site
- Any excess material should be reused or recycled on or off-site in accordance with appropriate legislation
- The Main Contractor will identify the waste types that are likely to be produced and aim to reduce the amount of waste as much as possible, through identifying routes to reuse or recycle materials. The Main Contractor will refer to the Waste and Resources Action programme (WRAP- www.wrap.org.uk) which provides a list of ten quick wins for reducing and re-using waste
- Control access to storage areas to minimize risk of theft or damage
- Set up a dedicated store for timber, from which workers can re-use supplies
- Store any materials away from sensitive locations in fenced off areas
- Employ a just-in-time policy to deliver materials in order to reduce the storage time on-site

- Recycled materials will be used where possible and any materials used on site will be recycled rather than disposed of (including timber, aggregates, soil, bricks, masonry, concrete).

3.1.4 Mitigation measures specific to demolition

Demolition activities can generate significant dust and also cause re-suspension of dust currently within the building. The Main Contractor will carry out soft stripping to screen dust and prevent dispersion. Water suppression will be used to damp down dust and other debris that could generate dust, and where practical, manual or mechanical demolition techniques will be used.

3.1.5 Measures specific to construction

Cement, sand, fine aggregates and other fine powders will be sealed after use and if necessary stored in enclosed or bunded containers or silos. Some materials should be kept damp to reduce the risk of drying out.

For a comprehensive table of mitigation measures for Low, Medium and High Risk Sites please refer to Appendix A.

4 Site Monitoring

The correct implementation of the best practice methods identified above is expected to minimise the formation of dust and harmful emissions from the proposed development.

In addition, continuous site monitoring will allow the developer to manage the generation of dust including PM10 and PM2.5 and NOx emissions during construction and demolition. The site is considered to be Low Risk. For a Low Risk site the Control of Dust and Emissions during Construction and Demolition SPG July 2014 recommends to:

- Take into account the impact of air quality and dust on occupational exposure standards to minimize worker exposure and breaches of air quality objectives that may occur outside the site boundary, such as by visual assessment
- Keep an accurate log of complaints from the public, and the measures taken to address any complaints, where they were required

5 Conclusion

This document identifies the Dust Risks associated with the proposed development. Best practice methods have been identified and proposed to minimize the formation of dust and harmful emissions from the construction. Appropriate mitigations measures are proposed to minimize impact to the adjoining owners and other stakeholders.

In relation to operational impact, it is expected that the new gas boiler and improved thermal performance of the new building envelope will greatly reduce the emissions of PM₁₀ and NO_x. It is anticipated that there will be no change in road traffic as a result of the proposed development.

6 Appendix A

Measures relevant for Demolition, Earthworks, Construction and Track-out

Source: The control of Dust and Emissions during Construction and Demolition SPG, July 2014, Mayor of London

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.		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	XX
Display the head or regional office contact information.	XX	XX	XX
Record and respond to all dust and air quality pollutant emissions complaints.	XX	XX	XX
Make a complaints log available to the local authority when asked.	XX	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	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	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	XX

XX: Highly recommended, X: Desirable

MITIGATION MEASURE	LOW RISK	MEDIUM RISK	HIGH RISK
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	XX
Ensure all non-road mobile machinery (NRMM) comply with the standards set within this guidance.	XX	XX	XX
Ensure all vehicles switch off engines when stationary - no idling vehicles.	XX	XX	XX
Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where possible.	XX	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	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	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	XX

MITIGATION MEASURE	LOW RISK	MEDIUM RISK	HIGH RISK
Ensure an adequate water supply on the site for effective dust/particulate matter mitigation (using recycled water where possible).	XX	XX	XX
Use enclosed chutes, conveyors and covered skips.	XX	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	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	XX
Avoid bonfires and burning of waste materials.	XX	XX	XX

Measures specific to demolition

MITIGATION MEASURE	LOW RISK	MEDIUM RISK	HIGH RISK
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	X	XX
Ensure water suppression is used during demolition operations.	XX	XX	XX
Avoid explosive blasting, using appropriate manual or mechanical alternatives.	XX	XX	XX
Bag and remove any biological debris or damp down such material before demolition.	XX	XX	XX

Measures specific to Earthworks

MITIGATION MEASURE	LOW RISK	MEDIUM RISK	HIGH RISK
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

MITIGATION MEASURE	LOW RISK	MEDIUM RISK	HIGH RISK
Avoid scabbling (roughening of concrete surfaces) if possible	X	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	XX	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

Measures specific to Track-out

MITIGATION MEASURE	LOW RISK	MEDIUM RISK	HIGH RISK
Regularly use a water-assisted dust sweeper on the access and local roads, as necessary, to remove any material tracked out of the site.	X	XX	XX
Avoid dry sweeping of large areas.	X	XX	XX
Ensure vehicles entering and leaving sites are securely covered to prevent escape of materials during transport.	X	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).	X	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

