

Haringey Civic Centre

Air Quality Assessment

0044501-BHE-XX-XX-RP-AQ-01

0044501

14 March 2023

Revision P02

Revision	Description	Issued by	Date	Checked
P01	First Issue	KB	06/03/2023	PH
P02	ME comments addressed. Issue for legal review.	KB	14/03/2023	PH

<https://burohappold.sharepoint.com/teams/Environment/Shared Documents/07 Air Quality/1. Projects/22/Haringey Civic/10. Report/01 - ME comments - legal review issue/230314 Haringey Civic Centre AQUA 02.docx>

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author

Kit Benjamin

date

14/03/2023

approved



signature

Peter Henshaw

date

14/03/2023

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Glossary

Term	Definition
AADT	Annual average daily traffic
AQAL	Air Quality Assessment Level
AQAP	Air Quality Action Plan
AQFA	Air Quality Focus Area
AQMA	Air quality management area
AQN	Air Quality Neutral
AQS	Air Quality Strategy
ASR	Annual Status Report
BEB	Building Emission Benchmark
DfT	Department for Transport
DMP	Dust Management Plan
EFT	Emissions Factor Toolkit
EPUK	Environmental Protection UK
GLA	Greater London Authority
HDV	Heavy Duty Vehicles
IAQM	Institute of Air Quality Management
LAEI	London Atmospheric Emission Inventory
LAQM	Local Air Quality Management
LBH	London Borough of Haringey
LDV	Light Duty Vehicle
LPA	Local planning authority
NO ₂	Nitrogen dioxide
NO _x	Nitrogen oxides
NPPF	National Planning Policy Framework
NRMM	Non Road Mobile Machinery
PM	Particulate matter
SPG	Supplementary Planning Guidance
TEB	Transport Emission Benchmark
TG22	Defra Local Air Quality Management Technical Guidance

1 Executive Summary

Buro Happold has been appointed by Haringey Council to undertake an air quality assessment to support a detailed planning and listed building consent application for the Haringey Civic Centre development. The proposed development involves refurbishment and extension to Haringey Civic Centre, to provide commercial and civic floorspace.

During construction, emissions generated by site activities will have the potential to affect local air quality in particular from dust deposition and increases in particulate matter concentration. The site is determined to be a medium risk to dust soiling impacts due to earthworks, construction and trackout during the construction phase. There is a low risk to human health impacts due to earthworks, construction and trackout. Mitigation measures are recommended for implementation, to ensure that any residual impact on local air quality is not significant.

Air quality impacts can also arise due to traffic generated during the construction phase. In line with the transport assessment, the maximum increase in heavy duty vehicles (annual average daily traffic) in the peak construction year is predicted to be 25 vehicles per day, which will occur on High Road to the north of Trinity Road. As this does not exceed the Institute for Air Quality Management (IAQM) screening threshold for proceeding to a detailed assessment, construction traffic has been screened out as not significant.

Potential impacts during operation of the proposed development can arise due traffic generated by the scheme, as well as from any proposed combustion plant. The emissions from these sources have been considered in line with IAQM planning guidance, with regard to national and local policy.

The proposed development will result in the reduction of 103 parking spaces and therefore there is a net decrease in vehicle trips associated with the development. Therefore, the impact from traffic emissions generated by the operation of the proposed development has been ruled not significant.

The heating and hot water strategy for the proposed development is to be emission free, with heating/hot water demand being met through air and water source heat pumps. There is a diesel-powered generator backup generator proposed, however this will only be used in the case of an emergency and for testing. As a result, due to the limited hours of use, any impact on air quality is likely to be negligible. Therefore, the impact of combustion plant associated with the proposed development will be not significant.

Although the development is located within an air quality management area (AQMA), as the development will predominantly be a workplace for the local authority, statutory air quality objectives would not strictly apply, however as a matter of good practice consideration has been given to the exposure of future site occupants to poor air quality. Baseline air quality monitoring indicates that both long-term and short-term air quality objectives, are not likely to be exceeded. Therefore, no additional mitigation is required in order to protect site users/occupants. Consideration should still be given to design measures (e.g. the proposed ventilation strategy) to reduce the exposure of building users to poor air quality, as latest evidence suggests there is no 'safe threshold' of ambient pollutant concentration below which the health benefits resulting from a reduction in air pollution would not occur.

Due to the net decrease in vehicle trips and the zero onsite emission energy strategy, the proposed development satisfies the requirements for Air Quality Neutral.

It is therefore concluded that with the implementation of recommended construction mitigation measures, the proposed development would not lead to any significant air quality effects and will comply with London Plan policy SI 1.

2 Introduction

2.1 Proposed development and site context

Buro Happold has been appointed by Haringey Council to produce an air quality assessment to support a detailed planning application and listed building consent application for the redevelopment of Haringey Civic Centre in the London Borough of Haringey (LBH). The proposed development comprises refurbishment and extension to Haringey Civic Centre, to provide commercial and civic floorspace.

Haringey Civic Centre is located at the junction of the High Road and Trinity Road, at the northern edge of Wood Green Metropolitan Centre. The southern boundary of the site is formed by the Wellman Place Travellers Site, Bounds Green Road and 247 High Road, beyond which is the Church of St Michael. Trinity Primary Academy school forms the west boundary of the site. Crescent Gardens is an open space directly to the east of the site. Figure 2—1 shows the location of the site and the surrounding prevailing land use.



Figure 2—1 The proposed development site and surrounding context.

2.2 Scope of the assessment

This report considers the air quality impacts associated with both the construction and operation of the proposed development. Likely changes to air quality in the area, owing to the proposed development have been considered. The assessment also considers any necessary mitigation measures to reduce any potentially significant impacts associated with the proposed development on local air quality.

During construction, emissions of dust and other pollutant emissions from onsite activities and construction vehicle movements will have a potential impact on local air quality.

With regards to operational impacts, emissions from traffic generated as a result of the development along with any proposed combustion plant, will give rise to pollutant emissions which will have a potential effect on local air quality.

Consideration has also been given to the exposure of future site occupants to poor air quality.

3 Legislation and guidance

3.1 European legislation

The 2008 Ambient Air Quality Directive (2008/50/EC) set legally binding limits for pollutant concentrations. This directive was made law in England through the Air Quality (Standards) Regulations 2010. The Regulations were subsequently updated in 2016 (The Air Quality Standards (Amendment) Regulations 2016).

3.2 UK legislation

3.2.1 Environment Act

Part IV of the Environment Act 1995¹ places a duty on the Secretary of State for the Environment to develop, implement and maintain an Air Quality Strategy (AQS) with the aim of reducing atmospheric emissions and improving air quality. The latest AQS for England, Scotland, Wales and Northern Ireland was published in 2011, and provides the framework for ensuring the air quality limit values are complied with based on a combination of international, national and local measures to reduce emissions and improve air quality. This includes the statutory duty, also under Part IV of the Environment Act 1995, for local authorities to undergo a process of Local Air Quality Management (LAQM). This requires local authorities to regularly and systematically review and assess air quality within their boundaries against a series of objectives and appraise development and transport plans against these assessments.

In areas where air quality objectives are not likely to be met by the relevant target date, local authorities are required to declare an Air Quality Management Area (AQMA) and develop an air quality action plan in pursuit of the air quality objectives. The national air quality objectives relevant to this assessment are detailed in Table 3-1.

Table 3-1 National Air Quality Objectives relevant to the assessment.

Pollutant	Objective
Nitrogen dioxide (NO ₂)	200 µg/m ³ measured as a 1-hour mean, not to be exceeded more than 18 times a year
	40 µg/m ³ measured as an annual mean
Particulate Matter (PM ₁₀)	50 µg/m ³ measured as a 24-hour mean, not to be exceeded more than 35 times a year
	40 µg/m ³ measured as an annual mean
Particulate Matter (PM _{2.5})	20 µg/m ³ measured as an annual mean

The Environment Act was amended in 2021², requiring the government to set new targets for PM_{2.5}. The subsequent Environmental Targets (Fine Particulate Matter) (England) Regulations 2023³ set the following targets:

- Annual mean PM_{2.5} concentration of 10 µg/m³ by 2040
- At least a 35% reduction in population exposure of PM_{2.5} by the end of 2040.

¹ HM Government. (1995). Environment Act. Part IV. <https://www.legislation.gov.uk/ukpga/1995/25/part/IV>

² HM Government. (2021). Environment Act 2021. <https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted>

³ HM Government. (2023). The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023. <https://www.legislation.gov.uk/uksi/2023/96/made>

The Environment Act 2021 requires the publication of an Environmental Improvement Plan every five years, with progress against the set targets reported on annually. The Environmental Improvement Plan 2023⁴ sets the following interim target for PM_{2.5}:

- Annual mean PM_{2.5} concentration of 12 µg/m³ by 2028
- At least a 22% reduction in population exposure of PM_{2.5} by the end of 2028.

3.2.2 National Planning Policy Framework⁵

The National Planning Policy Framework (NPPF) underlines the importance of local authorities contributing towards improving and protecting the environment. The legislation points towards the need to focus on the enhancement of biodiversity, minimising waste and pollution, and mitigation/adaptation to climate change.

With particular regard to air quality management, Section 9 of the NPPF notes that the environmental impact of transport and traffic should be identified and assessed, whilst mitigating adverse effects to bring about net environmental gains. The guidance states that the planning system should actively manage patterns of growth, offering a choice of transport modes to reduce air pollution:

‘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.’

Further to this, Section 15 of the NPPF notes that planning policies should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of AQMAs and Clean Air Zones (CAZ), and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Additionally, the NPPF states that planning decisions should ensure that any new development in AQMAs and CAZs is consistent with the local air quality action plan.

3.2.3 Planning Practice Guidance⁶

Planning Practice Guidance (PPG) provides guiding principles on how the planning process can take account of the impact of new development on air quality. Guidance outlines when air quality considerations could be relevant to the development management process. The PPG states:

‘Whether air quality is relevant to a planning decision will depend on the proposed development and its location. 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.’

⁴ HM Government. (2023). Environmental Improvement Plan 2023.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1133967/environmental-improvement-plan-2023.pdf

⁵ Department for Levelling Up, Housing and Communities. (2021). National Planning Policy Framework

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

⁶ Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government. (2019) Planning Practice Guidance: Air Quality. <https://www.gov.uk/guidance/air-quality--3>

Where air quality is a relevant consideration the local planning authority may need to establish:

- *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.'*

The guidance also outlines the specific issues that may need to be considered when assessing air quality impacts. Relevant considerations include when a development would:

- *'Lead to changes (including any potential reductions) in vehicle-related emissions in the immediate vicinity of the proposed development or further afield. This could be through the provision of electric vehicle charging infrastructure; altering the level of traffic congestion; significantly changing traffic volumes, vehicle speeds or both; or significantly altering the traffic composition on local roads. Other matters to consider include whether the proposal involves the development of a bus station, coach or lorry park; could add to turnover in a large car park; or involve construction sites that would generate large Heavy Goods Vehicle flows over a period of a year or more;*
- *Introduce new point sources of air pollution. This could include furnaces which require prior notification to local authorities; biomass boilers or biomass-fuelled Combined Heat and Power plant; centralised boilers or plant burning other fuels within or close to an air quality management area or introduce relevant combustion within a Smoke Control Area; or extraction systems (including chimneys) which require approval or permits under pollution control legislation;*
- *Expose people to harmful concentrations of air pollutants, including dust. This could be by building new homes, schools, workplaces or other development in places with poor air quality;*
- *Give rise to potentially unacceptable impacts (such as dust) during construction for nearby sensitive locations;*
- *Have a potential adverse effect on biodiversity, especially where it would affect sites designated for their biodiversity value.'*

Guidance also provides detail on how air quality impacts can be mitigated, stating that mitigation should be spatially specific, dependent on the proposed development, and proportionate to the likely impact. The following examples of mitigation are given:

- *'Maintaining adequate separation distances between sources of air pollution and receptors;*
- *Using green infrastructure, in particular trees, where this can create a barrier or maintain separation between sources of pollution and receptors;*
- *Appropriate means of filtration and ventilation;*
- *Including infrastructure to promote modes of transport with a low impact on air quality (such as electric vehicle charging points);*

- *Controlling dust and emissions from construction, operation and demolition; and*
- *Contributing funding to measures, including those identified in air quality action plans and low emission strategies, designed to offset the impact on air quality arising from new development.'*

3.3 Regional policy and guidance

3.3.1 The London Plan⁷

The most recent version of the London Plan, which has been developed to provide a new approach to future development and sustainable, inclusive growth of London, was published in 2021. The primary aim of the new plan is to provide a coherent strategy to address the ongoing housing crisis in the city by re-balancing development in London towards more affordable housing for working Londoners to buy and rent, and to deliver a more socially integrated, environmentally sustainable, and health/wellbeing conscious city.

The London Plan has adopted a number of policies relevant to air quality, including the following:

3.3.1.1 Policy SI 1 (Improving air quality)

"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.

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 provisions 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, which do not demonstrate that design measures have been used to minimise exposure should be refused.*

...

⁷ GLA. (2021). *The London Plan*. https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf

In order to reduce the impact on air quality during the constructions 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.

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."

3.3.1.2 Policy SI 3 (Energy infrastructure)

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

- 1. Connect to local existing or planned heat networks;*
- 2. Use zero emission or local secondary heat sources (in conjunction with heat pump, if required);*
- 3. 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 developments electricity demand and provide demand response to local electricity networks); and*
- 4. Use ultra-low NO_x gas boilers.*

CHP and ultra-low NO_x gas boiler communal or district heating systems should be designed to ensure that they meet the requirements of Policy SI1 Part B."

3.3.1.3 GG3 (Creating a healthy city)

"To improve Londoners' health and reduce health inequalities, those involved in planning and development must... seek to improve London's air quality, reduce public exposure to poor air quality and minimise inequalities in levels of exposure to air pollution."

3.3.2 London Environment Strategy⁸

The London Environment Strategy is a strategic planning policy document developed by the Mayor of London. The strategy aims to tackle the environmental pressures associated with an ever-growing London populace. With particular regard to air quality, the policies that are set out in the London Environmental Strategy aim to achieve the best air quality of any major world city by 2050; requiring the following primary actions:

- Reducing exposure of Londoners to harmful pollution across London – especially at priority locations like schools – and tackling health inequality;
- Achieving legal compliance with UK and EU limits as soon as possible, including by mobilising action from the London boroughs, government, and other partners; and
- Establishing and achieving new, tighter air quality targets for a cleaner London, meeting World Health Organisation (WHO) health-based guidelines by 2030 by transitioning to a zero emission London.

⁸ GLA. (2018). London Environment Strategy. https://www.london.gov.uk/sites/default/files/london_environment_strategy_0.pdf

3.3.3 Air Quality Focus Areas

Air Quality Focus Areas (AQFAs) are locations declared by the Mayor of London, where national air quality objectives for NO₂ are exceeded, coupled with high human exposure. The declared AQFA's are not designed to be an exhaustive list of London's air pollution hotspots but highlight where the problem is most acute.

The nearest AQFA is south of the site, covering Wood Green High Road to Turnpike Lane (Figure 3—1). There is also a small AQFA to the northwest at Bounds Green A109 junction with Durnsford/Brownlow Road B106. This highlights the severity of the air quality issues identified near to the proposed development.

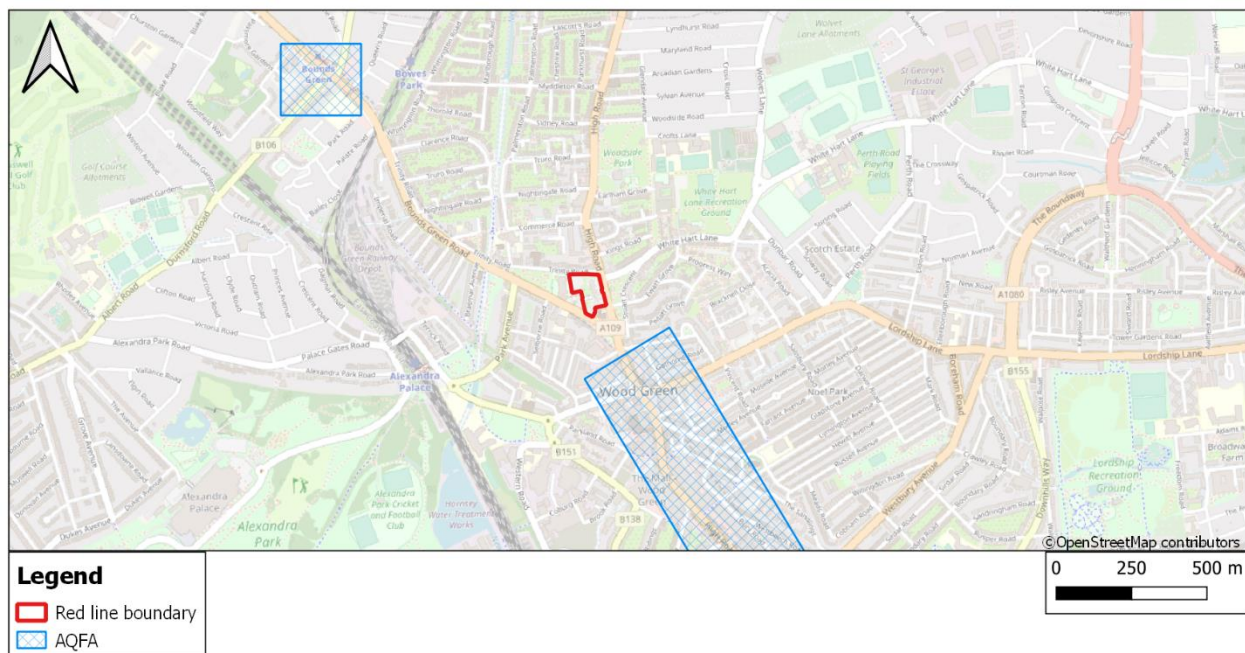


Figure 3—1 AQFAs in the vicinity of the proposed development.

3.3.4 Cleaner Air Borough

Included as part of the London Local Air Quality Management (LLAQM) framework, cleaner air borough (CAB) status is awarded to boroughs that are deemed to be committed to taking action to improve air quality. The goal of this designation is to raise awareness of air quality issues. CAB status requires that several criteria relating to air quality action are met, which is reviewed annually. Haringey is recognised as a Cleaner Air Borough, indicating that it is considered a high achieving borough in terms of air quality action and enabling LBH to bid for additional air quality funding from the Greater London Authority (GLA).

3.4 Local policy

3.4.1 Haringey Local Plan: Strategic Policies⁹

The Strategic Policies document contains the overarching legislation of Haringey's Local Plan. It sets out Haringey's spatial strategy for managing development and growth in the Borough up to 2026. It provides a framework for

⁹ LBH. (2017). Haringey's Local Plan: Strategic Policies 2013 – 2026.
https://www.haringey.gov.uk/sites/haringeygovuk/files/final_haringey_local_plan_2017_online.pdf

ensuring that housing, employment, infrastructure and other needs are met in a way that promotes sustainable development. Within it are high-level strategic policies used in assessing planning applications. It was adopted in 2013 and subsequently amended in 2017. There are several policies relating to air quality including:

3.4.1.1 SP7: Transport

"Delivering Action on Climate Change and Quality and Healthy Places

In line with the London Plan, the Council will work with its partners to promote the following travel demand management schemes to tackle climate change, improve local place shaping and public realm, and environmental and transport quality and safety by:

- *Minimising congestion and addressing the environmental impacts of travel;*
- *Promoting public transport, walking and cycling (including minimum cycle parking standards);*
- *Promoting road safety and pedestrian movement particularly in town centres and close to local services;*
- *Promoting car sharing and establishing car clubs;*
- *Seeking to locate major trip generating developments in locations with good access to public transport and so better integrate transport and land use planning;*
- *Adopting maximum car parking standards and car free housing wherever feasible;*
- *Seeking to mitigate the impact of road based freight and promote alternatives;*
- *Supporting measures to influence behavioural change such as promoting low carbon vehicles; and*
- *Requiring the submission of transport assessments and travel plans for large scale proposals in line with TfL guidance."*

3.4.1.2 SP14: Health and Well-Being

"The Council will seek to improve health and wellbeing in Haringey. The Council will:

- *Work with NHS Haringey in its goal to reduce health inequalities in the areas with poorest health;*
- *..."*

3.4.2 Haringey Local Plan: Development Management (DPD)¹⁰

The LBH Development Management development plan document (DPD) forms part of the LBH local plan. Adopted in 2017, this sets out planning policies to help determine which developments are granted planning permission. It gives effect to Haringey's spatial strategy and the key objectives of the Strategic Policies Local Plan by supporting proposals that contribute to the delivery of sustainable development in accordance with the strategy and providing a clear framework for resisting development that would be at odds with the Local Plan. The DPD sets out criteria-based policies against which planning applications will be assessed. There are several policies relating to air quality including:

3.4.2.1 Policy DM23: Environmental Protection

¹⁰LBH. (2017). Development Management DPD.

https://www.haringey.gov.uk/sites/haringeygovuk/files/final_haringey_dmp_dtp_online.pdf

- *"All development proposals should consider air quality and be designed to:*
 - *Improve or mitigate the impact on air quality in the Borough; and*
 - *Improve or mitigate the impact on air quality for the occupiers of the building or users of the development.*
- *Air quality assessments will be required for all major development and other development proposals, where appropriate.*
- *Where necessary, adequate mitigation must be provided."*

3.4.2.2 Policy DM1: Delivering High Quality Design

"Design Standards

Privacy and amenity

Development proposals must ensure a high standard of privacy and amenity for the development's users and neighbours. The Council will support proposals that:

- ...
- *Address issues of vibration, noise, fumes, odour, light pollution and microclimatic conditions likely to arise from the use and activities of the development"*

3.4.2.3 Policy DM21: Sustainable Design Layout and Construction

"All new development, including building and landscape works, will be expected to consider and implement sustainable design, layout and construction techniques. Proposals should:

- *Apply the energy hierarchy to minimise energy use in order to meet, and if possible exceed, minimum carbon dioxide reduction requirements;*
- *Apply the cooling hierarchy to reduce the potential for overheating and limit reliance on mechanical air conditioning systems;*
-

Proposals that fail to demonstrate adequate consideration for sustainable design, layout and construction techniques will be resisted."

3.4.2.4 Policy DM22: Decentralised Energy

"Subject to other policy requirements, proposals that contribute to the provision and use of Decentralised Energy network infrastructure will be supported."

3.4.3 LBH Site Allocations DPD¹¹

¹¹ LBH. (2017). Site Allocations DPD.

https://www.haringey.gov.uk/sites/haringeygovuk/files/final_haringey_site_allocations_dtp_online.pdf

The LBH site allocation development plan document (DPD) was adopted in 2017 and sets out the significant developments LBH expects to happen up until 2026. It also provides a high-level idea of the type of development that could take place at each allocation, in order to meet the boroughs housing demand and create jobs.

The civic centre is identified in the site allocations DPD, with the proposal of continuing the buildings' civic role and developing onto the car park. Alternatively, redevelopment to a mixed-use development is proposed, on the condition that an alternative facility for the councils' civic functions is found. One requirement for the site is to maintain or improve the bus stop outside the main entrance, on High Road.

3.4.4 Wood Green Action Area Plan¹²

Wood Green has been allocated as a growth area in the Local Plan. Consultation was held for a third time in March 2018, although it has yet to be adopted. The site is within the area covered by the Wood Green Action Area Plan (AAP), which provides a statutory land-use basis for determining planning applications, providing a framework to develop the area through investment. In the most recent document for consultation, air quality is identified as one of the key issues driving the areas allocation as a growth area. Several other policies within this document are relevant to air quality:

3.4.4.1 Policy WG11: Transport

1. *"Development which enhances pedestrian and cycle access, permeability and facilities, particularly those helping to establish the new principle East-West and North-South pedestrian and cycling routes through the area, will be supported.*
2. *The appropriate quantity and location of off-street Town Centre parking required within the centre will be delivered in line with the findings of the Transport Study underpinning this plan.*
3. ..
4. *Opportunities to create more bike lockers and hangers through new developments will be supported.*
5. *All parking spaces for new development will be required to provide electric vehicle charging points.*
6. *Opportunities to improve the layout of junctions should be considered through the transport assessments and designs for new developments. "*

3.4.4.2 Policy WG9: Community Infrastructure

"New development will be required to facilitate the development, and ensure connection to the Wood Green Decentralised Energy Network where feasible"

3.4.5 Haringey Borough Plan 2019-2023¹³

The Haringey Borough Plan sets out LBH's plans for the development of Haringey from 2019 to 2023. It identifies five key priorities: housing, people, place, economy and council. Within these five priorities there are 20 outcomes that

¹² LBH. (2018). Wood Green AAP Regulation 18 Preferred Option Consultation Draft.

https://www.haringey.gov.uk/sites/haringeygovuk/files/nsr00284-wood_green_aap_2018_awv4_lr.pdf

¹³ LBH. (2019). Borough Plan 2019 – 2023. Retrieved January 26, 2022, from

https://www.haringey.gov.uk/sites/haringeygovuk/files/borough_plan_2019-23.pdf

HBC aims to achieve, each with measures of success for the outcome. The local plan was developed with extensive engagement with local community, businesses and organisations.

3.4.5.1 Place

The “Place” priority covers the local environment of Haringey and the objectives to achieve a safe, clean and green environment. Of particular relevance to air quality:

Outcome: A healthier, active and greener place

Several of the objectives for achieving a healthier, active and greener place strongly relate to air quality. These are presented in Table 3-2.

Table 3-2 Objectives, relating to air quality, for achieving “a healthier, active and greener place” outcome, as defined in Haringey’s Borough Plan.

Relevant objective	How objective will be delivered	Performance indicator	Target
Improve air quality, especially around schools	- Take measures to reduce the impact of road vehicles on air pollution including through parking controls, parking charges and improving the environmental emissions of the council and partners’ vehicle fleets. - Implement measures through planning controls and sustainable design to reduce the impacts of emissions from developments and buildings on the local community. - Encourage residents to make choices that minimise air pollution such as such as travelling by walking, cycling and using public transport. - Support all schools to reduce the impact of air pollution on pupils.	Delivery of key milestones and activity set out in the Air Quality Action Plan, including: - Ensure responses to planning applications include air quality conditions - Deliver new electric vehicle charging points - Deliver new secure cycle parking spaces	Deliver HBC Air Quality Action Plan
Reduce CO2 by 40% before 2020 and begin the journey to reduce to zero by 2050	Promote Ultra Low Emission Vehicles, such as electric cars, and where required work with partner to install electric charging points	CO2 emissions	Reduce Expected Carbon emissions to 600 kT CO2 by 2022 (in line with our target of zero emissions by 2050)

3.4.5.2 People

Although air quality is not explicitly mentioned within the section of the borough plan covering the *People* priority, it is still highly relevant to many of the outcomes and themes.

Outcome: Happy childhood: all children across the borough will be happy and healthy as they grow up, feeling safe and secure in their family, networks and communities

An objective for this outcome is that “*Children and young people will be physically and mentally healthy and well.*” Air pollution has a significant impact on physical health, especially for children.

Outcome: All adults are able to live healthy and fulfilling lives, with dignity, staying active and connected in their communities

There are two relevant objectives of this outcome:

- *Healthy life expectancy will increase across the borough, improving outcomes for all communities.*
- *Adults will feel physically and mentally healthy and well.*

Air pollution has an impact on both adult physical health, morbidity and mortality, and therefore healthy life expectancy.

3.4.6 London Borough of Haringey Air Quality Action Plan 2019 – 2024¹⁴

The Haringey Air Quality Action Plan (AQAP) outlines how LBH plans to reduce concentrations of NO₂ and PM from 2019 to 2024, to ultimately be able to revoke the borough wide AQMA. The current AQAP was adopted in November 2019, following on from, and building upon, the initial AQAP published in 2003, and its subsequent revision in 2011. The AQAP is produced as part of the London Local Air Quality Management System (LLAQM), a statutory process by which boroughs monitor, assess, and take actions to tackle pollution. Under this system, AQAPs should be updated by local authorities a minimum of once every five years.

The current AQAP identifies road transport as the primary source of both NO_x and PM emissions. Commercial and domestic gas boilers also form a large proportion of NO_x emissions in the borough. Dust resuspension and Non-Road Mobile Machinery (NRMM) both produce sizeable proportions of PM emissions.

Many actions are set out in the AQAP to improve air quality in the borough. Several of the actions relevant to the proposed development are outline in Table 3-3.

Table 3-3 Actions to improve air quality, relevant to the proposed development, and the outputs and KPIs associated with each action, as set out in Haringey's AQAP.

Action name and description	Relevant Outputs/Measures/Targets	Relevant KPI(s)
Investigate the potential for larger development areas to proactively assess air quality impacts cumulatively	• Ensure that air quality assessment is dealt with adequately in planning applications.	
Ensuring emissions from demolition and construction are minimised.	• Continue to ensure that construction and demolition method statements are referred to pollution team for review at the discharge stage. • Continue to ensure all air quality conditions are discharged prior to development starting/occupation. • Continue to require Air Quality Dust Management Plans (AQDMP) by Condition for major developments • Compile Annual Status report (ASR) and submit to GLA/DEFRA • Continue to ensure that construction related complaints (> 10 units) are referred for enforcement • Log of Complaints and enforcement • Register of enforcement action taken	• Ensure 100% of all major planning applications have NRMM and AQDP conditions/ air quality and dust enforcement actions (BP) • Reduction in air pollution complaints from construction sites over the course of the AQAP year on year • Overall reduction of LAEI 2013 construction related PM10 & 2.5 emissions

¹⁴ LBH. (2019). Air Quality Action Plan. https://www.haringey.gov.uk/sites/haringeygovuk/files/haringey_final_aqap_2019-24_signed.pdf

Action name and description	Relevant Outputs/Measures/Targets	Relevant KPI(s)
Ensuring enforcement of nonroad mobile machinery (NRMM) air quality policies	- Statistics to be reported in our Annual Status Report including number of applications with NRMM conditions - Participate in Pan London NRMM project - Carry out enforcement and monitoring as prescribed by the project - Log of enforcement visits to be kept - Increase inspection on sites with NRMM requirements and keep a register - All major planning applications conditioned with NRMM requirements - Publicise role to make site operators aware that details of enforcement will be within initial application advisory documentation - Disseminate NRMM literature to site managers during site visits as part of London wide NRMM project	- Aim for 100% of, all major application to be registered at http://nrmm.london/. - Monitor percentage of development sites that comply to the NRMM requirements and proportion of relevant sites inspected each year - Percentage of relevant development sites that are subject to planning condition requiring compliance with the NRMM LEZ - Number or proportion of events or roadworks required by licence or contract to comply with the NRMM LEZ - Reporting on the collection and spend of section 106 contributions on construction management issues in the annual statement - Reductions in the number of complaints associated with construction machinery
Enforce Air Quality Neutral (AQN) policy	- Disseminate Information to support planners in understanding on site mitigation options - Ensuring conditions and requirements are enforced and monitored. - Agreeing standard planning conditions to require compliance with air quality neutral standards and submission of details prior to occupation for all developments. - Apply Air Quality Positive standards where appropriate (New London Plan) - AQN assessments submitted with Major applications. Enforcement via planning process – i.e. via approval of plans discharge of conditions - Knowledge sharing with planners, so that they can assess basic compliance in cases that are otherwise noncontentious for air quality. - Log of applications where AQ Neutral/positive conditions applied, and benchmarks achieved Target 100%	- Increase in number of development proposals meeting the air quality neutral standards - Annual Status Report submitted on time
Ensuring adequate, appropriate, and well-located green space and infrastructure is included in new and existing developments.	- Regularly produce map of green space. - Area of green space incorporated into new developments - Pursue "Healthy Streets" in areas of development and estate renewal - Apply London Plan Policy principles for Increasing Green Space in development opportunities - Access to information on suitable greenery - Implementing a mechanism for air quality and biodiversity officers to jointly comment on green infrastructure - Recording and benchmarking the levels of green infrastructure in developments and setting targets to improve on levels and quality of green infrastructure	- Numbers of proposals or projects where green infrastructure is used or enhanced to provide low exposure walking and cycling routes - Proportion of major planning applications where green amenity spaces are in areas of low exposure. - For stand-alone green infrastructure projects consider using exposure reduction targets as project KPIs

Action name and description	Relevant Outputs/Measures/Targets	Relevant KPI(s)
	provided. Requirements for green space set out within the Haringey Development Plan Document (DPD DM20) Ensuring that exposure in amenity spaces is considered at the design stage and as part of the Air Quality assessment for new development and redevelopment proposals	
Promoting and delivering energy efficiency and energy supply retrofitting projects in workplaces and homes through EFL retrofit programmes such as RE: FIT, RE: NEW and through borough carbon offset funds. to replace old boilers/top-up lost insulation in combination with other energy conservation measures.	- Outputs from different program as detailed below for carbon management - SAP scores from HfH and other housing sectors. - ASR and planning. - Continue monitoring the before/after benefits - Improve energy efficiency in Haringey's corporate buildings - Review procurement policy regarding replacement boilers to introduce NOx emission standards for all council property stock for upgraded heating system - Promoting the Minimum Energy Performance Regulation requirements to commercial and residential landlords on the Councils website and via Haringey's Home Finder Scheme and Private Sector Housing team at Landlord forums. - Continue to deliver home improvements such as loft and roof insulation, energy efficient boilers, upgrades to communal boilers and double-glazed windows through Homes for Haringey major works programme. - Promote energy efficiency to both council and private residential and commercial property owners/tenants. - Facilitate the design and development of decentralised energy networks in Tottenham Hale, North Tottenham and Wood Green. - Explore the opportunity to install clean renewable energy technologies in the Council's housing and commercial stock. - Applying for new funding opportunities to encourage energy efficiency improvements in the borough. - To maximise the opportunities to achieve zero carbon on-site and to collect carbon offsetting contributions. To finalise the priority projects for funding from the Councils carbon offsetting fund. Using it to deliver energy efficient projects with wider community benefit.	- Reduce CO2 emissions by 40% by 2020 and being Zero-Carbon by 2050. - No. of schemes using RE: FIT and RE: NEW. as the programme guarantees the amount of CO2 emissions reduced. (GLA) - Tracks the percentage of the boroughs social housing stock which has been updated through the RE: NEW scheme. (GLA)

4 Methodology

4.1 Baseline assessment methodology

Baseline data was gathered from the following sources:

- LBH 2020 Air Quality Annual Status Report¹⁵
- London Borough of Enfield 2020 Air Quality Annual Status Report¹⁶
- Air Quality in England air quality monitoring data¹⁷
- London Atmospheric Emissions Inventory¹⁸
- Diffusion tube monitoring carried out by Buro Happold.

2019 is considered to be the baseline year as this is the most recent full year that was not impacted by the COVID-19 pandemic. The restrictions imposed in response to the COVID-19 pandemic, in addition to the changes in travel patterns and subsequent emissions, significantly impacted pollutant concentrations making monitoring results from 2020 and 2021 atypical from previous years. Therefore, the baseline assessment assumes 2019 to be the most representative year of baseline conditions.

4.2 Background methodology

Sources of background concentration data has been gathered from the following sources:

- Monitored concentrations presented in the LBL and LBW Annual Status Reports
- Defra's air quality background maps¹⁹.

Defra model background air pollution data for NO₂, PM₁₀ and PM_{2.5} for each 1km-by-1km OS grid square. Background pollutant concentrations are modelled from a reference year of 2018 and based upon ambient monitoring and meteorological data from 2018 with projections for future years up to 2030.

Background concentrations have been determined considering data from all of these sources.

4.3 Short term monitoring methodology

Buro Happold undertook a three-month air quality monitoring survey in the area surrounding the proposed development site. Monitoring was carried out at five locations across the site for three months. In line with Defra Local

¹⁵ LBH. (2020). Annual Air Quality Status Report 2020.

https://www.haringey.gov.uk/sites/haringeygovuk/files/london_borough_of_haringey_2020_annual_status_report.pdf

¹⁶ London Borough of Enfield. (2020). Air Quality Annual Status Report for 2020. <https://new.enfield.gov.uk/services/environment/air-quality-status-report-environment.pdf>

¹⁷ Air Quality in England. (2020). London Borough of Haringey Monitoring Data. https://www.airqualityengland.co.uk/site/latest?site_id=HG005

¹⁸ GLA and TfL Air Quality. London Atmospheric Emissions Inventory (LAEI) 2019. <https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory--laei--2019>

¹⁹ Defra. (2018). Background Mapping data for local authorities. <https://uk-air.defra.gov.uk/data/laqm-background-home>.

Air Quality Management Technical Guidance (TG22)²⁰, results have been annualised and bias adjusted, in order to determine the equivalent annual mean value.

Monitoring was carried out over the following four week periods;

- Period 1: 02/02/2022 - 02/03/2022
- Period 2: 02/03/2022 - 30/03/2022
- Period 3: 30/03/2022 - 29/04/2022

Palmes-type diffusion tubes have been used for this short-term monitoring survey, mirroring the air quality monitoring that the majority of local authorities carry out as part of the Local Air Quality Management process. The diffusion tubes were supplied and analysed by Gradko, a UKAS accredited laboratory, and were prepared using the 50% TEA in acetone method. Tubes were deployed for a four week period and changed at roughly the same time each month for consistency.

The locations of the monitoring sites are shown in Figure 4—1, with information on the site locations presented in Table 4-1.

All diffusion tubes sites were;

- At least 5cm from any the surface it was placed on
- Above 2m in height
- Away from: boiler flues, overhanging vegetation, air conditioning outlets and extractor vents.

²⁰ Defra. (2022). Local Air Quality Management Technical Guidance (TG22). <https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf>



Figure 4—1 Diffusion tube monitoring locations for the Buro Happold short term monitoring study.

Table 4-1 Buro Happold commissioned short term diffusion tube monitoring site information.

Site ID	Site description	Type	X OS grid ref (m)	Y OS grid ref (m)	Height (m)	Photo
HCC1	High Road A105	Kerbside	530956	190532	2.3	
HCC2	Bounds Green Road	Kerbside	530837	190651	2.3	

Site ID	Site description	Type	X OS grid ref (m)	Y OS grid ref (m)	Height (m)	Photo
HCC3	High Road – Civic Centre Kerbside	Kerbside	530885	190733	2.3	
HCC4	High Road – Civic Centre Roadside	Roadside	530883	190766	2.3	
HCC5	Trinity Road	Kerbside	530814	190787	2.3	

4.3.1 Annualisation, bias adjustment and back projection

Annualisation is the process of adjusting short term monitoring to be representative of a full calendar year, allowing for comparison against long-term air quality objectives. Annualisation has been carried out in line with LAQM TG22 to give a better indication of the annual mean NO₂ concentration at each of the monitoring sites. The four urban background automatic sites nearest to the proposed development have been used to calculate the annualisation factor; Haringey - Priory Park South, Enfield - Bush Hill Park, Islington - Arsenal, Enfield - Prince of Wales School. Table 4-2 outlines the annualisation calculations. An annualisation factor of 0.83 has been used for the majority of the sites. HCC1 was not recovered in the first monitoring period so an annualisation factor has been derived using only the second two monitoring periods for this site. The annualisation factor used for HCC1 was derived to be 1.0.

Table 4-2 Annualisation factor derivation

Period	Haringey - Priory Park South		Enfield - Bush Hill Park		Islington - Arsenal		Enfield - Prince of Wales School	
	Mean concentrati on (µg/m³)	Data availability (%)	Mean concentrati on (µg/m³)	Data availability (%)	Mean concentrati on (µg/m³)	Data availability (%)	Mean concentrati on (µg/m³)	Data availability (%)
1	34.9	99.7	35.9	99.7	41.8	99.7	35.7	100.0
2	19.8	99.7	19.1	99.7	24.4	99.0	19.4	99.7
3	23.3	99.9	25.0	99.9	24.3	99.7	27.3	99.4
Period mean (PM)	26.0		26.6		30.0		22.6	
Annual mean 2019 (AM)	21.9	99.1	22.4	99.4	24.8	95.3	22.6	99.4
Site annualisatio n factor (AM/PM)	0.84		0.84		0.83		0.82	
Annualizati on factor	0.83							

The bias adjustment factor used in this assessment is 0.83, derived from the 2021 national bias adjustment factor for Gradko 50% TEA in acetone diffusion tubes. This was obtained from the national diffusion tube bias adjustment factor spreadsheet²¹. The national bias adjustment factor has been used to adjust LBH diffusion tube monitoring, as outlined in the Annual Status Report.

The monitored results require scaling from a 2022 concentration to the 2019 baseline year of this assessment. LAQM TG22 guidance states that a ratio of roadside concentrations should be calculated from the roadside projection factors²². The roadside projection factors provide estimated future ratio changes in roadside NO₂ concentrations up until 2030, based on a 2018 reference year. The roadside projection factors for 'Inner London' are presented in Table 4-3. The scale back factor for these years is 1.25 using this method.

Table 4-3 Roadside Projection Factors

Road Type	2019	2022
Inner London	0.909	0.727
Ratio of Roadside Emissions (2019/2022)	1.25	

A summary of the values used in the post processing of the short-term monitoring study are presented in Table 4-4.

²¹ Defra. (2022). National Bias Adjustment Factors <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/national-bias/>

²² Defra. (2018). Roadside NO₂ Projection Factor. <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/roadside-no2-projection-factors/>

Table 4-4 Summary of values used in post processing data from short term diffusion tube monitoring study.

Factor	Value	Derivation
Annualisation	0.83	Using monitoring data from three nearest urban background automatic monitoring sites.
Bias adjustment	0.83	National bias adjustment factor for Gradko 50% TEA diffusion tubes.
2022 to 2019 scale back factor roadside	1.25	Defra roadside NO ₂ projection factors

These factors are applied to the raw monitoring data following the process outlined below to obtain an annual average concentration for 2019 at each site. This methodology is in line with LAQM TG22 guidance.

1. Calculate average concentration of the raw data over the study period (2nd Feb - 29th April 2022);
2. Multiply by the annualisation factor to obtain a 2022 annual average concentration;
3. Multiply by the bias adjustment factor to obtain a bias adjusted 2022 annual average concentration;
4. Multiply by 2022 to 2019 scale back factor to obtain a bias adjusted 2019 annual average concentration.

4.4 Construction assessment methodology

Potential construction effects are assessed in accordance with both the Institute of Air Quality Management (IAQM) best practice guidance²³ and the GLA's Control of Dust and Emissions during Construction and Demolition SPG²⁴. These documents provide a methodology for assessing air quality impacts from demolition, earthworks, construction and trackout activities which may be associated with a development. The GLA's SPG is based on the approach taken by IAQM, focusing on London in particular, and representing best practice for developers. The construction assessment methodology involves the following steps

1. A screening assessment to identify the need for detailed assessment. Detailed assessment will be required where there is:
 - a. A human receptor within:
 - 350m of the site boundary; or
 - 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).
 - b. An ecological receptor within:
 - 50m of the site boundary; or

²³ Holman, C., Barrowcliffe, R., Birkenshaw, D., Dalton, H., Gray, G., Harker, G., . . . Vining, L. (2014). Guidance on the assessment of dust from demolition and construction. Version 1.1. Institute of Air Quality Management. Retrieved from <https://iaqm.co.uk/text/guidance/construction-dust-2014.pdf>

²⁴ GLA. (2014). The Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance. GLA. <https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/london-plan-guidance-and-spgs/control-dust-and>

- 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).
2. Assess the risk of dust impacts by:
 - a. Defining the potential dust emission magnitude,
 - b. Defining the sensitivity of the area, and
 - c. Assessing the risk of impacts. Criteria for defining the dust impacts are shown in Appendix A.
 3. Determine site-specific mitigation for each of the four possible construction activities; and
 4. Examine residual effects to determine whether or not these are significant.

This assessment will focus on demolition, earthworks, construction, and trackout. IAQM guidance suggests that the significance of any adverse effects are reported post-mitigation, assuming all actions to avoid or reduce environmental effects are an inherent part of the Proposed Development.

4.5 Operational assessment methodology

4.5.1 Criteria for assessing operational impacts

The EPUK/IAQM has published guidance on consideration of air quality within the planning and development control process²⁵. This guidance includes criteria which identify when relevant operational impacts can be screened out as insignificant or require further assessment. Criteria relevant to this assessment are detailed in Table 4-5.

Table 4-5 Indicative criteria for requiring an air quality assessment.

The development will:	Indicative criteria to proceed to detailed assessment:
Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans.	A change of LDV flows of: - more than 100 annual average daily traffic (AADT) within or adjacent to an AQMA - more than 500 AADT elsewhere.
Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses >3.5t gross vehicle weight).	A change of HDV flows of: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.
Have one or more substantial combustion processes, where there is a risk of impacts at relevant receptors. NB. this includes combustion plant associated with standby emergency generators (typically associated with centralised energy centres) and shipping.	Typically, any combustion plant where the single or combined NO _x emission rate is less than 5 mg/sec is unlikely to give rise to impacts, provided that the emissions are released from a vent or stack in a location and at a height that provides adequate dispersion. In situations where the emissions are released close to buildings with relevant receptors, or where the dispersion of the plume may be adversely affected by the size and/or height of adjacent buildings (including situations where the stack height is lower than the receptor) then consideration will need to be given to potential impacts at much lower emission rates. Conversely, where existing nitrogen dioxide concentrations are low, and where the dispersion conditions are favourable, a much higher emission rate may be acceptable.

²⁵ Moorcroft, S. and Barrowcliffe, R. et al. (2017). Land-Use Planning & Development Control: Planning for Air Quality. IAQM. Accessed 24, February, 2022 from <https://iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf>

4.5.2 Combustion plant emissions

Heating, cooling and hot water demand will be provided through air and water source heat pumps which will not give rise to any on-site air pollutant emissions.

It is proposed that an emergency diesel generator will be installed for life safety purposes and will be used during an emergency and regular testing only. The generator will be located at the south of the site, a significant distance from sensitive receptors, with the nearest being Wellman Place Traveller site, over 30 m away. The flue is likely to terminate at 2.5 – 3 m above ground level. Testing is expected to occur for 60 minutes each month at least 50% of the rated power. Therefore, testing will occur for 12 hours a year. Owing the limited hours of operation and proximity of sensitive receptors, the impact of emissions from the emergency generator is anticipated to be negligible and therefore not significant.

It can therefore be concluded that combustion plant associated with the proposed development will not have a significant impact on local air quality, and therefore detailed assessment of combustion plant emissions has been screened out of the assessment.

4.5.3 Traffic emissions

The existing Civic Centre building has been vacant for a few years, but some of its car parking still remains operational. The existing building has a total parking capacity of 132 spaces: 98 spaces in the Trinity Road car park, 12 spaces in the Bounds Green car park and 22 spaces accessed from High Road. The spaces accessed from High Road are currently unavailable, but the Trinity Road and Bounds Green car parks still remain in use. There are therefore up to 110 car parking spaces currently in use. The proposed development will remove the existing parking on-site and propose a total of eight parking spaces, a reduction of 102 from those that are currently available.

Therefore, the proposed vehicle trip generation from the development on highway network adjacent to the site would be lower than existing and the 2019 baseline year. Hence, operational traffic will not exceed the IAQM screening thresholds outlined in Table 4-5 and have been screened out as not significant.

Peak construction year traffic generation, split into heavy/light duty vehicles (HDV/LDV), has been supplied by the project transport consultant and is presented in Table 4-6. The maximum increase in HDV AADT will be 25 vehicles per day, which will occur on High Road to the north of Trinity Road. As this does not exceed the IAQM screening threshold for proceeding to a detailed assessment, construction traffic has been screened out as not significant.

Table 4-6 Peak construction year trip generation due to the proposed development

Link	2024 peak construction year (AADT)	
	HGVs	LGVs
High Road (north of Trinity Road)	25	5
Trinity Road	19	4
High Road (south of Trinity Road)	6	1

4.6 Exposure of future site occupants to poor air quality

IAQM guidance states the following with regards to assessing the exposure of site occupants to poor air quality:

'Where the air quality is such that an air quality objective at the building façade is not met, the effect on residents or occupants will be judged as significant, unless provision is made to reduce their exposure by some means. For people working at new developments in this situation, the same will not be true as occupational exposure standards are different, although any assessment may wish to draw attention to the undesirability of the exposure.'

Although the development is located within an air quality management area (AQMA), as the development will predominantly be a workplace for the local authority, statutory air quality objectives would not strictly apply, however as a matter of good practice consideration has been given to the exposure of future site occupants to poor air quality.

4.7 Air quality neutral

The principle of 'air quality neutral' is to ensure that the cumulative impact from multiple developments, which may individually have a small impact on air quality, does not lead to an incremental increase in background concentrations (or 'background creep'). This is proposed by the introduction of standards, or benchmarks, for building and transport emissions, for which all new developments in London should adhere to, as per the London Plan and the Haringey air quality action plan. Developments which cannot meet these benchmarks should offset emissions in agreement with the local planning authority (LPA).

The latest version of the Air Quality Neutral guidance²⁶ was published by the GLA in February 2023. This document provides a methodology for carrying out an air quality neutral assessment; calculating total building and transport emissions associated with the development and gives benchmarks for transport and building emissions. The guidance includes updated benchmarks on previous iterations of air quality neutral guidance and is in line with the 2021 London Plan.

Paragraph 2.2.1 of the guidance states:

"Developments, including major developments, that do not include additional emissions sources are assumed to be Air Quality Neutral and to meet the Air Quality Neutral benchmarks. As such, there is no need to do an AQN Assessment. This would include, for example, developments that have no additional motor vehicle parking, do not lead to an increase in motor vehicle movements²⁷, and do not include new combustion plant such as gas-fired boilers. It is good practice to advise the local planning authority that the development meets this criterion when submitting a planning application, for example in a cover letter or the planning statement."

As stated sections 4.5.2 and 4.5.3, the operation of the proposed development will lead to a net decrease in vehicle parking and vehicle movements and will utilise an emission free energy strategy. Therefore, the proposed development is considered air quality neutral.

²⁶ <https://www.london.gov.uk/sites/default/files/2023-02/Air%20Quality%20Neutral%20LPG.pdf>

²⁷ Taxi, delivery and servicing vehicle trips, as well as heavy vehicle trips produced by the operation of an industrial or commercial premises are not covered by Air Quality Neutral.

5 Baseline conditions

5.1 Air quality management areas

LBH declared a borough wide air quality management area (AQMA, Figure 5—1) in 2001 due to exceedances of 24-hour mean PM₁₀ and annual mean NO₂ national air quality objectives²⁸. The AQMA still stands today, indicating that these objectives have not been met consistently in recent years, highlighting air quality as a persistent issue in the borough. Road transport is declared as the primary source of these pollutants within the AQMA.

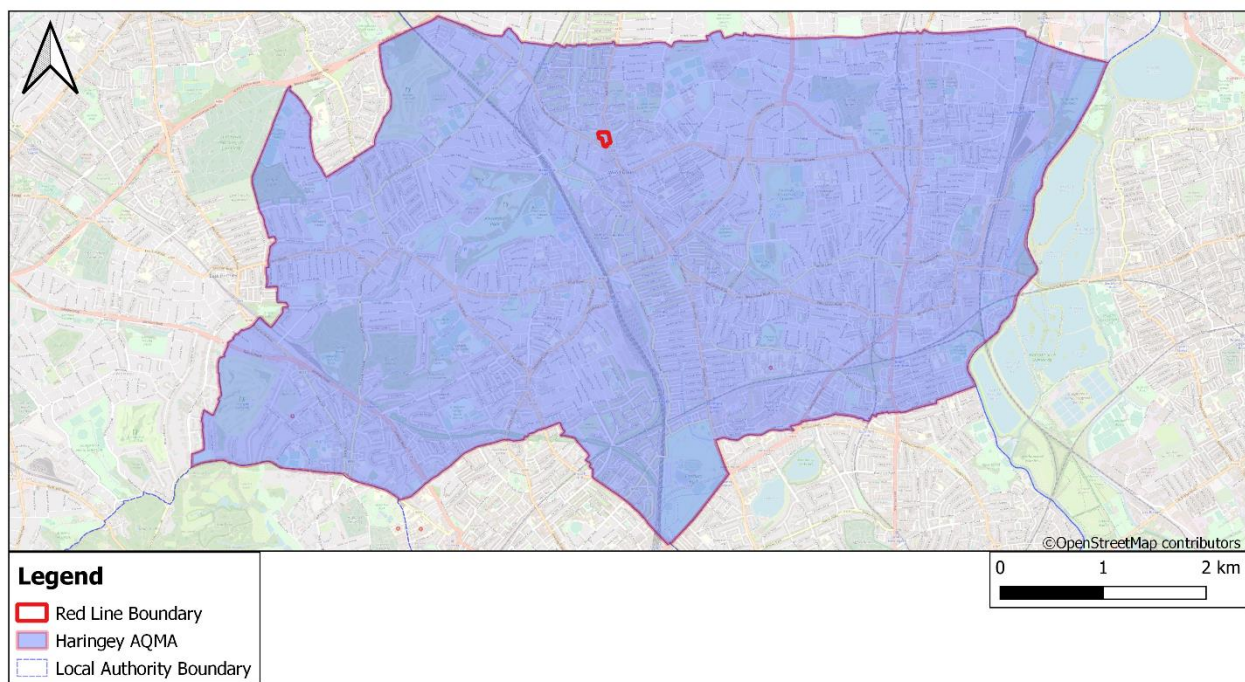


Figure 5—1 Proposed development red line boundary within the Haringey borough wide AQMA.

5.2 Local authority air quality monitoring

LBH undertakes air quality monitoring using both continuous automatic monitoring sites and non-automatic sites (diffusion tubes). In the baseline year of 2019 there was a network of 18 diffusion tubes and two automatic sites, measuring NO₂ and ozone (at site UKA00568 only), in Haringey. A third automatic monitoring site (HG005) was set up 760m south-east of the site in May 2021, recording NO₂, PM₁₀ and PM_{2.5}. This site is located on the roadside of High Road A105, which also runs adjacent to the site. The monitoring site is affiliated with the Air Quality in England (AQE) network. In addition, the neighbouring borough of Enfield (LBE) also undertakes monitoring in the vicinity of the site. Within LBE there is a network of ten diffusion tubes and four automatic monitoring sites, with each site measuring NO₂ and one (ENF5) measuring PM₁₀ concentration. The locations of monitoring sites within the vicinity of the site are presented in Figure 5—2 and Figure 5—3.

²⁸ Defra. (2023). AQMA Details. Haringey AQMA. https://uk-air.defra.gov.uk/aqma/details?aqma_ref=72

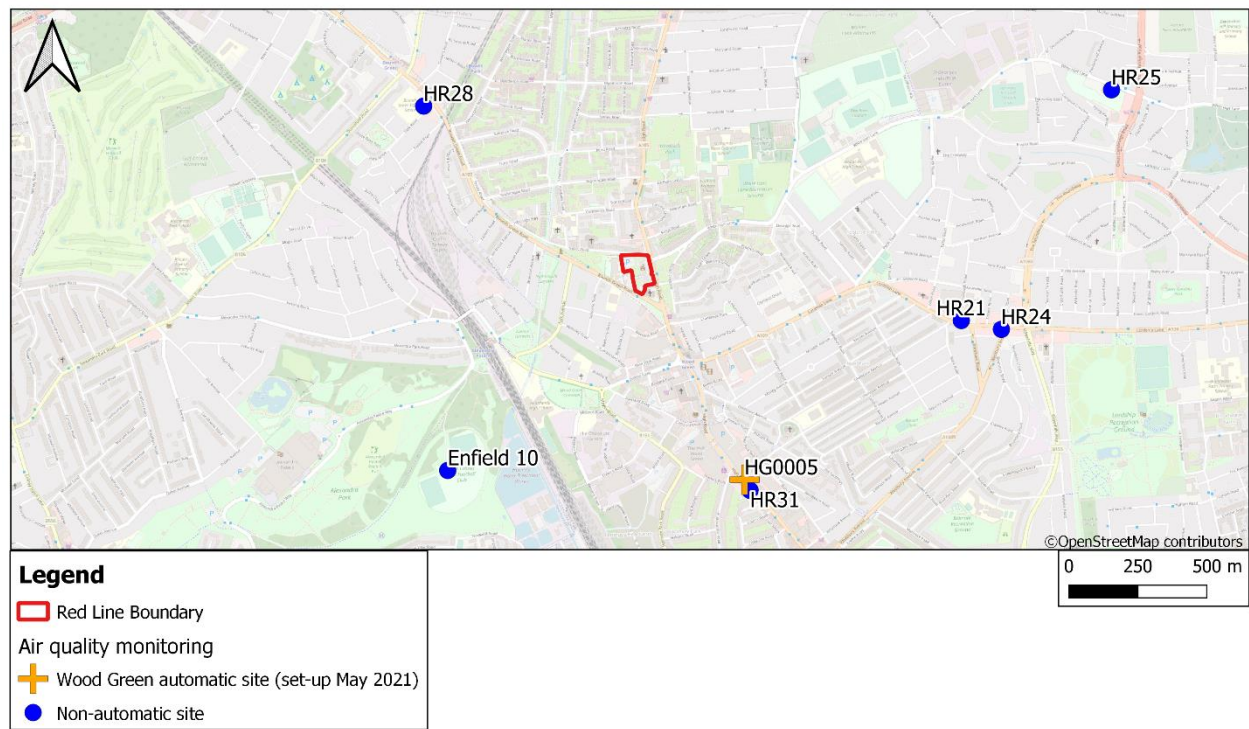


Figure 5—2 LBH air quality monitoring in the vicinity of the site.

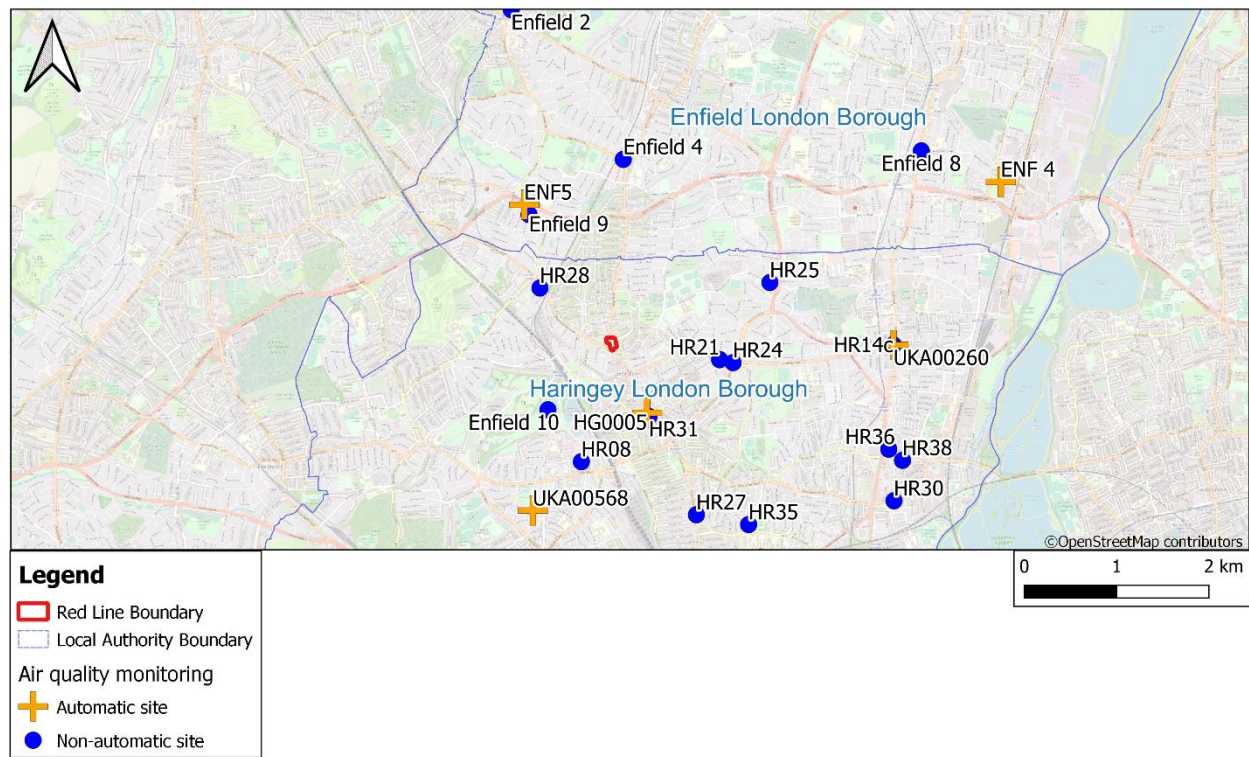


Figure 5—3 LBH and LBE air quality monitoring.

Measured roadside and kerbside annual average nitrogen dioxide (NO₂) concentrations in the vicinity of the site are presented in Table 5-1. The closest monitoring site, operating in 2019, is diffusion tube HR31 which is located 830 m south-east of the site. This monitoring site is on the roadside of High Road A105, which also runs adjacent to the site. This monitoring site recorded annual mean NO₂ of 67.8 µg/m³ in 2019, well in exceedance of the national objective annual average NO₂ concentration of 40 µg/m³. Furthermore, the measured concentration is greater than 60 µg/m³, so it can be considered that exceedances of the NO₂ 1-hour objective may occur, as per in LAQM TG22²⁹. It has exceeded this threshold every year since 2018 and concentrations have increase year upon year since 2017, including in 2020 when national and city-wide traffic decreased substantially due to the COVID-19 pandemic.

The closest automatic site is ENF5 within LBE, 1.7km to the north-east of the site. This monitoring site recorded annual average NO₂ concentration of 41 µg/m³ in 2019, in exceedance of the national objective. Unlike HR31, however, this site experienced a significant decline in NO₂ concentrations in 2020 with the annual mean dropping to 30 µg/m³. All other monitoring sites in the vicinity of the proposed development recorded annual average NO₂ concentrations below 40 µg/m³ in 2019 and are therefore in compliance with the annual average NO₂ national objective.

Table 5-1 Annual mean NO₂ concentrations measured in the vicinity of the site for the last five reporting years.

Site ID	Site name	Distance from site (m)	Site type	Site classification	Annual mean NO ₂ concentration (µg/m ³)					
					2016	2017	2018	2019	2020	2021
HG005	Haringey Wood Green, (14 High Rd Hornsey, London N22 6HH)	768	Automatic	Roadside	-	-	-	-	-	44
HR31	97/101 High Road, N22 6BB	832	Diffusion tube	Roadside	59	52	65	67.8	71.5	62.3
HR28	Bounds Green Primary School, N11	896	Diffusion tube	Roadside	33	34	-	30.7	29.0	30.5
HR21	Lordship Lane Primary School	1130	Diffusion tube	Roadside	31	30	-	23.0	22.0	21.4

²⁹ Defra. (2021). Local Air Quality Management Technical Guidance (TG16). <https://laqm.defra.gov.uk/documents/LAQM-TG16-April-21-v1.pdf>.

Site ID	Site name	Distance from site (m)	Site type	Site classification	Annual mean NO ₂ concentration (µg/m ³)					
					2016	2017	2018	2019	2020	2021
HR24	Westbury Medical Centre, 205 Wesbury Av., N22 6RX	1278	Diffusion tube	Roadside	37	33	33	34.1	28.7	30.8
ENF5	Bowes Primary School	1690	Automatic	Roadside	47	45	44	41	30	30
HR25	Rowland Hill Nursery, White Hart Lane	1792	Diffusion tube	Roadside	30	29	35	27.4	20.2	23.0
Enfield 4	Enfield 4	1928	Diffusion tube	Roadside	22.4	20.8	30.2	30.1	27.6	26.3
UKA00260	Haringey Roadside (639, High Road)	3005	Automatic	Roadside	43	40	39	37	33	32

Notes: Exceedances of the NO₂ annual mean AQO of 40 µg/m³ are shown in **bold**. NO₂ annual means in excess of 60 µg/m³, indicating a potential exceedance of the NO₂ hourly mean AQO are shown in **bold and underlined**.

Hourly NO₂ concentration monitoring, recorded by automatic monitoring stations within ~3 km of the site (Table 5-2) shows that there have been no exceedances of the 1-hour (short term) NO₂ national objective of 200 µg/m³ at any of these sites since 2018.

Table 5-2 Number of exceedances of hourly NO₂ national air quality objective.

Site ID	Distance from site (m)	Site classification	Number of exceedances of NO ₂ 1-hour mean objective (> 200 µg/m ³)					
			2016	2017	2018	2019	2020	2021
HG005	768	Roadside	-	-	-	-	-	0
ENF5	1690	Roadside	6	3	0	0	0	0
UKA00568	1965	Urban Background	0	0	0	0	0	0
UKA00260	3005	Roadside	6	5	0	0	0	0 (120)

If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

Monitoring site ENF5 is the only location within LBE and LBH measuring particulate matter in 2019. Annual average PM₁₀ concentrations were in compliance with the national objective of 40 µg/m³ every year since at least 2016. The 24-hour average objective concentration of 50 µg/m³ has been exceeded ten or less times every year since 2016, significantly less than the 35 permissible exceedances of the short-term air quality objective. HG005

Table 5-3 Annual average PM₁₀ concentrations and exceedances of short-term air quality objectives within LBE.

Site ID	Distance from site (m)	Site classification	Variable	Year					
				2016	2017	2018	2019	2020	2021
HG005	768	Roadside	Annual mean PM ₁₀ concentration (µg/m ³)	-	-	-	-	-	16
			Number of exceedances of PM ₁₀ 24-hour mean objective (> 50 µg/m ³)	-	-	-	-	-	0 (24)
ENF5	1690	Roadside	Annual mean PM ₁₀ concentration (µg/m ³)	22	24	18	19	15	15
			Number of exceedances of PM ₁₀ 24-hour mean objective (> 50 µg/m ³)	10	9	2	9	2	2

Where the period of valid data is less than 85% of a full year, the 90.4th percentile is provided in brackets.

Automatic monitoring site HG0005 was set up in May 2021 on High Road A105, which runs adjacent to the site (see Figure 5—2). HG005 is the only monitoring site within LBE and LBH that monitors PM_{2.5}. In 2021, the annual average PM_{2.5} concentration at this site was 10 µg/m³, significantly below the air quality objective (20 µg/m³). However, it should be noted that 2021 is not a representative baseline year and, due to the site being set up in May 2021, data availability is low at 65%.

Table 5-4 Monitored annual average PM_{2.5} concentration at HG005.

Site ID	Valid data capture for monitoring period (%)	Annual mean PM _{2.5} concentration (µg/m ³)
		2021
HG005	64.6	10

Graphs of the hourly NO_2 and 24-hour averaged PM_{10} and $\text{PM}_{2.5}$ concentrations, since the beginning of site operation, are presented in Figure 5—4 and Figure 5—5. This shows that the short term NO_2 national objective ($200 \mu\text{g}/\text{m}^3$) has not been exceeded within this time span. The short term PM_{10} national objective has been exceeded ten times over this 22-month period. There is no short term $\text{PM}_{2.5}$ national air quality objective. As this monitoring site is located on the same road as the proposed development, it is likely that it is a reasonable representation of roadside air quality conditions near to the site.

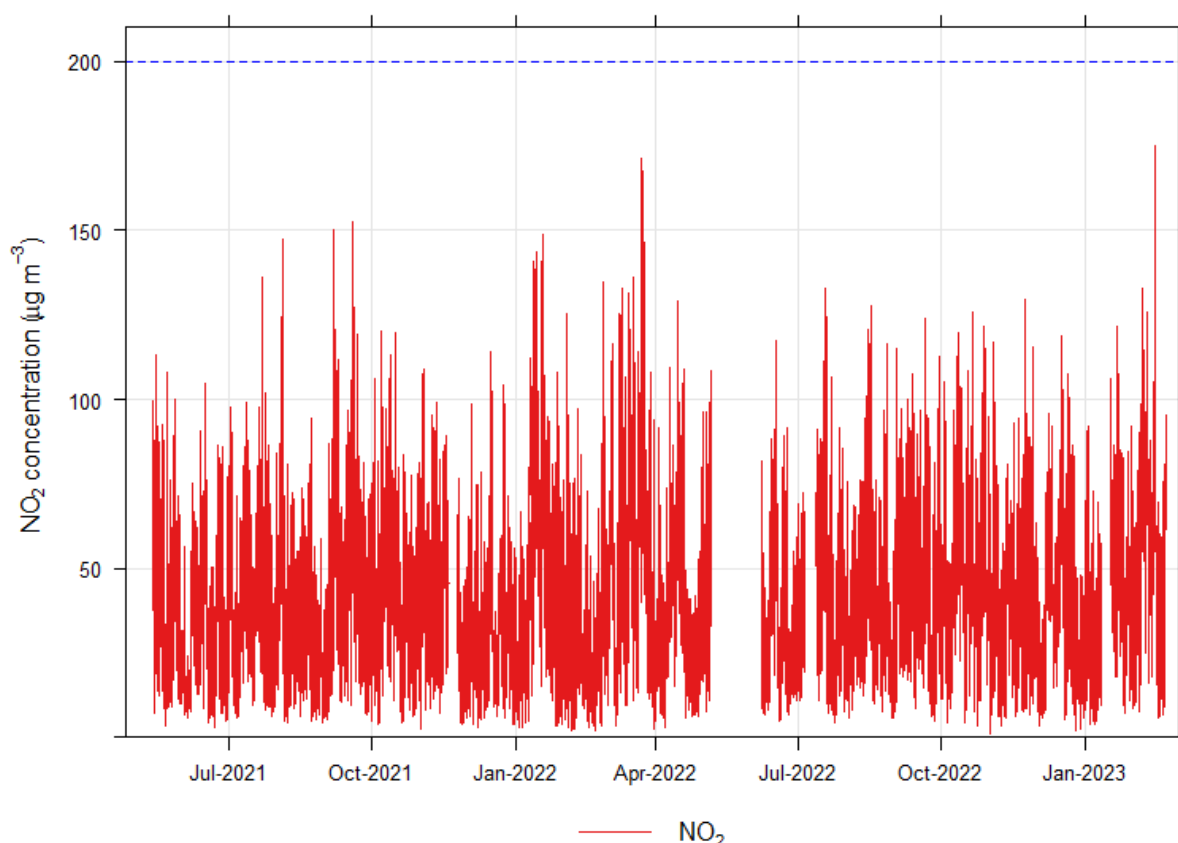


Figure 5—4 Hourly NO_2 concentrations at site HG0005 from May 2021 to January 2022. Data has been downloaded and plotted using openair³⁰.

³⁰ Carslaw, D. C. and K. Ropkins, (2012) openair --- an R package for air quality data analysis. *Environmental Modelling & Software*. Volume 27-28, 52-61.

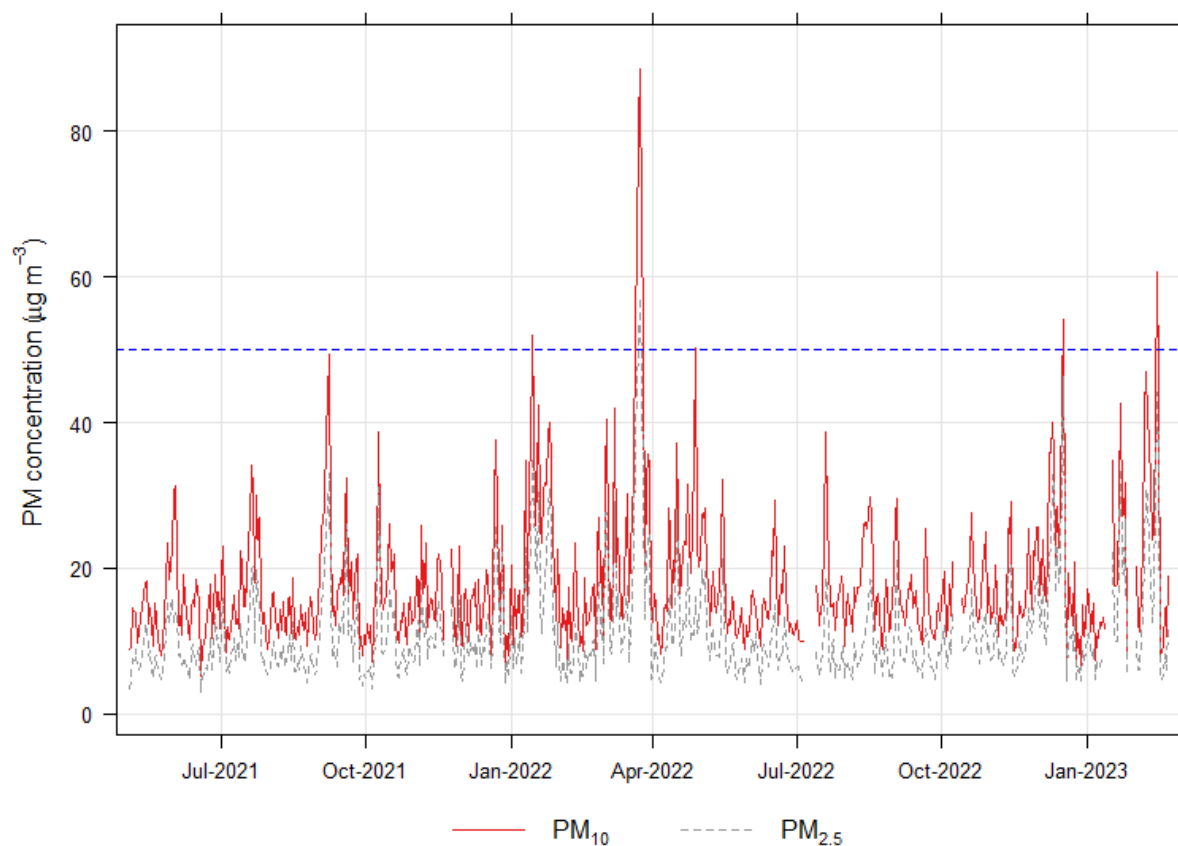


Figure 5—5 24-hour averaged PM concentrations at site HG0005 from May 2021 to January 2022. Data has been downloaded and plotted using openair.

5.3 Buro Happold air quality monitoring

Raw monitored concentrations from the short-term monitoring study undertaken by Buro Happold (see section 4.3) are presented in Table 5-5.

Table 5-5 Raw monitoring results

Site ID	Site description	Site type	Period 1 02/02/22 - 02/03/2022 (µg/m ³)	Period 2 02/03/2022 - 30/03/2022 (µg/m ³)	Period 3 30/03/2022- 29/04/2022 (µg/m ³)	Raw three month average minus travel blank (µg/m ³)
HCC1	High Road A105	Kerbside	-	56.5	46.9	50.7
HCC2	Bounds Green Road	Kerbside	36.0	48.0	31.6	37.9
HCC3	High Road – Civic Centre Kerbside	Kerbside	39.8	44.9	32.3	38.4
HCC4	High Road – Civic Centre Roadside	Roadside	44.2	55.4	44.8	47.5

Site ID	Site description	Site type	Period 1 02/02/22 - 02/03/2022 (µg/m ³)	Period 2 02/03/2022 - 30/03/2022 (µg/m ³)	Period 3 30/03/2022- 29/04/2022 (µg/m ³)	Raw three month average minus travel blank (µg/m ³)
HCC5	Trinity Road	Kerbside	23.7	33.3	21.6	25.5

The raw results have been post-processed (bias adjusted, annualised and scaled back to 2019) following the methodology outlined in section 4.3.1. The post processed results are presented in Table 5-6 and

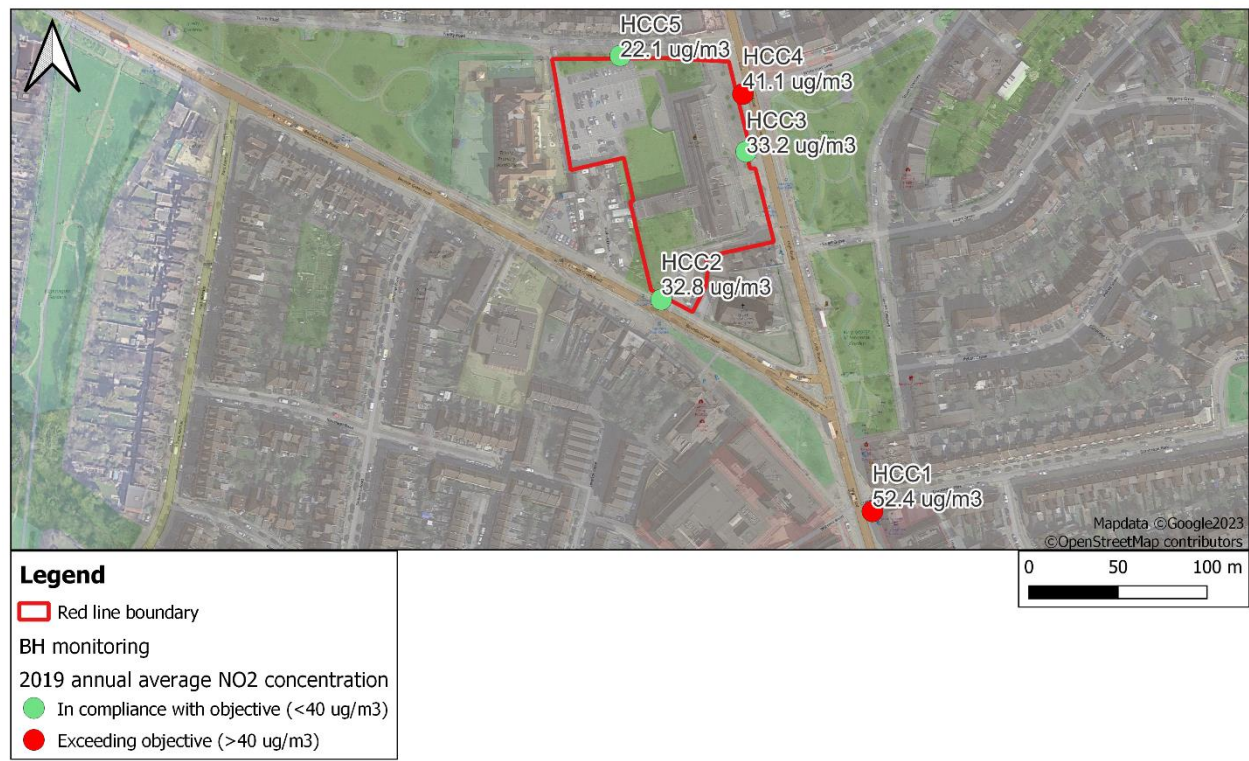


Figure 5—6.



Data obtained from two of the sites exceed the annual average NO₂ air quality objective (40 µg/m³) in 2019; HCC1 kerbside of High Road to the south of the site, and HCC4, kerbside of High Road adjacent to the site. HCC1 exceeded the air quality objective significantly (by over 12.4 µg/m³), whilst HCC4 was marginally above the objective (1.1 µg/m³), despite the two sites being along High Road. This highlights the significant air quality issues along High Road, especially close to Wood Green high street, indicating high traffic volumes and congestion along this road link.

Whilst the air quality objective is exceeded at HCC4 in 2019, this site was less than 1 m from the kerbside of High Road. The proposed development is approximately 18 m from the kerbside, a distance over which there is likely to be a significant reduction in pollutant concentrations. This is illustrated by the HCC3, which is in a similar location to HCC4 but 6.5 m from the kerbside, recording a concentration of 33.2: 7 µg/m³ less than HCC4. Pollutant concentrations will reduce further at the façade of the Civic Centre building.

The estimated 2019 annual average NO₂ concentration at HCC2 (32.8 µg/m³), along Bounds Green Road, is significantly below the air quality objective. Whilst this is a significant A road, it recorded much lower concentrations than the diffusion tubes on High Road, highlighting the significance of the air quality issues along High Road. HCC5 is located along Trinity Road, a minor road with low traffic volumes. The estimated 2019 annual average NO₂ concentration was 22.1 µg/m³ at this site, almost half of the 40 µg/m³ objective. As this site is a significant distance from any major roads, it is likely to be close to background concentrations in the area.

It is important to note that owing to the short-term nature of the monitoring, and the assumptions made in the processing of results, may lead to an under or over-prediction of the actual concentrations. There is a higher level of uncertainty associated with the 2019 annual average concentrations, due to the additional uncertainty introduced by estimating the change in concentrations from 2022 to 2019.

Table 5-6 Post-processed monitoring results.

Site ID	Site type	Raw three month average minus travel blank ($\mu\text{g}/\text{m}^3$)	Bias Adjusted ($\mu\text{g}/\text{m}^3$)	Bias adjusted annualised 2022 annual average ($\mu\text{g}/\text{m}^3$)	Bias adjusted annualised 2019 annual average ($\mu\text{g}/\text{m}^3$)
HCC1	Kerbside	50.7	42.1	41.9	52.4
HCC2	Kerbside	37.9	31.4	26.2	32.8
HCC3	Kerbside	38.4	31.8	26.5	33.2
HCC4	Roadside	47.5	39.4	32.8	41.1
HCC5	Kerbside	25.5	21.2	17.7	22.1



Figure 5—6 Mapped results from BH short-term monitoring study.

5.4 London Atmospheric Emissions Inventory

The London Atmospheric Emissions Inventory (LAEI) produces estimates of ground level concentrations of key air pollutants (NO₂, PM₁₀ and PM_{2.5}) across Greater London based on dispersion modelling that utilises emission estimates from a number of source types. Produced by the GLA and Transport for London, alongside several partners,

the LAEI was most recently updated in December 2021, using a baseline year of 2019. This includes impacts associated with the operation of the central London Ultra Low Emission Zone (ULEZ).

The LAEI modelling shows the highest concentration of NO₂ on the eastern boundary, adjacent to High Road A105, and southern boundary, adjacent to Bounds Green Road A109, of the site (Figure 5—7 LAEI modelled NO₂ concentrations at the site in 2019. Figure 5—7). Estimated concentrations on the southern and eastern boundaries of the site are between 30 µg/m³ and 35 µg/m³. Pollutant concentrations reduce with distance from these pollution sources.

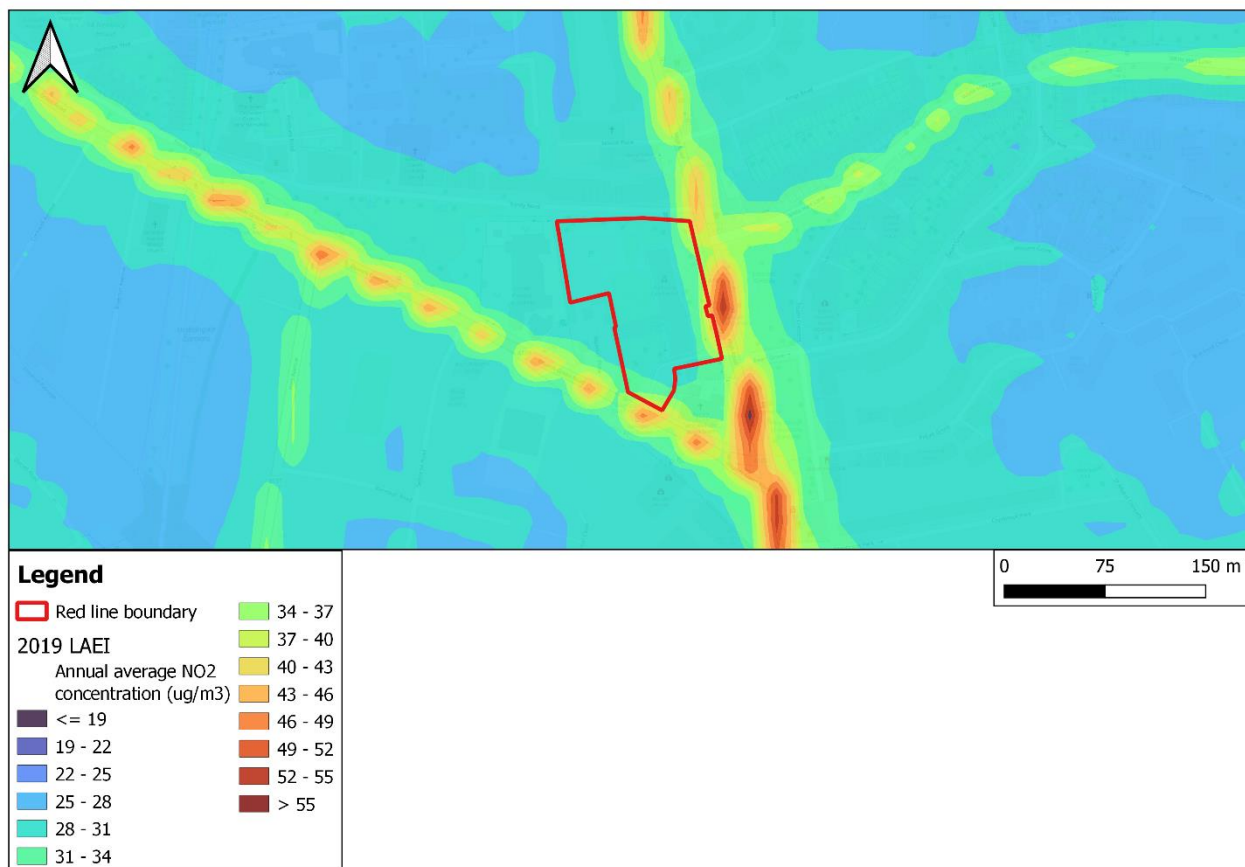


Figure 5—7 LAEI modelled NO₂ concentrations at the site in 2019.

Similarly, the highest particulate matter concentrations are estimated to be closest to the roads on the southern and eastern boundary of the site (Figure 5—8). PM₁₀ concentrations are estimated to be between 16 µg/m³ and 18 µg/m³ in these areas, with 6 to 12 exceedances of the 24-hour national objective. PM_{2.5} concentrations are estimated to be below 12 µg/m³ across the site. As with NO₂, PM concentrations decline with distance from the roads adjacent to the site.

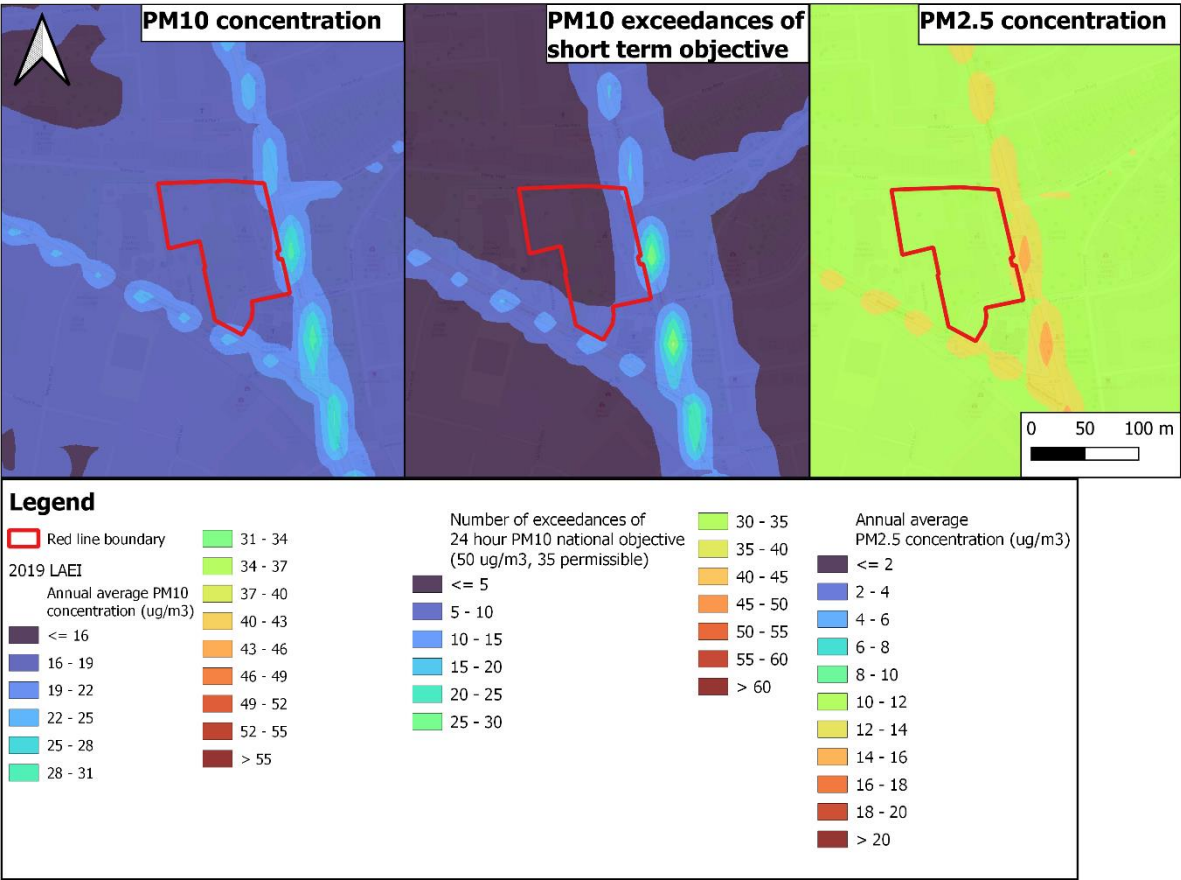


Figure 5—8 LAEI modelled particulate matter concentrations and exceedances of 24-hour national objectives at the site in 2019.

5.5 Background air quality

There are four urban background monitoring sites within 2 km of the site, presented in Figure 5—9 with associated monitoring data in Figure 5—9 Urban background monitoring sites and recorded 2019 annual aver NO2 concentration in the vicinity of the site

Table 5-7. These measured varying annual average NO₂ concentrations in 2019, with the greatest concentration, at Enfield 10, being 36.6 $\mu\text{g}/\text{m}^3$ and the lowest concentration, at UKA00568, being 22 $\mu\text{g}/\text{m}^3$. UKA00568 is an automatic site whereas the other three sites are diffusion tubes. Therefore, UKA00568 will likely have the highest measurement accuracy of these sites.

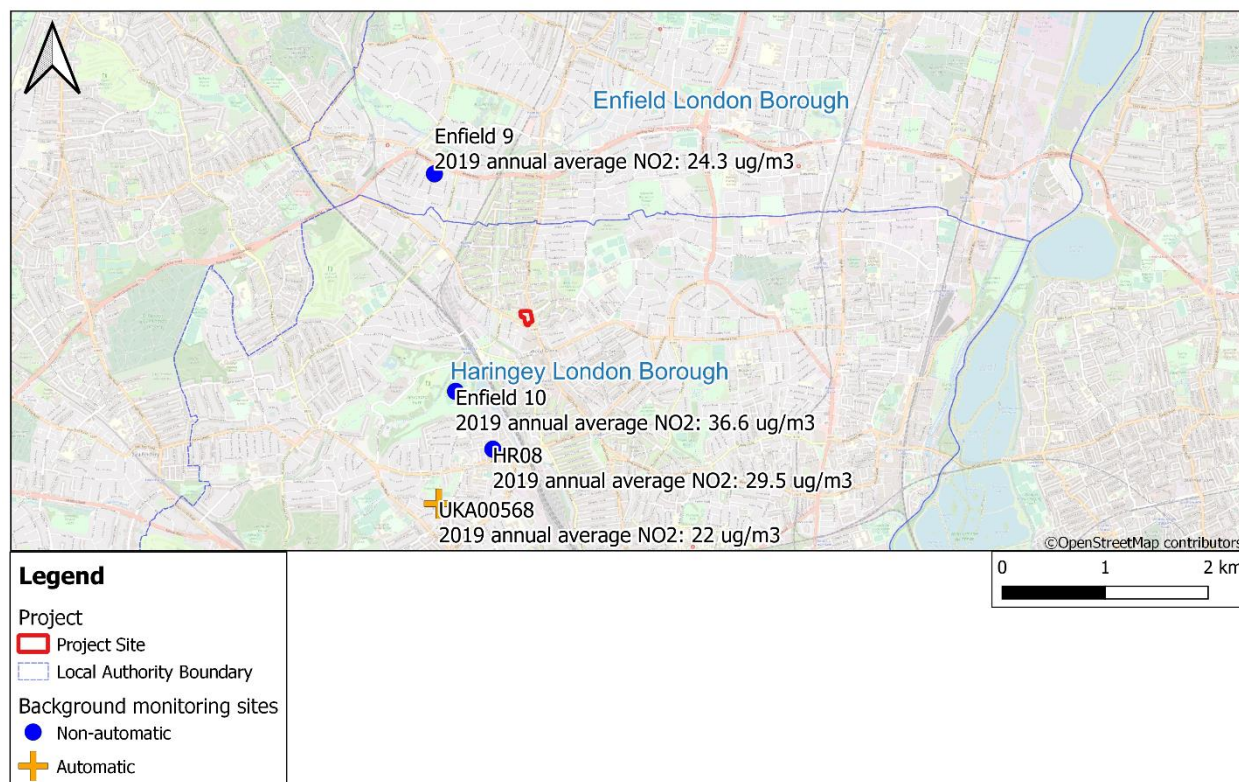


Figure 5—9 Urban background monitoring sites and recorded 2019 annual aver NO2 concentration in the vicinity of the site

Table 5-7 Annual average NO2 concentrations at urban background monitoring sites in the vicinity of the site.

Site ID	Distance from site (m)	Site type	Site classification	Annual mean NO ₂ concentration (µg/m ³)				
				2016	2017	2018	2019	2020
Enfield 10	961	Non-automatic	Urban Background	-	-	36.5	36.6	29.4
HR08	1285	Non-automatic	Urban Background	28	27	19	29.5	20.32
Enfield 9	1573	Non-automatic	Urban Background	51	27	26	24.3	18.6
UKA00568	1965	Automatic	Urban Background	26	24	23	22	16

Notes: Exceedances of the NO₂ annual mean AQO of 40 µg/m³ are shown in **bold**.

Defra model background air pollution data for NO₂, PM₁₀ and PM_{2.5} for each 1km-by-1km OS grid square³¹.

Background pollutant concentrations are modelled from a reference year of 2018 and based upon ambient monitoring and meteorological data from 2018 with projections for future years up to 2030.

Modelled background concentrations for 2019 and 2022 in the grid square in which the proposed development is located (530426, 190822) are outlined in Table 5-8.

Table 5-8 Defra modelled background concentrations for the OS grid square containing the proposed development

Pollutant	Annual mean background NO ₂ concentrations (µg/m ³)	
	2019	2022
Nitrogen dioxide (NO ₂)	23.2	20.3
Oxides of nitrogen (NO _x)	34.4	29.3
PM ₁₀	17.7	16.8
PM _{2.5}	11.7	11.2

The Defra modelled background 2019 NO₂ concentration of 23.2 µg/m³ is comparable to the measured annual average NO₂ by automatic urban background urban monitoring site UKA00568 of 22 µg/m³. This supports the accuracy of the Defra background modelling in this area. Therefore, Defra modelled background concentrations, presented in Table 5-8, have been used in this assessment.

³¹ Defra. (2018). Background Mapping data for local authorities. <https://uk-air.defra.gov.uk/data/laqm-background-home>

6 Construction impacts

6.1 Construction assessment

The IAQM guidance criteria used to assess the potential impacts from construction activities is detailed in Appendix A. The following steps explain the site-specific assessment in the context of the IAQM criteria.

6.1.1 Step 1: Screen the need for a detailed assessment

In accordance with screening criteria in the IAQM guidance, an assessment is required as sensitive receptors are located within 350m of the site boundary. Receptors include residential housing to the north, south and east of the site, Trinity Primary Academy to the west, St. Michaels church (grade II listed) to the south-east and St Michaels Primary School to the south. Therefore, screening indicates the need for a construction dust assessment.

6.1.2 Step 2A: Define the potential dust emission magnitude

Dust emission magnitudes for relevant construction activities are shown in Table 6-1.

Table 6-1 Dust emission magnitudes.

Activity	Dust emission magnitude	Justification
Demolition	N/A	Existing structures are to be retained. No demolition is required.
Earthworks	Medium	Earthworks area up to 8100 m ² , within the IAQM threshold for medium dust emission magnitude (2,500 m ² – 10,000 m ²). Soil is a clayey loam to silty loam texture with a clay and silt-rich subsoil, according to the UK Soil Observatory ³² . This is a relatively small grain size and therefore may be prone to suspension. Overall, given the worst-case size of the earthworks area being significantly below the large threshold, dust emission magnitude during earthworks is considered to be medium.
Construction	Medium	Construction volume is 30,300 m ³ , based on architectural drawings. This falls within the medium IAQM threshold (25,000 m ³ – 100,000 m ³).
Trackout	Medium	Peak construction year AADT increase will be 13 outward HDV movements per hour, therefore it is unlikely that in any one day there will be more than 50 outward HDV movements and therefore falls under the medium IAQM threshold (10 – 50 HDV outward movements in any one day)

6.1.3 Step 2B: Define the sensitivity of the area

The sensitivity of the surrounding area to potential construction impacts is detailed in Table 6-2.

Table 6-2 Area sensitivity to human health.

Potential impact	Sensitivity of surrounding area		
	Earthworks	Construction	Trackout
Dust soiling	High	High	High

³² UK Soil Observatory. (2023). UKSO Map Viewer. <https://mapapps2.bgs.ac.uk/ukso/home.html>

Potential impact	Sensitivity of surrounding area		
	Earthworks	Construction	Trackout
Human health	Medium	Medium	Medium

In determining the sensitivity of the surrounding area, the following were taken into consideration:

- No demolition will take place on site, therefore sensitivity to demolition impacts is not applicable for the proposed development.
- Figure 6—1 shows a summary of receptors within 50m of the proposed development boundary.
 - Within 20 m of the site there is Trinity Primary school, which is highly sensitive to human health impacts. There are also more than 10 residential properties on Trinity Road, within 20m of the northern boundary of the site, and six pitches on the licenced traveller site within 20m of the south-west of the site. These are highly sensitive to dust soiling and human health impacts;
 - The expected trackout route will be within 20m of multiple high sensitivity residential receptors, including those on Trinity Road, High Road and Bounds Green Road.
- Taking this into account, the number of highly sensitive receptors within 20m is estimated to be over 100 for human health and over 10 for dust soiling. In addition, there are religious buildings, shops, offices and other commercial properties within 100m of the site. Dust soiling can diminish the appearance or value of these receptors. For these reasons, the area sensitivity to dust soiling for earthworks, construction and trackout is considered to be high, in line with IAQM criteria presented in Table A-.
- Sensitivity to human health impacts also takes background PM₁₀ concentrations into account, Defra's mapped background PM₁₀ concentration is 17.7 µg/m³ (see Table 5-8). Based on criteria presented in Table A-, the sensitivity of the area to health impacts is medium due to the background PM₁₀ being below 24 µg/m³ and there being over 100 high sensitivity receptors within 20m of the site.
- There are no designated ecological sites within 50m of the site boundary therefore ecological impacts have been scoped out of the construction assessment, in line with IAQM guidance (see Table A-1).



Figure 6—1 Receptors to construction dust impacts within 50m from the site.

6.1.4 Step 2C: Define the risks of impacts

The risk of dust impacts for relevant construction activities are summarised in Table 6-3. These results take into account both the potential dust emission magnitude and the sensitivity of the area. It should be noted that activities on site will be temporary in nature, and mitigation appropriate to the level of risk and in line with good industry practices will be implemented across the site to ensure any adverse effects are minimised. Section 8.1 sets out appropriate mitigation measures to ensure the impact from construction activities will not be significant.

Table 6-3 Summary of risk from dust impacts.

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

6.2 Construction traffic

As discussed in section 4.5.24.5.3, the increase in HDV AADT during the peak construction year will not exceed 25 on any road link. As this does not exceed the IAQM screening threshold for detailed assessment, any air quality impacts will have an insignificant effect.

7 Operational impacts

As discussed in section 4.5.2 and 4.5.3, the impact from traffic and combustion plant associated with the proposed development has been screened out as insignificant, therefore this section focuses on determining the exposure of future site occupants to poor air quality.

7.1 On-site exposure

Owing to the proposed development being predominantly a place of work (i.e., office and civic uses) statutory air quality objectives are not applicable, nonetheless consideration has been given to the exposure of future site occupants to poor air quality as a matter of good practice.

The Buro Happold short term monitoring site likely to represent on-site conditions most accurately is HCC3, 6.5 m from the Kerb of High Road. Whilst this site is likely to be most representative of on-site conditions, it is still over 10 m closer to the kerb than the eastern façade of the civic centre, so concentrations will be higher here than at the facade. The estimated 2019 annual average NO₂ concentration at this monitoring location is 33.2 µg/m³, below the annual average objective (40 µg/m³) and significantly below the threshold at which there is a risk of exceedance of the 1-hour objective (60 µg/m³), as defined in LAQM TG22.

Air pollutant concentrations are projected to decrease in future years, due to reductions in background concentrations and tailpipe emissions. Taking these factors into account, it is determined that air pollutant concentrations would not exceed relevant air quality objectives at the proposed development during operation.

8 Mitigation

8.1 Construction

As the site is classed as medium risk the following mitigation measures are highly recommended.

With respect to communications:

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- 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.
- Display the head or regional office contact information.
- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. In London additional measures may be required to ensure compliance with the Mayor of London's guidance. The DMP may include monitoring of dust deposition, dust flux, real time PM10 continuous monitoring and/or visual inspections.

With respect to site management:

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
- Hold regular liaison meetings with other high risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport deliveries which might be using the same strategic road network routes.

With respect to monitoring:

- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.
- Increase the frequency of site inspections by the person 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.
- Agree dust deposition, dust flux, or real-time PM10 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.

With respect to 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.
- 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 that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.

With respect to 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.
- 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 practicable.
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.

With respect to 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 suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and 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.
- 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.

With respect to waste management:

- Avoid bonfires and burning of waste materials.

Additionally as the site is classed as medium risk the following mitigation measures are desired:

With respect to 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 window sills within 100m of site boundary, with cleaning to be provided if necessary.

With respect to operating vehicle/machinery and sustainable travel:

- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced 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).

As the site is classed as medium risk for earthworks the following mitigation measures are desirable:

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable
- Only remove the cover in small areas during work and not all at once.

As the site is classed as medium risk for construction the following mitigation measure is highly recommended:

- 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.

Additionally, as the site is classed as medium risk for construction the following mitigation measures are desirable:

- Avoid scabbling (roughening of concrete surfaces) if possible.
- 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.
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.

As the site is classed as medium risk for trackout the following mitigation measures are highly recommended:

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are 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 10m from receptors where possible.

8.2 Operation

With respect to existing receptors, the impacts of the operational phase as insignificant and as such no further mitigation is proposed.

With respect to proposed receptors, concentrations across the site are likely to be in compliance with relevant air quality objectives across the site for the year of opening. Consideration should still be given to design measures (e.g. the proposed ventilation strategy) to reduce the exposure of building users to poor air quality, as latest evidence suggests there is no 'safe threshold' of ambient pollutant concentration below which the health benefits resulting from a reduction in air pollution would not occur.

9 Conclusions

During the construction phase, there is a medium risk of dust soiling impacts, and a low risk to human health impacts, due to earthworks, construction and trackout. The assessment proposes best practice mitigation measures that are recommended to be implemented within an Air Quality and Dust Management Plan, in line with IAQM guidance. Successful implementation of these measures will ensure construction emissions are minimised and any residual impact on air quality will likely be not significant. The impact of construction vehicle traffic on the air quality of surrounding receptors has been screened out as not significant.

Heating and hot water provision will be met through air and water source heat pumps, which will not give rise to any on site emissions. Owing to the reduction in parking due to the proposed development, there will be a net decrease in vehicle trips as a result of the proposed development. Therefore, the impact on local air quality due to the operation of the proposed development will be negligible and any effects not significant.

Although the development is located within an air quality management area (AQMA), as the development will predominantly be a workplace for the local authority, statutory air quality objectives would not strictly apply, however as a matter of good practice consideration has been given to the exposure of future site occupants to poor air quality. Baseline air quality monitoring indicates that both long-term and short-term air quality objectives, are not likely to be exceeded. Therefore, no additional mitigation is required in order to protect site users/occupants.

Due to the net decrease in vehicle trips and the zero onsite emission energy strategy, the proposed development is determined to be Air Quality Neutral.

It is therefore concluded that, with the implementation of recommended construction mitigation measures, the proposed development would not lead to any significant air quality effects and therefore satisfy policy SI 1 of the London Plan.

Appendix A Construction assessment methodology

A.1 Assessing the risk of dust impacts

A) Defining the potential dust emission magnitude

The dust emission magnitude is based on the scale of the anticipated works and should be classified as Small, Medium, or Large.

Demolition: Example definitions for demolition are:

- **Large:** Total building volume >50,000 m³, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >20 m above ground level;
- **Medium:** Total building volume 20,000 m³ – 50,000 m³, potentially dusty construction material, demolition activities 10-20 m above ground level; and
- **Small:** Total building volume <20,000 m³, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10m above ground, demolition during wetter months.

Earthworks: Earthworks will primarily involve excavating material, haulage, tipping and stockpiling. This may also involve levelling the site and landscaping. Example definitions for earthworks are:

- **Large:** Total site area >10,000 m², 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, total material moved >100,000 tonnes;
- **Medium:** Total site area 2,500 m² – 10,000 m², 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; and
- **Small:** Total site area <2,500 m², 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.

Construction: The key issues when determining the potential dust emission magnitude during the construction phase include the size of the building(s) / infrastructure, method of construction, construction materials, and duration of build. Example definitions for construction are:

- **Large:** Total building volume >100,000 m³, on site concrete batching, sandblasting;
- **Medium:** Total building volume 25,000 m³ – 100,000 m³, potentially dusty construction material (e.g. concrete), on site concrete batching; and
- **Small:** Total building volume <25,000 m³, construction material with low potential for dust release (e.g. metal cladding or timber).

Trackout: Factors which determine the dust emission magnitude are vehicle size, vehicle speed, vehicle numbers, geology and duration. As with all other potential sources, professional judgement must be applied when classifying trackout into one of the dust emission magnitude categories. Example definitions for trackout are:

- **Large:** >50 HDV (>3.5t) outward movements³⁴ in any one day³⁵, potentially dusty surface material (e.g. high clay content), unpaved road length >100 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; and
- **Small:** <10 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50 m.
- These numbers are for vehicles that leave the site after moving over unpaved ground, where they will accumulate mud and dirt that can be tracked out onto the public highway.

B) Defining the sensitivity of the area

- The sensitivity of the area takes account of a number of factors:
- The specific sensitivities of receptors in the area;
- The proximity and number of those receptors;
- In the case of PM₁₀, the local background concentration; and
- Site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.
- Examples of sensitivities of various receptors to dust soiling, elevated PM₁₀ and ecological effects are shown in Table A-1.

For the sensitivity of people and their property to soiling, the IAQM recommends that the air quality practitioner uses professional judgement to identify where on the spectrum between high and low sensitivity a receptor lies, taking into account the general principles in the table below.

For the sensitivity of people to the health effects of PM₁₀, the IAQM recommends that the air quality practitioner assumes that there are three sensitivities based on whether or not the receptor is likely to be exposed to elevated concentrations over a 24-hour period, consistent with the Defra's advice for local air quality management.

With regards to ecological effects, it is advised to seek the advice of an ecologist to determine the need for an assessment of dust impacts on sensitive habitats and plants. Professional judgement is required to identify where on the spectrum between high and low sensitivity a receptor lies, taking into account the likely effect and the value of the ecological asset. A habitat may be highly valuable but not sensitive, alternatively it may be less valuable but more sensitive to dust deposition. Consequently, specialist ecological advice should also be sought to determine the sensitivity of the ecological receptors to dust impacts. In general, most receptors will either be of high sensitivity or low sensitivity i.e. either sensitive or not to dust deposition.

³⁴ A vehicle movement is a one way journey. i.e. from A to B, and excludes the return journey.

³⁵ HDV movements during a construction project vary over its lifetime, and the number of movements is the maximum not the average.

Table A-1 Examples of receptor sensitivities for various construction effects

Receptor sensitivity	Effects		
	Dust soiling	Elevated PM ₁₀	Ecological
High	Users can reasonably expect a enjoyment of a high level of amenity. 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, museum and other culturally important collections, medium and long term car parks and car showrooms.	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.	Locations with an international or national designation and the designated features may be affected by dust soiling; or location where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain. An indicative example is a Special Area of Conservation (SAC) designated for acid heathlands adjacent to the demolition of a large site containing concrete (alkali) buildings or for the presence of lichen.
Medium	Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or the appearance, aesthetics or value of their property could be diminished by soiling; or the people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. Indicative examples include parks and places of work.	Locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM₁₀ (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). Indicative examples may include office and shop workers, but will generally not include workers occupationally exposed to PM₁₀, as protection is covered by Health and Safety at Work legislation.	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or Locations with a national designation where the features may be affected by dust deposition. Indicative examples include a Site of Special Scientific Interest (SSSI) with dust sensitive features.
Low	The enjoyment of amenity would not reasonably be expected; or there is property that would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or there is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. Indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.	Locations where human exposure is transient. Indicative examples public footpaths, playing fields, parks and shopping streets.	Locations with a local designation where the features may be affected by dust deposition. Indicative example is a local Nature Reserve with dust sensitive features.

Additional factors to consider when determining the sensitivity of the area include the following

- Any history of dust generating activities in the area;

- The likelihood of concurrent dust generating activity on nearby sites;
- Any pre-existing screening between the source and the receptors;
- Any conclusions drawn from analysing local meteorological data which accurately represent the area; and if relevant the season during which the works will take place;
- Any conclusions drawn from local topography;
- Duration of the potential impact, as a receptor may become more sensitive over time; and
- Any known specific receptor sensitivities which are considered go beyond the classifications given.
- The following tables show how the sensitivity of an area can be determined for the various potential impacts. For each potential impact the highest level of sensitivity should be recorded.

Table A-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
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table A-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	<200	<350
High	>32 µg/m ³ (>18 µg/m ³ in Scotland)	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m ³ (16-18 µg/m ³ in Scotland)	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m ³ (14-16 µg/m ³ in Scotland)	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m ³ (<14 µg/m ³ in Scotland)	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32 µg/m ³	>10	High	Medium	Low	Low	Low

Receptor sensitivity	Annual mean PM ₁₀ concentration	Number of receptors	Distance from the source (m)				
			<20	<50	<100	<200	<350
	(> 18 µg/m ³ in Scotland)	1-10	Medium	Low	Low	Low	Low
	28-32 µg/m ³ (16-18 µg/m ³ in Scotland)	> 10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µg/m ³ (14-16 µg/m ³ in Scotland)	> 10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m ³ (< 14 µg/m ³ in Scotland)	> 10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	> 1	Low	Low	Low	Low	Low

Table A-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

C) Defining the risks of impacts

Dust emission magnitude determined at step A) should be combined with the sensitivity of the area determined at step B) in order to determine the risk of impacts with no mitigation applied. The following matrices provide a method of assigning the level of risk for each activity. For those cases where the risk category is 'negligible', no mitigation measures beyond those required by legislation will be required.

Table A-5 Risk of dust impacts – demolition

Sensitivity of area	Dust emission magnitude		
	Large	Medium	Small
High	High risk	Medium risk	Medium risk
Medium	High risk	Medium risk	Low risk
Low	Medium risk	Low risk	Negligible

Table A-6 Risk of dust impacts – earthworks

Sensitivity of area	Dust emission magnitude		
	Large	Medium	Small
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible

Table A-6 Risk of dust impacts – construction

Sensitivity of area	Dust emission magnitude		
	Large	Medium	Small
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible

Table A-7 Risk of dust impacts – trackout

Sensitivity of area	Dust emission magnitude		
	Large	Medium	Small
High	High risk	Medium risk	Low risk
Medium	Medium risk	Low risk	Negligible
Low	Low risk	Low risk	Negligible

Kit Benjamin
Buro Happold Limited
17 Newman Street
London
W1T 1PD
UK

T: +44 (0)207 927 9700

F: +44 (0)870 787 4145

Email: kit.benjamin@burohappold.com