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COMER GROUP UK
HAREFIELD GROVE
RICKMANSWORTH ROAD, HAREFIELD

AIR QUALITY ASSESSMENT

MAY 2023

the journey is the reward

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Project Code:	**26306 - CHHarefield(A).9**
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COMER GROUP UK
HAREFIELD GROVE
Rickmansworth Road, Harefield
Air Quality Assessment

List of Contents

Sections

Figures

Tables

1 Introduction

1.1 Mayer Brown Limited has been instructed by Comer Group UK to undertake an Air Quality Assessment (AQA) in respect of the planning application for the development of a parcel of land on the outskirts of the village of Harefield, known as 'Harefield Grove'.

1.2 The development will provide 39 residential units along with the reinstatement of the former sports pitch on site and associated landscaping and parking improvements. The development is described as:

"Subdivision and conversion of the Main House into 6no. residential units; demolition of the existing extension of the Main House and erection of a three storey 'stable block' building containing 29no. residential units; construction of a new dwellinghouse to the south-east (Orchard House); extension of Garden House to provide a new single storey dwelling; internal alterations to Cottage House to provide a new two storey dwelling; demolition of Conservatory building and replacement with a new two storey dwelling (Lake View House); and associated alterations to landscape, access and parking."

1.3 This AQA has been undertaken in order to evaluate the suitability of the site for the proposed residential use and assess any likely air quality impacts associated with the proposed development upon the surrounding area.

1.4 In the event that potential impacts are identified, specific mitigation measures have been recommended in order to minimise significant pollution impacts and help safeguard the health and wellbeing of any existing and proposed sensitive receptors within the local area.

1.5 The AQA is divided up into the following sections:

- **Section 2** – Existing Site;
- **Section 3** – Proposed Development;
- **Section 4** – Legislation and Policy Context;
- **Section 5** – Assessment Methodology and Significance Criteria;
- **Section 6** – Baseline Site Conditions;
- **Section 7** – Evaluation of Potential Effects;
- **Section 8** – Mitigation Measures; and
- **Section 9** – Residual Effects and Conclusions
- **Appendix A** – Construction Dust Assessment
- **Appendix B** – Air Quality Neutral Assessment

2 Existing Site

2.1 The proposed development site falls within the jurisdiction of London Borough of Hillingdon (LBH).

2.2 The site covers an area of approximately 7.8 hectares and is accessed via a long driveway from Rickmansworth Road.

2.3 The site location in relation to the local highway network is illustrated in **Figure 2.1** below.

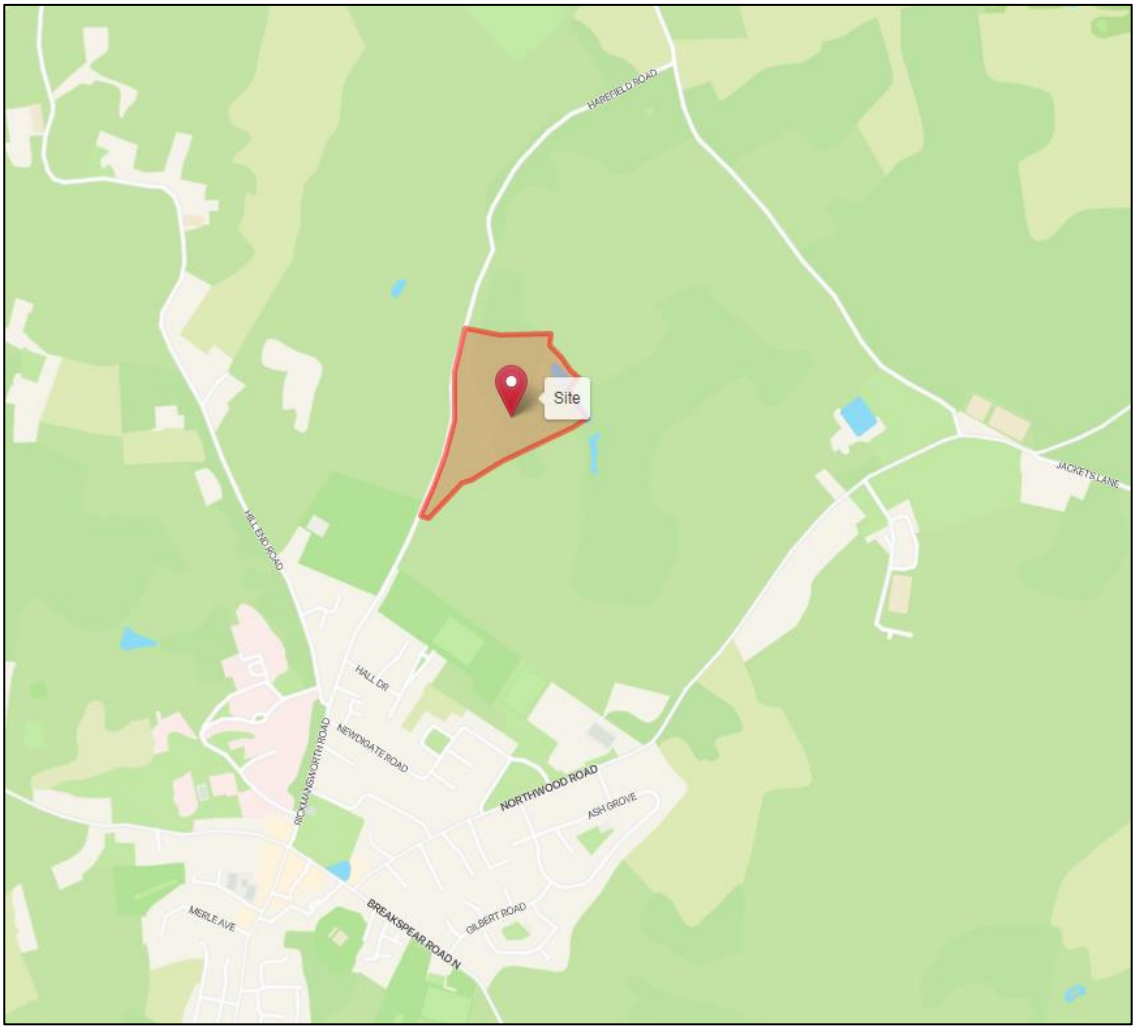

Figure 2.1: Site Location in Relation to the Local Highway Network

2.4 The Site is located on the Eastern side of Rickmansworth Road, approximately 1km north from Harefield Village.

2.5 The site is predominantly bounded by fields and woodlands, with a metalwork fabricator company “Cube Metals Ltd” located within 200m from the South-Eastern side of the site boundary.

2.6 The site is currently vacant, although it is used sporadically for film and television sets. The site's last permanent use was for office purposes in 2002.

2.7 Within the extensive grounds are a series of associated buildings and structures, including the Stable Building (two storeys with clock tower), Cottage House (two storey dwelling), Conservatory (single storey greenhouse) and Gardener's Cottage (two storey dwelling). A large gravel car park serves the site providing c. 120 spaces.

2.8 The site lies within the Metropolitan Green Belt. It forms part of a Nature Conservation Site of Grade I and Grade II Importance and falls within a Countryside Conservation Area.

2.9 The existing site plan is illustrated in **Figure 2.2** below.

Figure 2.2: Existing Site Plan

3 Proposed Development

3.1 The proposed development seeks full planning permission and listed building consent for the redevelopment of the site to provide a total of 39no. residential dwellings.

3.2 The Main House will be subdivided into six apartments (Use Class C3) in a mix of 1x one-bedroom, 3x two-bedroom and 2x three-bedroom, with two units proposed to each floor.

3.3 The existing 1980s extension to the Main House and the Stable Building will be demolished to allow for the erection of the new courtyard stable block. A total of 29 apartments (Use Class C3) in a mix of 1, 2 and 3 bed units are proposed over three floors (Garden Level, Ground Floor and First Floor). The building will be sited 20m from the Main House.

3.4 Cottage House will be converted into a 3-bed two storey dwelling (Use Class C3).

3.5 The Conservatory is to be demolished to facilitate the erection of a new 4-bed two storey dwelling (Use Class C3) named 'Lake View House'.

3.6 A new 4-bed two storey dwelling (Use Class C3) named 'Orchard House' is proposed on the southern border of the site.

3.7 Garden House is to be extended and converted into a 3-bed single storey dwelling (Use Class C3).

3.8 A total of 58 car parking spaces will also be provided within the site, of which 20% will have access to active electric vehicle charging provision and all others will be provided with passive provision.

3.9 Three covered and secure cycle stores will provide parking spaces for 70 bicycles.

3.10 The proposed development plan is illustrated in **Figure 3.1** below.

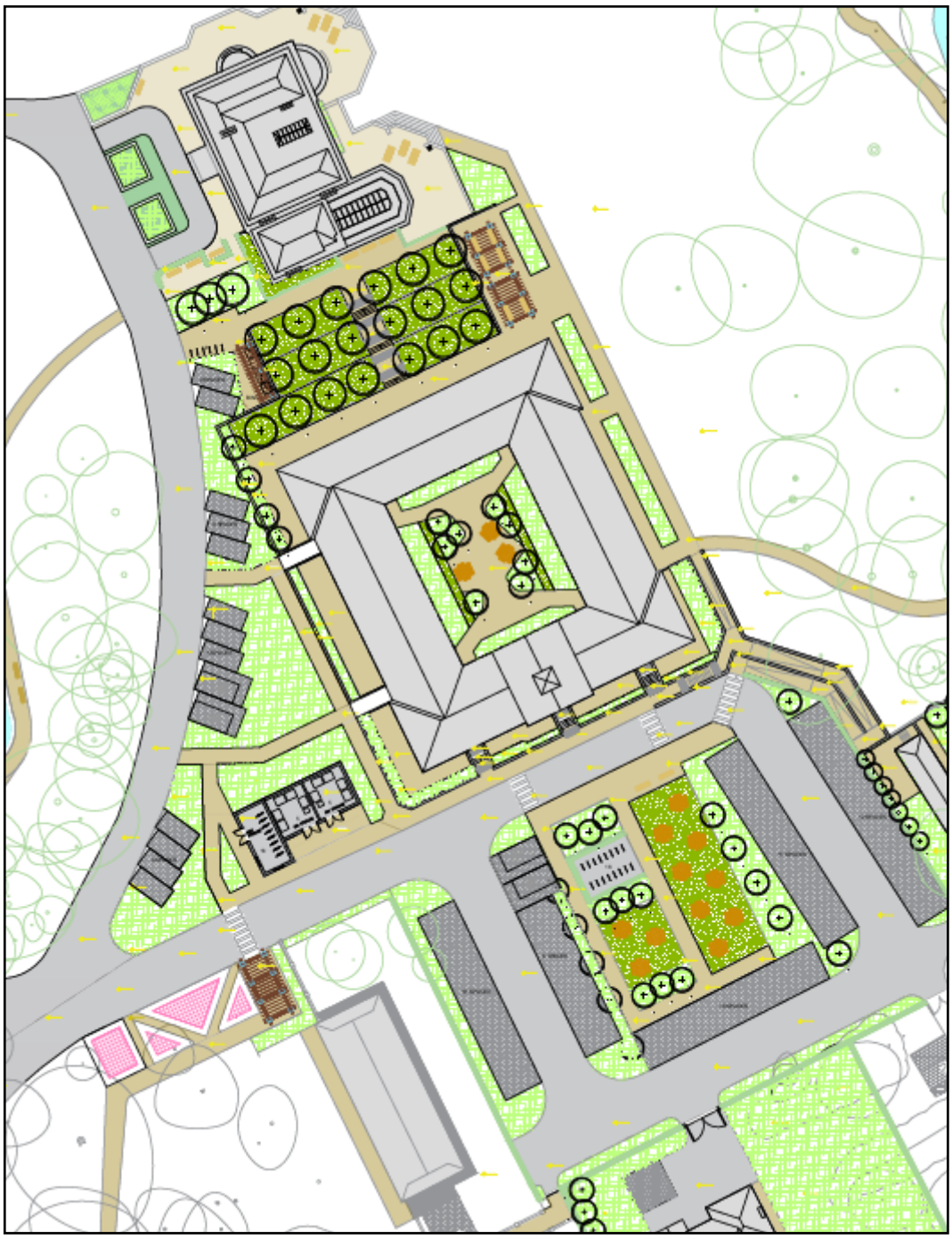

Figure 3.1: Proposed Development Plan

4 Legislation and Policy Context

4.1 This section provides a summary of all the relevant legislation and policies that are applicable to the development.

National Planning Policy

The Air Quality Strategy[1]

4.2 The Air Quality Strategy (AQS) has been prepared following obligations imposed upon the UK Government to produce standards, objectives and measures for improving ambient air quality, following The Environment Act 1995 as amended by the Environment Act 2021.

4.3 The AQS sets out a framework for Local Authorities to reduce adverse health effects from ambient air pollution and ensures that international and national commitments are met, using the Local Air Quality Management (LAQM) system.

4.4 The AQS sets standards and objectives for pollutants to protect human health, vegetation and ecosystems. The pollutant objectives are the future dates by which each standard is to be achieved, taking into account economic considerations, practical and technical feasibility.

4.5 The main air quality pollutants of concern with regards to new developments such as the one proposed at this Application Site are the traffic related pollutants of Nitrogen Dioxide (NO_2) and Particulate Matter (PM_{10} and $PM_{2.5}$).

4.6 The relevant air quality objectives, as they currently apply in the United Kingdom are presented in **Table 4.1** below.

[1] Department of Environment, Food and Rural Affairs in Partnership with the Scottish Executive, Welsh Assembly Government and Department of the Environment Northern Ireland, (2011). 'The Air Quality Strategy for England, Scotland, Wales and Northern Ireland', The Stationery Office (TSO). Norwich.

Pollutant	Air Quality Objectives		Date to be achieved by
	Objectives	Measured as	
Nitrogen Dioxide (NO_2)	200 µg/m^3	1-hour mean. Not to be exceeded more than 18 times a year	31 December 2005
	40 µg/m^3	Annual mean	
Particles (PM_{10})	50 µg/m^3	24-hour mean. Not to be exceeded more than 35 times a year	31 December 2004
	40 µg/m^3	Annual mean	
Particles – Except Scotland ($PM_{2.5}$)	20 µg/m^3	Annual mean	2020
Particles – UK Urban Areas ($PM_{2.5}$)	Target of 15% reduction in concentrations at urban background		Between 2010 and 2020

Table 4.1: Air Quality Objectives in the UK

Air Quality Standards Regulations 2010[2]

4.7 The air quality limit values set out in EU Directive (2008/50/EC, 2008) are transposed in English law by the Air Quality Standards Regulations (2010). This imposes duties on the Secretary of State relating to achieving the limit values.

4.8 With regards to dust, it is recognised that major construction works may give rise to dust emissions within the PM_{10} and $PM_{2.5}$ size fraction and it is noted within section 79 of the Environmental Protection Act 1990 that a statutory nuisance is defined as:

"…b - smoke emitted from premises so as to be prejudicial to health or a nuisance;

c - fumes or gases emitted from premises so as to be prejudicial to health or a nuisance;

d - any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance…".

National Planning Policy Framework (NPPF) 2021[3]

4.9 The NPPF was updated in July 2021 and supersedes all the previous versions. The purpose of the document is to set out the Government's policies in relation to planning for England and how these should be applied.

[2] UK Parliament, (2010). 'The Air Quality Standards Regulations 2010', SI 2010/1001. HMSO, London.
[3] Ministry of Housing, Communities and Local Government, (2021), 'National Planning Policy Framework', London.

4.10 Section 9 of the NPPF refers to promoting sustainable transport. In relation to air quality, paragraph 104 states that:

"Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:….

…c) opportunities to promote walking, cycling and public transport use are identified and pursued;

d) the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains…"

4.11 Additionally, paragraph 105 states:

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

4.12 Section 15 of the document also refers to air quality within planning. Paragraph 185 states:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development…"

4.13 Paragraph 186 adds that:

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

4.14 In relation to the planning conditions and obligations, paragraphs, 55 and 56 state the following:

"Local planning authorities should consider whether otherwise unacceptable development could be made acceptable through the use of conditions or planning

obligations. Planning obligations should only be used where it is not possible to address unacceptable impacts through a planning condition.

Planning conditions should be kept to a minimum and only imposed where they are necessary, relevant to planning and to the development to be permitted, enforceable, precise and reasonable in all other respects. Agreeing conditions early is beneficial to all parties involved in the process and can speed up decision making. Conditions that are required to be discharged before development commences should be avoided, unless there is a clear justification."

Planning Practice Guidance – Air Quality[4]

4.15 The Planning Practice Guidance (PPG) is used to support the National Planning Policy Framework and is published online. The guidance on air quality was originally published in 2014 and updated in November 2019. The PPG provides various principles on how planning can take account of the impact of new development on air quality.

4.16 The guidance refers to the specific issues that may need to be considered when assessing air quality impacts. It states:

"Considerations that may be relevant to determining a planning application include whether the development would:

- *Lead to changes (including any potential reductions) in vehicle-related emissions in the immediate vicinity of the proposed development or further afield…*
- *Introduce new point sources of air pollution…*
- *Expose people to harmful concentrations of air pollutants…*
- *Give rise to potentially unacceptable impacts (such as dust) during construction for nearby sensitive locations;*
- *Have a potential adverse effect on biodiversity…"*

4.17 Guidance on how detailed an air quality assessment need to be is provided and states:

"Assessments need to be proportionate to the nature and scale of development proposed and the potential impacts (taking into account existing air quality conditions", and because of this are likely to be locationally specific…"

4.18 Reference to how air quality can be mitigated states that:

"Mitigation option will need to be locationally specific, will depend on the proposed development and need to be proportionate to the likely impact. It is important that local planning authorities work with the applicants to consider appropriate mitigation so as to

[4] Ministry of Housing, Communities and Local Government, (2019), 'Planning Practice Guidance-Air Quality', Ministry of Housing, Communities and Local Government, London. Available on: https://www.gov.uk/guidance/air-quality--3#history

ensure new development is appropriate for its location and unacceptable risks are prevented…"

Regional Planning Policy

The London Plan 2021[5]

4.19 The London Plan 2021 is the Spatial Development Strategy for Greater London. Under the legislation establishing the Greater London Authority (GLA), the Mayor is required to publish a Spatial Development Strategy (SDS) and keep it under review.

4.20 In Chapter 1 Planning London's Future - Good Growth, GG3: Creating a Healthy city, relates to air quality and states:

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

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

4.21 Policy D1: London's form, character and capacity for growth requires:

"Boroughs should undertake area assessments to define the characteristics, qualities and value of different places within the plan area to develop an understanding of different areas' capacity for growth. Area assessments should cover the elements listed below:…

…5) air quality and noise levels…"

4.22 Policy D3: Optimising site capacity through the design-led approach refers to air quality and requires that:

"…Development proposals should:…

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

4.23 Paragraph 3.3.9 adds:

"Measures to design out exposure to poor air quality and noise from both external and internal sources, should be integral to development proposals and be considered early in the design process. Characteristics that increase pollutant or noise levels, such as poorly-located emission sources, street canyons and noise sources should also be designed out wherever possible. Optimising site layout and building design can also reduce the risk of overheating as well as minimise minimising carbon emissions by reducing energy demand."

[5] Greater London Authority (GLA), (2021), 'The London Plan', GLA, London

4.24 Chapter 9 of the documents refers to Policy SI1: Improving air quality, which states:

*"**A.** Development plans, through relevant strategic, site specific and area-based policies should seek opportunities to identify and delivery further improvements to air quality and should not reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality.*

***B.** To tackle poor air quality, protect health and meet legal obligations the following criteria should be addressed:*

1. Development proposals should not:

a) *lead to further deterioration of existing poor air quality*

b) *create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits*

c) *create unacceptable risk of high levels of exposure to poor air quality.*

2. In order to meet the requirements in Part 1, as a minimum:

a) Development proposals must be at least air quality neutral.

b) Development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality in preference to post-design or retro-fitted mitigation measures.

c) Major development proposals must be submitted with an Air Quality Assessment. Air quality assessments should show how the development will meet the requirements of B1.

d) development proposals in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people, should demonstrate that design measures have been used to minimise exposure.

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

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

2) what measures or design features will be put in place to reduce exposure to pollution, and how they will achieve this.

D. *In order to reduce the impact on air quality during the construction and demolition phase development proposals must demonstrate how they plan to comply with the Non-Road Mobile Machinery Low Emission Zone and reduce emissions from the demolition and construction of buildings following best practice guidance.*

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

4.25 Paragraph 9.1.1 adds:

"Poor air quality is a major issue for London which is failing to meet requirements under legislation. Poor air quality has direct impacts on the health, quality of life and life expectancy of Londoners. The impacts tend to be most heavily felt in some of London's most deprived neighbourhoods, and by people who are most vulnerable to the impacts such as children and older people. London's air quality should be significantly improved and exposure to poor air quality, especially for vulnerable people, should be reduced."

4.26 Paragraph 9.1.15 confirms that:

"Where the Air Quality Assessment or the air quality positive approach assumes that specific measures are put in place to improve air quality, prevent or mitigate air quality impacts, these should be secured through the use of planning conditions or s106 agreements. For instance, if ultra-low NOx boilers are assumed in the assessment, conditions should require the provision of details of the installed plant prior to the occupation of the building, or where larger plant is used for heating, post installation emissions tests should be required to ensure that the modelled emission parameters are achieved."

4.27 Under Chapter 10 – Transport, paragraph 10.4.3 refers to air quality and states:

"It is important that development proposals reduce the negative impact of development on the transport network and reduce potentially harmful public health impacts. The biggest transport-related impact of development on public health in London is the extent to which it enables physical activity from walking, cycling and using public transport. The other main impacts on public health relate to air quality…"

London Environment Strategy, May 2018[6]

4.28 Changes made by the Localism Act 2011 brought in a requirement for the original six separate environmental strategies to be brought together into a single London Environment Strategy ("the strategy") under section 351A of the Greater London Authority Act 1999. This included The Mayer's Air Quality Strategy – Cleaning the Air, 2010.

4.29 The London Environment Strategy sets out an ambitious vision for improving London's environment for the benefit of all Londoners. This strategy sets out a vision for London in 2050, that will realise the potential of London's environment to support good health and quality of life and to make the city a better place to live, work and do business. The Mayor wants London to be the world's greenest global city. This will mean making it: Greener, cleaner and ready for the future.

4.30 The London Environment Strategy sets out bold policies and proposals in seven policy areas, to make this vision a reality. The key aims for London are:

- "*for London to have the best air quality of any major world city by 2050, going beyond the legal requirements to protect human health and minimise inequalities;*
- *for London to be the world's first National Park City, where more than half of its area is green, where the natural environment is protected, and where the network of green infrastructure is managed to benefit all Londoners;*
- *for London to be a zero carbon city by 2050, with energy efficient buildings, clean transport and clean energy;*
- *to make London a zero waste city. By 2026 no biodegradable or recyclable waste will be sent to landfill, and by 2030 65 per cent of London's municipal waste will be recycled;*
- *for London and Londoners to be resilient to severe weather and longer-term climate change impacts. This will include flooding, heat risk and drought;*
- *for Londoners' quality of life to be improved by reducing the number of people adversely affected by noise and promoting more quiet and tranquil spaces; and*
- *for London to transition to a low carbon circular economy"*

4.31 Chapter 4: Air Quality has the following aim:

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

4.32 Objective 4.1 adds:

[6] Greater London Authority (GLA), (2018), 'London Environment Strategy', GLA, London

"Support and empower London and its communities, particularly the most disadvantages and those in priority locations, to reduce their exposure to poor air quality."

4.33 Policy 4.1.1 states:

"*Make sure that London and its communities, particularly the most disadvantaged and those in priority locations, are empowered to reduce their exposure to poor air quality*".

4.34 Policy 4.1.2 stated the following:

"*Improve the understanding of air quality health impacts to better target policies and action*".

4.35 Objective 4.2 adds:

"Achieve legal compliance with UK and EU Limits as soon as possible, including by mobilising action from London Boroughs, Government and other partners"

4.36 Policy 4.2.1 refers to reducing emissions and switching to more sustainable travel. It states:

"*Reduce emissions from London's road transport network by phasing out fossil fuelled vehicles, prioritising action on diesel, and enabling Londoners to switch to more sustainable forms of transport".*

4.37 Policy 4.2.2 adds:

"Reduce emissions from non-road transport sources, including by phasing out fossil fuels"

4.38 Policy 4.2.3 states:

"Reduce emissions from non-transport sources, including by phasing out fossil fuels".

4.39 Policy 4.2.4 states:

"The Mayor will work with the government, the London boroughs and other partners to accelerate the achievement of legal limits in Greater London and improve air quality"

4.40 Policy 4.3.1 and 4.3.2 refer to meeting World Health Organization (WHO) air quality guidelines, establishing new targets for pollutants and zero emission transport. They state:

"*The Mayor will establish new targets for $PM_{2.5}$ and other pollutants where needed. The Mayor will seek to meet these targets as soon as possible, working with government and other partners"*

"The Mayor will encourage the take up of ultra low and zero emission technologies to make sure London's entire transport system is zero emission by 2050 to further reduce levels of pollution and achieve WHO air quality guidelines"

4.41 Policy 4.3.3 states:

"*Phase out the use of fossil fuels to heat, cool and maintain London's buildings, homes and urban spaces, and reduce the impact of building emissions on air quality*".

4.42 Policy 4.3.4 states:

"*Work to reduce exposure to indoor air pollutants in the home, schools, workplace and other enclosed spaces"*.

Local Planning Policy

Local Plan: Part 1 - Strategic Policies (2012)[7]

4.43 This document is the key planning document for the Borough, providing details of spatial vision and strategy, strategic objectives, core policies and a monitoring implementation framework with clear objectives for achieving delivery, all provided up to 2026. The document helps shape development and determine planning application, along with part 2 of the Local Plan.

4.44 Policy E1: Managing the Supply of Employment Land states:

"The Council Will accommodate growth by protecting Strategic Industrial Locations and the designation of Locally Significant Industrial Sites (LSIS) and Locally Significant Employment Locations (LSEL) including the designation of 13.63 hectares of new employment land."

4.45 Policy E2: Location of Employment Growth additionally states:

"The Council will promote development in highly accessible locations that delivers sustainable travel patterns and contributes to the improvement of existing networks to reduce emissions and impacts on air quality. The Council will accommodate a minimum of 3,800 additional hotel bedrooms, and new hotels and visitor facilities will be encouraged in Uxbridge, Hayes, on sites outside of designated employment land on the Heathrow perimeter and in other sustainable locations."

4.46 Policy BE1: Built Environment adds:

"The Council will require all new development to improve and maintain the quality of the build environment in order to create successful and sustainable neighbourhoods, where

[7] London Borough of Hillingdon, (2012), 'Local Plan: Part 1 - Strategic Policies', London.

people enjoy living and working and that serve the long-term needs of all residents. All new developments should:

…10. Maximise the opportunities for all new homes to contribute to tackling and adapting to climate change and reducing emissions of local air quality pollutants. The Council will require all new development to achieve reductions in carbon dioxide emission in line with the London Plan targets through energy efficient design and effective use of low and zero carbon technologies…"

4.47 Policy EM1: Climate Change Adaptation and Mitigation

"The Council will ensure that climate change mitigation is addressed at every stage of the development process by:…

…5. Promoting the use of decentralised energy within large scale development whilst improving local air quality levels.

6. Targeting areas with high carbon emissions for additional reductions through low carbon strategies. These strategies will also have an objective to minimise other pollutants that impact on local air quality. Targeting areas of poor air quality for additional emissions reductions…"

4.48 Policy EM8: Land, Water, Air and Noise provides detail into how developments should not adversely impact local air quality, stating that:

"All development should not cause deterioration in the local air quality levels and should ensure the protection of both existing and new sensitive receptors.

All major development within the Air Quality Management Area (AQMA) should demonstrate air quality neutrality (no worsening of impacts) where appropriate; actively contribute to the promotion of sustainable transport measures such as vehicle charging points and the increased provision for vehicles with cleaner transport fuels; deliver increased planting through soft landscaping and living walls and roofs; and provide a management plan for ensuring air quality impacts can be kept to a minimum.

The Council seeks to reduce the levels of pollutants referred to in the Government's National Air Quality Strategy and will have regard to the Mayor's Air Quality Strategy. London Boroughs should also take account of the findings of the Air Quality Review and Assessments and Actions plans, in particular where Air Quality Management Areas have been designated.

The Council has a network of Air Quality Monitoring stations but recognises that this can be widened to improve understanding of air quality impacts. The Council may therefore

require new major development in an AQMA to fund additional air quality monitoring stations to assist in managing air quality improvements."

4.49 Policy T4: Heathrow Airport states:

"Recognising the economic importance of the airport to the borough this Hillingdon Local Plan: Part 1 – Strategic Policies will support the sustainable operation of Heathrow within its present boundaries and growth in the Heathrow Opportunity Area by facilitating improvements to public transport and cycle links, enhancing the public transport interchange to provide the opportunity for a modal shift from the use of private cars and from short haul air to sustainable transport modes and providing transport infrastructure to accommodate economic and housing growth whilst improving environmental conditions, for example noise and local air quality for local communities."

Local Plan: Part 2 – Development Management Policies (2020)[8]

4.50 The Local Plan Part 2 Development Management Policies and Site Allocations and Designations were adopted as part of the borough's development plan in 2020, this replaces the Local Plan Part 2 Saved UDP Policies (2012).

4.51 Section 6 focuses on Environmental Protection and Enhancement, in which policy DMEI 1: Living Walls and Roofs and Onsite Vegetation states:

"All Development Proposals are required to comply with the following:

…ii) Major development in Air Quality Management Areas must provide onsite provision of living roofs and/or walls. A suitable offsite contribution may be required where onsite provision is not appropriate."

4.52 Policy DMEI 3: Decentralised Energy adds provides insight into Decentralised Energy Networks (DENs), stating that:

"… D) The Council will support the development of DENs and energy centres in principle, subject to meeting the wider policy requirements of this plan and in particular on design and air quality."

4.53 Policy DMEI 14 Air Quality states the following:

"A) Development proposals should demonstrate appropriate reductions in emissions to sustain compliance with and contribute towards meeting EU limit values and national air quality objectives for pollutants.

B) Development proposals should, as a minimum:

[8] London Borough of Hillingdon, (2020), 'Local Plan: Part 2 – Development Management Policies', London.

i) be at least "air quality neutral";

ii) include sufficient mitigation to ensure there is no unacceptable risk from air pollution to sensitive receptors, both existing and new; and

iii) actively contribute towards the improvement of air quality, especially within the Air Quality Management Area."

4.54 Policy DMIN 1A: Assessing Proposals for New Minerals Development states:

"Proposals for minerals development will be permitted subject to it being demonstrated that the development would not have an unacceptable impact, including cumulative impact, with other developments upon:

i) Local amenity (including demonstrating that the impacts of noise levels, air quality and dust emissions, light pollution and vibration are acceptable);…"

4.55 Policy DMT 1: Managing Transport Impacts states that:

"A) Development proposals will be required to meet the transport needs of the development and address its transport impacts in a sustainable manner. In order for developments to be acceptable they are required to:…

…v) have no significant adverse transport or associated air quality and noise impacts on the local and wider environment, particularly on the strategic road network…"

4.56 Policy DMT 2 Highways Impacts states:

"Development proposals must ensure that:…

ii) they do not contribute to the deterioration of air quality, noise or local amenity or safety of all road users and residents;…"

4.57 Policy DMAV 2: Heathrow Airport also states:

"A) Development proposals within the Heathrow Airport boundary will only be supported where:…

…iii) they comply with Policy DMEI 14: Air Quality;

iv) there are no other significant adverse environmental impacts; where relevant, an environmental impact and/or transport assessment will be required with appropriate identification of mitigation measures; and

v) they comply with all other relevant policies of the Local Plan."

4.1 This air quality assessment has taken into consideration all the above policies and guidelines.

5 Assessment Methodology and Criteria

5.1 This section outlines the assessment methodology and the criteria that have been used to assess the significance of risk associated with the proposed development.

5.2 **Table 5.1** below summarises the key information sources and guidance documents used in this assessment.

Source	Details
Department for Environment, Food and Rural Affairs (Defra)	**COVID-19 Supplementary Guidance - Local Air Quality Reporting in 2021**[9] Prepared in order to inform local authorities in England of the key changes and points of reference with respect to LAQM duties, as described in Part IV of the Environment Act 1995, for the 2021 reporting year.
	The Local Air Quality Management (LAQM)Tools.[10] Contain information pertaining to monitoring networks across the UK and provides tools, which aid in the data processing and the estimation of pollutant concentrations with reference to the specific year of study.
	LAQM Background Maps (2018 Reference Year)[11] These provide mapped estimates of background concentrations for specific pollutants (NO_x, NO_2, PM_{10} and $PM_{2.5}$) using a 1x1 km grid. The maps also provide information on how pollutant concentrations change over time or across a wide area, while allowing for the assessment of new pollutant sources that are introduced into an area and the impact they may have upon local air quality.
	The Emissions Factors Toolkit (EFT) – version11.0[12] The EFT allows users to calculate road vehicle pollutant emission rates for NOx, PM_{10}, $PM_{2.5}$ and CO_2 for a specified year, road type, vehicle speed and vehicle fleet composition.
Environmental Protection UK (EPUK) & Institute of Air Quality Management (IAQM)	**Land-Use Planning & Development Control: Planning for Air Quality (2017)**[13] This document provides advice and guidance to ensure that air quality is adequately considered in the land-use planning and development control processes. This is particularly applicable to assessing the effect of changes in exposure of members of the public resulting from residential and mixed-use developments, especially those within urban areas where air quality is poorer.

[9] Greater London Authority (GLA). (2021). 'Local Air Quality Management Reporting in 2021 COVID-19 Supplementary Guidance'. GLA, London

[10] https://laqm.defra.gov.uk/air-quality/air-quality-assessment/list-of-available-tools/

[11] Department of Environment, Food and Rural Affairs (DEFRA). (2018), 'Background Mapping data for local authorities – 2018', DEFRA, London. https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018

[12] https://laqm.defra.gov.uk/air-quality/air-quality-assessment/emissions-factors-toolkit/

[13] Environmental Protection UK & Institute of Air Quality Management (EPUK & IAQM) (2017) Land-Use Planning & Development Control: Planning for Air Quality, EPUK & IAQM, London

Source	Details
	Guidance on the assessment of dust from demolition and construction (2014 v.1.1)[14] The document provides guidance on how to undertake a construction impact assessment (including demolition and earthworks). The emphasis in the document is on providing the means for classifying the risk of dust impacts from a construction site, which then allows appropriate mitigation measures to be identified.
The National Atmospheric Emissions Inventory (NAEI)	**The UK NAEI**[15] estimates annual pollutant emissions from 1970 to the most current publication year for the majority of pollutants. The NAEI is compiled on an annual cycle, each year the latest set of data are added to the inventory and the full time series is updated to take account of improved data and any advances in the methodology used to estimate the emissions.
London Atmospheric Emissions Inventory (LAEI)	**The LAEI**[16] provides emissions estimates for key pollutants and the vehicle fleet composition for the base year (2019) only. These emissions have been used to estimate ground level concentrations of key pollutants NOx, NO_2, PM_{10} and $PM_{2.5}$ across Greater London for year 2019, using an atmospheric dispersion model. Air pollutant concentration maps and associated datasets. The area covered by the LAEI includes Greater London (the 32 London boroughs and the City of London), as well as areas outside Greater London up to the M25 motorway.
Greater London Authority (GLA)	**London Local Air Quality Management (LLAQM)- Technical Guidance 2019 (LLAQM.TG (19))**[17] This technical guidance has been prepared by the Greater London Authority (GLA) to support London boroughs in carrying out their duties under the Environment Act 1995 and connected regulations. It applies only to London's 32 boroughs (and the City of London).
	GLA's The Control of Dust and Emissions During Construction and Demolition - Supplementary Planning Guidance[18] This SPG provides guidance on the then adopted London Plan (2016) policy 7.14, as well as a range of other policies that deal with environmental sustainability, health and quality of life.
	Non-Road Mobile Machinery (NRMM) – 'Low Emissions Zone (LEZ)' [19] The NRMM Low Emission Zone uses the Mayor and London Borough's planning powers to control emissions from NRMM used on construction sites. NRMM regulations apply to all major developments, within London and requires that all engines with a power rating between 37 kW and 560 kW meet an emission standard based on the engine emission "stage".

[14] IAQM, (2014). 'Guidance on the assessment of dust from demolition and construction', IAQM, London.

[15] National Atmospheric Emissions Inventory (NAEI). Available from: https://naei.beis.gov.uk/

[16] London Atmospheric Emissions Inventory (2019) Available from: https://data.london.gov.uk/dataset/london-atmospheric-emissions-inventory--laei--2019

[17] Greater London Authority (GLA), (2019), 'London Local Air Quality Management (LLAQM) Technical Guidance 2019 (LLAQM.TG (19))', GLA, London.

[18] Mayor of London (2014). 'The Control of Dust and Emissions During Construction and Demolition-Supplementary Planning Guidance (SPG)'. Greater London Authority (GLA). London.

[19] Available here: Non-Road Mobile Machinery (NRMM) | London City Hall

Source	Details
	Non-Road Mobile Machinery (NRMM) – Practical Guide v.5.[20] This document provides guidance on the London NRMM Low Emission Zone (LEZ), including the processes and procedures that must be in place on all development sites to comply with the policy. It also signposts future changes to the policy.
	London Plan Guidance - Air Quality Neutral Planning Support Update: GLA 80371(2014) [21]**.** This report has been commissioned by the GLA to provide support to the development of the Mayor's London Plan 2021 Policy SI 1 Improving Air Quality to ensure that "development proposals must be at least Air Quality Neutral". It provides guidance on the application of the "air quality neutral" policy, methodology and calculations to complete either a simple or full procedure for an Air Quality Neutral Assessment. If a development is not Air Quality Neutral this document also provides guidance on mitigation measures and offsetting payments methodologies, where required.
	Air Quality Neutral: Update to Benchmarks (2020)[22] This report provides an update to the Air Quality Neutral benchmarks in light of the most up-to-date evidence and provides further clarification on how to apply the benchmarks to support planning applications.
London Councils	**Air Quality and Planning Guidance**[23]**.** This guidance is aimed at local authorities, developers and their consultants, and provides technical advice on how to deal with planning applications that could have an impact on air quality.
Local/Neighbouring Authorities	**London Borough of Hillingdon Council ASR Report**[24] This Annual Status Report (ASR) highlights the status of the air quality within the Borough, discussing AQMAs, the monitoring strategy and concentrations of pollutants in the air.
	Three Rivers District Council[25] This Annual Status Report (ASR) highlights the status of the air quality within the District, discussing AQMAs, the monitoring strategy and concentrations of pollutants in the air. This ASR has been used due to the location of monitoring locations close to the proposed development site.

Table 5.1: Key Information Sources

[20] Cleaner Construction For London, supported by Mayor of London (2022). Non-Road Mobile Machinery (NRMM) Practical Guide v.5. London

[21] Air Quality Consultants (AQC) & ENVIRON UK Ltd, (2014). 'Air Quality Neutral Planning Support Update: GLA80371'. AQC. Bristol

[22] Air Quality Consultants (AQC) & ENVIRON UK Ltd, (2020). 'Air Quality Neutral: Update to Benchmarks. AQC. Bristol

[23] London Councils. (2007), Air Quality and Planning Guidance, The London Air Pollution Planning and the Local Environment (APPLE) working group, London

[24] London Borough of Hillingdon, (2021), Air Quality Annual Status Report, 2020', LBH.

[25] Three Rivers District Council, (2021), '2021 Air Quality Annual Status Report (ASR)', TRDC.

Scope of Air Quality Assessment

5.3 This Air Quality Assessment considers the suitability of the site for the proposed development and assesses whether any significant air quality impacts are anticipated as a result of the construction and/or the operation of the proposed development.

5.4 A staged assessment approach has been adopted. This ensures that the approach taken for the assessment of risk is proportional to the risk of an unacceptable impact being caused. Where a simple review of the likely impacts associated with the proposed development clearly demonstrates that the risk of a health/annoyance impact is negligible, this will be sufficient to conclude that no further or detailed assessment is necessary.

5.5 In cases where the risk involved cannot be regarded as negligible, a more detailed and quantitative assessment will be undertaken.

5.6 The specific methodology and impact criteria used in this assessment is detailed below.

Construction Dust Impacts

5.7 The Institute of Air Quality Management (IAQM) published the 'Guidance on the assessment of dust from demolition and construction' in February 2014 which provides guidance on how to assess and mitigate the impacts of dust emissions from demolition and construction sites. This document was updated in June 2016 (Version 1.1) and supersedes the 2012 IAQM guidance on the assessment of the impacts of construction on air quality and the determination of their significance. This approach is broadly replicated within the Greater London Authority (GLA) construction dust document (2014) and provides detail for a clear and concise construction dust assessment.

5.8 The potential impacts associated with construction activities will be assessed in accordance with the IAQM Guidance. IAQM Guidance provides a five-step assessment procedure to assess the potential impacts of construction dust pre-mitigation, provide mitigation measures specific to the risk and assess the post-mitigation impacts.

5.9 It recommends that the assessment procedure follows the following framework:

- Screen the requirement for a more detailed assessment;
- Assess the risk of dust impacts of the four phases of construction (demolition, earthworks, construction and trackout), taking into account:
    - the scale and nature of the works, which determines the potential Dust Emission Magnitude; and
    - the sensitivity of the area.
- Determine the site-specific mitigation for the potential activities;

- Examine the residual effects and determine whether or not these are significant; and
- Prepare the Construction Dust Assessment.

5.10 In the process of screening the need for a detailed assessment, the following criteria is used:

"An assessment will normally be required where there is:

- *a 'human receptor' within:*
  - *350m of the boundary of the site; or*
  - *50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).*
- *an 'ecological receptor' within:*
  - *50m of the boundary of the site; or*
  - *50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s)."*

5.11 When defining the sensitivity of an area/receptor, the factors within **Table 5.2** below are used.

Area Sensitivity	Human Receptors	Ecolgoical Receptors
High	People would be present continuously, 10-100 dwellings within 20m of the site, exposed over a time period relevant to the air quality objective for PM_{10}, very sensitive receptors (e.g. residential properties, hospitals, schools, care homes).	International or national designation, locations where there is a community of a particularly dust sensitive species (e.g. Special Area of Conservation SAC).
Medium	People would not be expected to be present here continously for extended periods, locations where people exposed are workers and exposure is over a time period relevant to the air quality objective for PM_{10}, 1-10 dwellings within 20m of the site, medium sensitive receptors (e.g. parks, place of work- office and shop workers).	Locations where there is particularly important plant species, national designation where the features may be affected by dust deposition (e.g. Sites of Special Scientific Interest SSSI).
Low	People would be expeceted to be present only for limited periods, human exposure is transient. 1 dwelling within 20m of site. Annual mean concentrations well below the national objectives (<28µg/m^3). Low sensitivity receptors (e.g. public footpaths, playing fields, shopping streets).	Locations with a local designation where the features may be affected by dust deposition (e.g. Local Nature Reserve).

Table 5.2: IAQM Factors for Defining the Sensitivity of an Area/Receptor

Building Emissions

5.12 Any emissions associated with the proposed energy strategy have been assessed in line with the recommendations provided by the consultants at Stroma Built Environment.

Transport Emissions

5.13 The EPUK & IAQM Guidance – 'Planning For Air Quality' has been used to assess potential traffic impacts associated with the development.

5.14 **Table 5.3** below provides the criteria used for screening the need for an Air Quality Assessment.

The Development will:	Indicative Criteria to Proceed to an Air Quality Assessment
Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans <3.5t gross vehicle weight).	A change of LDV flows of: - more than 100 AADT within or adjacent to an 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.
Realign roads, i.e. changing the proximity of receptors to traffic lanes	Where the change is 5m or more and the road is within an AQMA
Introduce a new junction or remove an existing junction near to relevant receptors	Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic lights, or roundabouts.
Introduce or change a bus station	Where bus flows will change by: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere
Have an underground car park with extraction system	The ventilation extract for the car park will be within 20m of a relevant receptor. Coupled with the car park having more than 100 movements per day (total in and out)
Note – Where distances from the road are presented, they are from the edge of the nearest carriageway to the nearest relevant receptor, taking account of vertical and horizontal dimensions. Where traffic flows are presented they are Annual Average Daily Traffic (AADT) in vehicles per day (vpd). Where HDV flows are specified, they include lorries and buses. Where LDV's are specified they include cars and vans (with a gross vehicle weight ≤ 3.5 tonnes).	

Table 5.3: Indicative Criteria for Requiring an Air Quality Assessment

5.15 If any of the above criteria in **Table 5.3** are met, then the significance of air pollution impacts must be assessed. This may either be a Simple or a Detailed Assessment. In accordance with the EPUK & IAQM Guidance, a Simple Assessment is one relying on already published information and without quantification of impacts, in contrast to a Detailed Assessment that must be completed with the aid of a dispersion model.

Air Quality Neutral Assessment[26]

5.16 In February 2023 the Greater London Authority published the 'London Plan Guidance Air Quality Neutral' document which describes the method of calculating the NOx and/or PM_{10} emissions from the building and transport elements of the proposed development. These emissions are then compared to Building Emission Benchmarks (BEBs) and/or Transport Emission Benchmarks (TEBs).

5.17 London's air quality problems are primarily a result of a very large number of sources each contributing a small amount. In light of these issues, both the London Plan 2021 and the 2018 London Environment Strategy make reference to new developments being "air quality neutral".

5.18 The new London Plan (2021) Policy SI 1 Improving Air Quality states that;

"…2) In order to meet the requirements in Part 1, as a minimum:
a) development proposals must be at least Air Quality Neutral… ".

5.19 An Air Quality Neutral Assessment, is required to be incorporated into the Air Quality Assessment, to calculate the building and transport emissions associated with the proposed development and compare these values to the relevant benchmarks.

5.20 There is also a Simplified Procedure for BEB's and TEB's of minor developments. A minor development includes;

- *"dwellings, where the number of dwellings to be constructed is between one and nine inclusive;*
- *a site area of less than 0.5 hectares for the construction of dwellings where the number of dwellings to be constructed is not given in the application;*
- *a development where the floor space to be built is less than 1,000 m^2 floor area or where the site area is less than one hectare (non-dwellings)".*

5.21 If the above criteria is not met then a Full Procedure is required. Developments that are shown to not meet the emission benchmarks for buildings or transport (considered

[26] Greater London Authority (GLA). (2023). London Plan Guidance Air Quality Neutral. GLA. London

separately), then further review and discussions might be required in order to consider suitable mitigation and/or the off-setting measures. *Air Quality Positive Statement*[27]

5.22 In February 2023 the Greater London Authority published the 'London Plan Guidance Air Quality Positive' document which outlines the criteria and methodology to undertake an Air Quality Positive Statement.

5.23 This guidance document states;

"Air Quality Positive should be applied to masterplans and development briefs for large-scale development proposals subject to an EIA. In this context, 'largescale development' refers to planning applications that are referable to the Mayor under the following categories of The Town and Country Planning (Mayor of London) Order 2008 detailed in Appendix 1:

- Category 1A
- Category 1B
- Category 2C(1)(a)-(f)
- Category 2C(2)
- Category 2C(3)
- Category 2D

An AQP Statement should be submitted as part of the EIA and updated as appropriate for reserved matters applications, outlining the Air Quality Positive approach taken. Where the proposal meets the above criteria for a large-scale development subject to an EIA, but does not have a masterplan or development brief, Air Quality Positive should still be applied."

5.24 **Table 5.4** below provides the criteria used for screening the need for an Air Quality Positive Statement.

[27] Greater London Authority (GLA). (2023). London Plan Guidance Air Quality Positive. GLA. London

Category	Description
Category 1A	Development which comprises or includes the provision of more than 150 houses, flats, or houses and flats.
Category 1B	Development (other than development which only comprises the provision of houses, flats, or houses and flats) which comprises or includes the erection of a building or buildings: (a) in the City of London and with a total floorspace of more than 100,000 m^2 (b) in Central London4 (other than the City of London) and with a total floorspace of more than 20,000 square metres; or outside Central London and with a total floorspace of more than 15,000 m^2 .
Category 2C: Paragraph 1, parts (a) to (f)	Development to provide: (a) an aircraft runway (b) a heliport (including a floating heliport or a helipad on a building) (c) an air passenger terminal at an airport (d) a railway station or a tram station (e) a tramway, an underground, surface or elevated railway, or a cable car (f) a bus or coach station.
Category 2C: Paragraph 2	Development to alter an air passenger terminal to increase its capacity by more than 500,000 passengers per year.
Category 2C: Paragraph 3	Development for a use which includes the keeping or storage of buses or coaches where: (a) it is proposed to store 70 or more buses or coaches or buses and coaches; or (b) the part of the development that is to be used for keeping or storing buses or coaches or buses and coaches occupies more than 0.7 hectares.
Category 2D	Waste development which does not accord with one or more provisions of the development plan in force in the area in which the application site is situated and which falls into one or more of these sub-categories: (a) it occupies more than 0.5 hectares; (b) it is development to provide an installation with a capacity for a throughput of more than: (i) 2,000 tonnes per annum of hazardous waste; or (ii) 20,000 tonnes per annum of waste.

Table 5.4: Criteria for Requiring an Air Quality Positive Statement. Applicable Categories of The Town and Country Planning (Mayor of London) Order 2008

5.25 Additionally, the London Plan Policy (S1(C)) states the following:

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

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

2) what measures or design features will be put in place to reduce exposure to pollution, and how they will achieve this".

Impact Criteria

5.26 In the event that the initial screening indicates that there is a potential risk of impact, guidance is provided also by EPUK & IAQM on how to determine the magnitude and the significance of any changes in air pollutant concentrations and/or exposure as a result of a proposed development.

5.27 This process takes the following into account:

- the magnitude of the change (% change of annual mean concentration);
- the concentration relative to the Air Quality Strategy (AQS) objective (above or below the objective); and
- the direction of change (adverse or beneficial).

5.28 The magnitude of an impact should be described by using the criteria set out in **Table 5.5** below. The criteria are based upon the change in pollutant concentration resulting from the proposed development as a percentage of the Air Quality Action Level (AQAL) which in this case is NO_2 and PM_{10} annual mean objective levels of 40 µg/m^3.

Change Magnitude	NO_2/PM_{10} Annual Mean	No Days PM_{10} >40 µg/m^3
Large	Increase/decrease >10% (>4 µg/m^3)	Increase/decrease >4 days
Medium	Increase/decrease 6-10% (2.4-4 µg/m^3)	Increase/decrease 2-4 days
Small	Increase/decrease 2-5% (0.8-2 µg/m^3)	Increase/decrease 1-2 days
Imperceptible	Increase/decrease <1% (<0.4 µg/m^3)	Increase/decrease <1 day

Table 5.5: Impact Magnitude for Changes in NO_2 and PM_{10} Concentrations

5.29 The significance of the impact will be dependent upon the magnitude of change in relation to the relevant AQAL. This is set out in **Table 5.6** below.

Long term average Concentration at receptor in assessment year.	% Change in concentration relative to Air Quality Action Level (AQAL)*			
	1	2-5	6-10	>10
75% of less of AQAL (<30 µg/m^3)	Negligible	Negligible	Slight	Moderate
76 – 94% of AQAL (30-38 µg/m^3)	Negligible	Slight	Moderate	Moderate
95 – 102% of AQAL (38-41 µg/m^3)	Slight	Moderate	Moderate	Substantial
103 – 109% of AQAL (41 - 44 µg/m^3)	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL (>44 µg/m^3)	Moderate	Substantial	Substantial	Substantial

*Air Quality Action Level – in this case the objective levels.

Table 5.6: Impact Descriptors for Individual Receptors

5.30 Therefore, once the magnitude and the significance of the change has been established, the impact at each relevant receptor can be described. The impact magnitude at each receptor location can be described using the changes stated above as being of Imperceptible, Small, Medium or Large magnitude, or Negligible, Slight Moderate or Substantial significance and also as being either Temporary or Permanent.

5.31 The overall significance should be described separately for both the impact of emissions related to the proposed development on existing receptors, and for the impacts of emissions from existing source(s) on new exposure being introduced from the proposed development. This is discussed below.

Exposure Criteria

5.32 The London Councils Air Quality and Planning Guidance takes into account the now superseded Planning Policy Statement 23: Planning and Pollution Control and is aimed at developers, their consultants and local authorities in order to ensure consistency in the approach to dealing with Air Quality and planning in London.

5.33 When determining both the significance of exposure to air pollution and the levels of mitigation required, consideration should be given to the Air Pollution Exposure Criteria (APEC). The APEC criteria is set out in **Table 5.7** below.

	Applicable Range Nitrogen Dioxide Annual Mean	Applicable Range PM_{10}	Recommendation
APEC – A	> 5% below national objective	**Annual Mean:** > 5% below national objective **24 hr:** > 1-day less than national objective	No air quality grounds for refusal; however, mitigation of any emissions should be considered.
APEC – B	Between 5% below or above national objective	**Annual Mean:** Between 5% above or below national objective **24 hr:** Between 1-day above or below national objective.	May not be sufficient air quality grounds for refusal, however appropriate mitigation must be considered e.g., Maximise distance from pollutant source, proven ventilation systems, parking considerations, winter gardens, internal layout considered, and internal pollutant emissions minimised.
APEC – C	> 5% above national objective	**Annual Mean:** > 5% above national objective **24 hr:** > 1-day more than national objective.	Refusal on air quality grounds should be anticipated, unless the Local Authority has a specific policy enabling such land use and ensure best endeavours to reduce exposure are incorporated. Worker exposure in commercial/industrial land uses should be considered further. Mitigation measures must be presented with air quality assessment, detailing anticipated outcomes of mitigation measures.

Table 5.7: Air Pollution Exposure Criteria

5.34 It should be noted that air quality is not well suited to the rigid application of a generic significance matrix to determine the overall significance of a development and individual receptor sensitivity should also be taken into account. Therefore, professional judgement should be employed throughout, and the assessment should take into account any site-specific considerations.

5.35 Both the impact and exposure criteria will be applied to the findings of this assessment, where required.

6 Baseline Site Conditions

Local Air Quality Management

6.1 The Site falls within the jurisdiction of the London Borough of Hillingdon (LBH) and close to the neighbouring district; Three Rivers District Council (TRDC),

6.2 Under the Air Quality Strategy, there is a duty on all Local Authorities to consider the air quality within their boundaries and prepare an annual update report.

6.3 A review of the Air Quality Assessments undertaken by LBH has indicated that the Borough has declared one Air Quality Management Area (AQMA). Defra define the AQMA as being "*the area from the southern boundary north to the border defined by, the A40 corridor from the western borough boundary, east to the intersection with the Yeading Brook north until its intersection with the Chiltern-Marylebone railway line".* The AQMA was declared in 2003 as a result of exceedances of the annual mean objective for Nitrogen Dioxide (NO_2).

6.4 The proposed development site does not lie within the LBH AQMA.

6.5 There are two ecological sites within the Borough that are located in proximity to the site. These being: Pearson's Wood, an ancient woodland situated approximately 50m from the site boundary towards the East. Along with Old Park Wood, a registered Site of Special Scientific Interest (SSSI) and ancient woodland, located roughly 550m from the site boundary towards the West of the site.

6.6 The closest ecological sites in relation the proposed development is provided in **Figure 6.1** below.

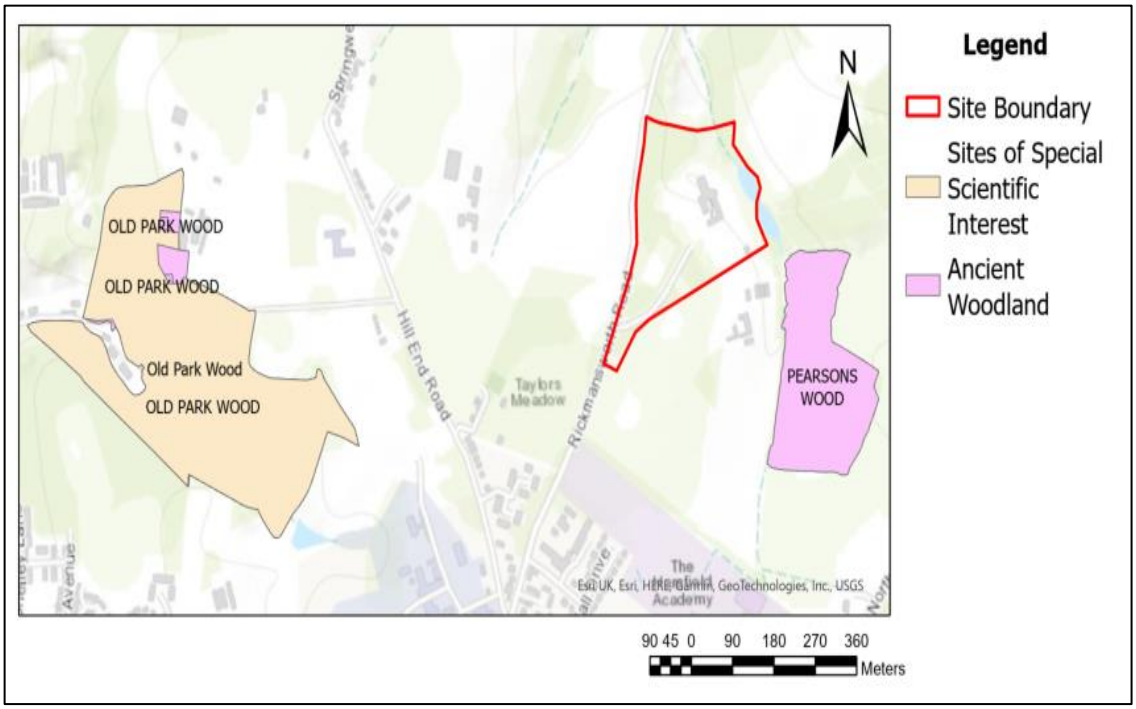

Figure 6.1: Site Location in Relation to the Closest Ecological Sites

Background

6.7 The Defra mapping tool (reference year 2018) has been used to establish the pollutant background concentrations. Due to the site's location, four 1x1km grid squares have been used to determine an average pollutant concentration for the site. These being: X:505500, Y:191500, X:50500, Y:192500, X:506500, Y:192500, X:506500, Y:191500.

6.8 The NOx, NO_2, PM_{10} and $PM_{2.5}$ annual mean background concentrations for 2019 are provided in **Table 6.1** below.

Pollutant	2019 (µg/m^3)
NOx	17.1
NO_2	12.7
PM_{10}	14.2
$PM_{2.5}$	9.7

Table 6.1: Defra Annual Mean Background Concentrations for 2019.

Local Monitoring

6.9 In May 2022, LBH published their latest Air Quality Annual Status Report (ASR) which provides monitoring data for recent years, whilst the neighbouring Three Rivers District Council (TRDC), also used in this assessment, published their ASR in June 2022.

6.10 Monitored results from 2020 and 2021 are likely to have been impacted by the COVID-19 pandemic and are likely to be less representative of the 'true' baseline concentrations. Therefore, in line In line with the Covid-19 Supplementary Guidance produced by the GLA in 2021, the use of 2019 data, as a reference year, is encouraged.

Automatic Monitoring

6.11 LBH currently operates various automatic monitoring stations within the Borough, which monitor for NO_2, PM_{10} and $PM_{2.5}$. However, TRDC does not currently undertake any automatic monitoring.

6.12 The closest automatic monitoring locations in relation to the proposed development site are illustrated in **Figure 6.2**.

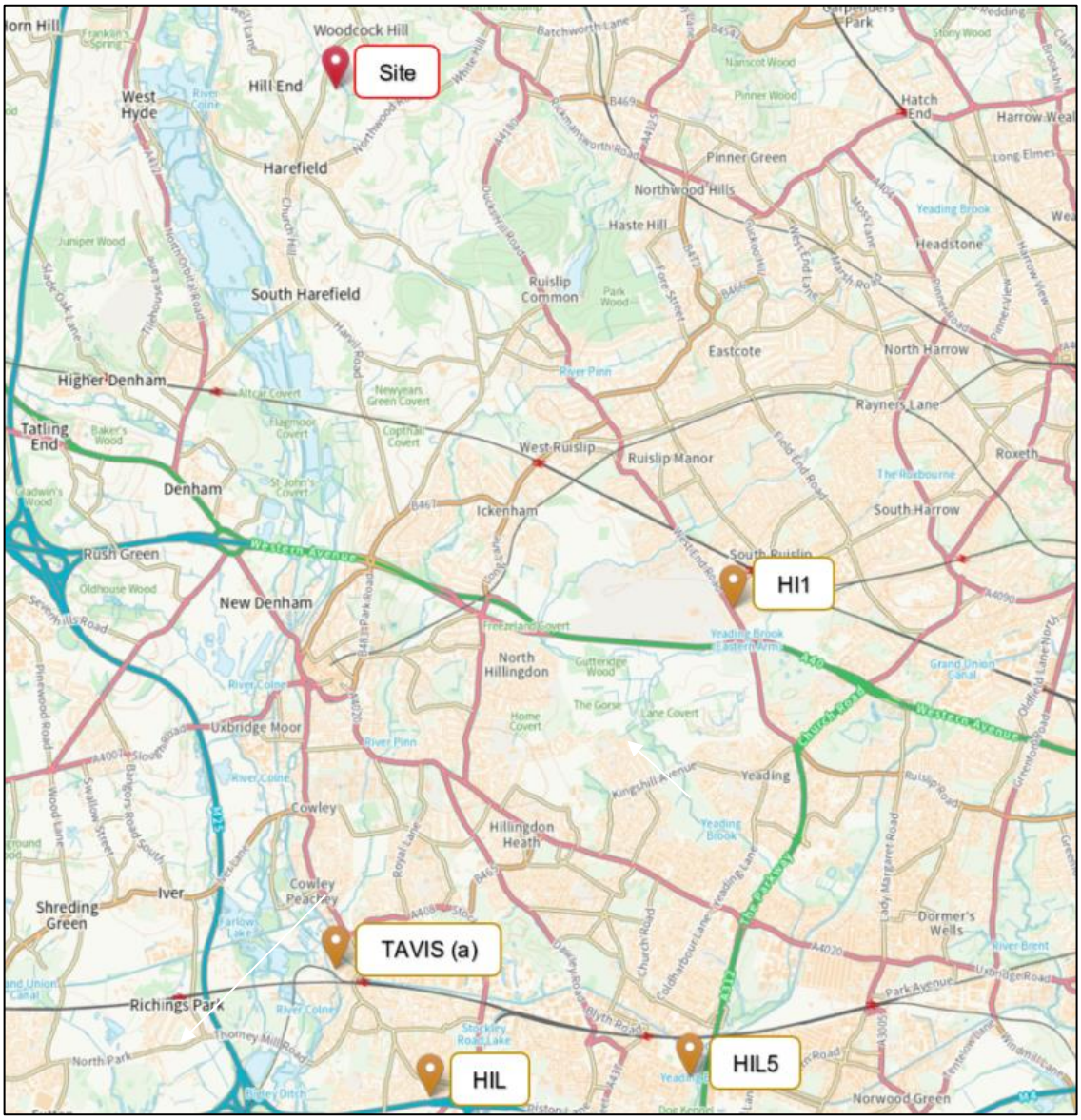

Figure 6.2: Site Location in Relation to the Closest Automatic Monitoring Locations

6.13 TAVIS (a) was only commissioned in 2021 and subsequently has no annual mean concentrations for 2019.

6.14 The latest results for the closest automatic monitoring locations are provided within **Table 6.2** below.

ID	Site Name	Co - ordinates (X;Y)	Site Type	Pollutant	Annual Mean Concentrations (µg/m^3)			
					2018	2019	2020	2021
HIL	London Hillingdon	506951; 178605	Urban Background	NO_2	**46**	**45**	28	25
				PM_{10}	-	-	-	-
				$PM_{2.5}$	-	-	-	-
HIL5	Hillingdon Hayes	510303; 178882	Roadside	NO_2	**43**	**41**	31	34
				PM_{10}	30	28	25	26
				$PM_{2.5}$	-	-	-	-
HI1	Hillingdon 1 – South Ruislip	510857; 184917	Roadside	NO_2	36	34	25	27
				PM_{10}	17	17	18	17
				$PM_{2.5}$	-	-	-	-
TAVIS (a)	69 Tavistock Rd	505739; 180258	Roadside	NO_2	-	-	-	24
				PM_{10}	-	-	-	-
				$PM_{2.5}$	-	-	-	12

Table 6.2: Latest Annual Mean Concentrations for the Automatic Monitoring Locations

Non-Automatic Monitoring

6.15 Additionally, LBH and TRDC have also undertaken non-automatic monitoring of NO_2, using diffusion tubes, at various locations.

6.16 The site location in relation to the closest non-automatic monitoring locations is illustrated in **Figure 6.3** below.

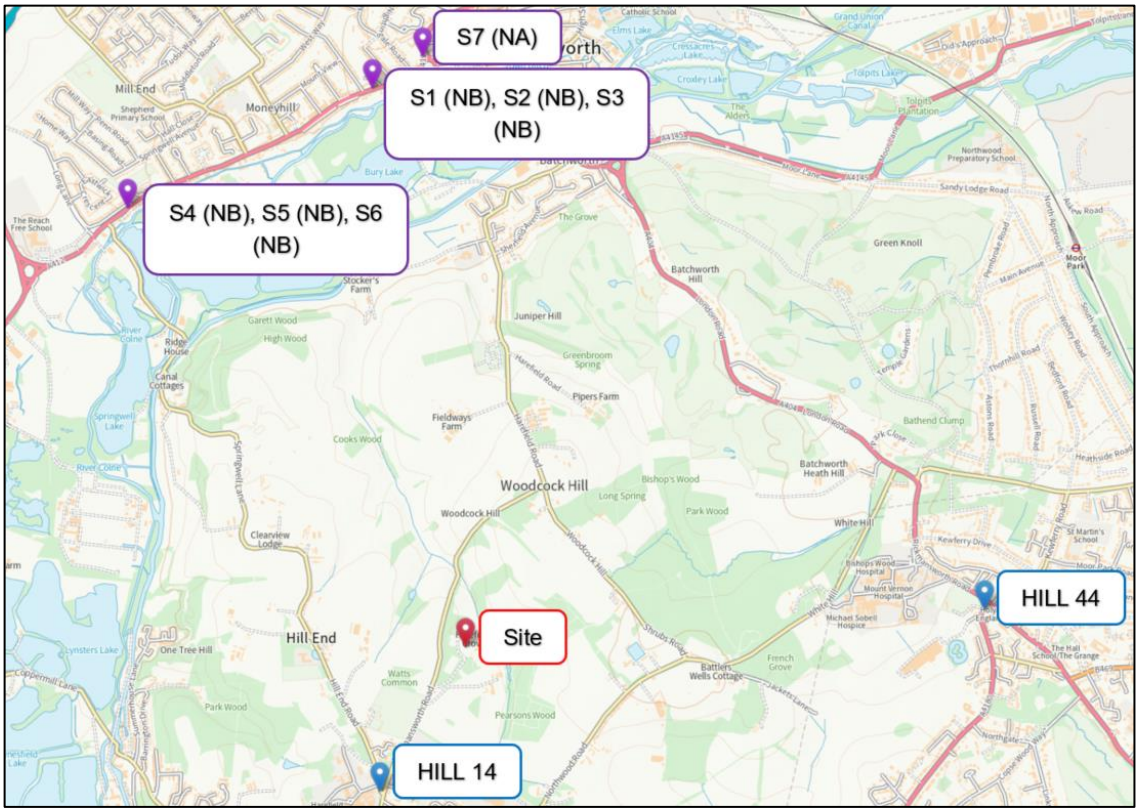

Figure 6.3: Site Location in Relation to the Closest Non-Automatic Monitoring Locations

6.17 HILL 44 was only commissioned in 2021 and subsequently has no annual mean concentrations for 2019.

6.18 The latest results for the closest non-automatic monitoring locations are provided within **Table 6.3** below.

ID	Site Name	Coordinates (X;Y)	Site Type	Annual Mean NO_2 Concentration ($\mu g/m^3$)			
				2018	2019	2020	2021
HILL14	Harefield Hospital Hill End Road	505299; 190923	Background	20.5	22.4	15.5	15.4
HILL 44	Hillingdon NorthWood Focus Area	508162; 191784	Roadside	-	-	-	24.1
S1 (NB) S2 (NB) S3 (NB)	Belfry House Uxbridge Road (Mill End 1)	505264; 194251	Kerbside	39.0	**41.0**	28.0	28.1
S4 (NB) S5 (NB) S6 (NB)	A412 Long Lane (Mill End 2)	504104; 193684	Kerbside	29.8	29.8	22.9	22.9
S7 (NA)	Fire Station	505500; 194400	Other	27.7	26.0	18.0	19.4

Table 6.3: Annual Mean NO_2 Concentrations for the Closest Non-Automatic Monitoring Locations.

6.19 The closest and therefore the most representative location is HILL 14 which is >5% below the annual mean objective level for NO_2 in 2019.

6.20 Therefore, the proposed development is likely to fall under APEC – A for site suitability, which in accordance with the exposure criteria set out in **Table 5.7**, states the following:

APEC A: *"No air quality grounds for refusal; however, mitigation of any emissions should be considered".*

6.21 Suitable mitigation measures have been considered within **Section 8** of this AQA, where required.

7 Evaluation of Potential Effects

Construction

Construction Dust

7.1 During the demolition/site clearance and construction phases, there is the potential for emissions of dust to cause annoyance, nuisance and health effects to sensitive receptors, both human and ecological located close to the site.

7.2 The construction activities associated with the proposed development can be separated into four stages:

- Demolition/Site Clearance;
- Earthworks;
- Construction; and
- Trackout.

7.3 There are a number of human receptors within 350m of the site boundary. Therefore, a dust assessment has been undertaken in order to evaluate and minimise potential dust effects during the aforementioned four stages.

7.4 The construction dust assessment is included in **Appendix A.**

Construction Traffic and Plant

7.5 Throughout the construction period, there will be a number of construction vehicles, stationary plant and vehicles used by the construction workforce. These may potentially present an additional source of air pollutants in the vicinity of the proposed development site.

7.6 Any likely pollutant impacts should be addressed through Best Available Techniques (BAT) mitigation measures. Likely BAT are provided in **Section 8.**

Completed Development

Development Traffic

7.7 A Transport Assessment has been undertaken for the same application by Mayer Brown Limited, which included an assessment of the daily trip generation anticipated as a result the operation of the proposed development.

7.8 A comparison between the daily vehicle movements associated with the proposed development and the trips associated with the consented 24 dwelling scheme is shown in **Table 7.1** below.

	Morning Peak			Evening Peak			AADT		
	In	Out	Total	In	Out	Total	In	Out	Total
Existing / Approved	3	17	20	12	9	21	77	84	161
Proposed	7	13	20	12	6	18	89	90	179
Net Impact	**+4**	**-4**	**0**	**0**	**-3**	**-3**	**+12**	**+6**	**+18**

Table 7.1: Proposed Development Net Traffic Impact (AADT)

7.9 **Table 7.1** demonstrates that a net increase of 18 daily AADT is anticipated between the proposed development and the consented scheme.

7.10 As such, this level of traffic impact does not meet the EPUK & IAQM criteria, for requiring further or detailed assessment. Therefore, it has not been considered necessary to quantify traffic related air quality impacts as a result of the operation of the proposed development.

Building Emissions

7.11 The energy consultants at Stroma Built Environment have indicated that the associated energy strategy for the proposed development is likely to use a 'JOULE Victorum HW Exhaust Air Heat Pumps (EAHPs)' for each apartment. EAHPs are multipurpose in that they will serve for central heating, domestic hot water and centralised mechanical extract ventilation uses within the flats.

7.12 Solar Photovoltaic Panels (Solar PV) have also been proposed along the Eastern, Western and Southern roof areas of the apartments.

7.13 The houses will include individual Air Source Heat Pumps (ASHPs) providing space heating and domestic hot water.

7.14 The indicated systems, being fully electric, are not directly associated with any NOx or Particulate emissions. Therefore, this would be in accordance with the minimum standard/requirements outlined within the EPUK & IAQM criteria and also considered to be Air Quality Neutral in terms of building emissions, in line with the Air Quality Neutral London Plan Guidance.

7.15 Therefore, no further assessment of building emissions is considered required.

7.16 Compliance with relevant regulations and standards, at this stage, should be secured through planning conditions, where necessary.

Air Quality Neutral

7.17 As stated above, the development has an all-electric energy strategy. Meaning that building emissions do not need to be considered further.

7.18 However, the daily trips associated with the proposed development does mean that an Air Quality Neutral Assessment is required for the Transport Emissions.

7.19 Therefore, an Air Quality Neutral Assessment has been undertaken in accordance with the EPUK & IAQM criteria and the Air Quality Neutral London Plan Guidance for the Transport Emissions only. This is included in **Appendix B.**

Air Quality Positive Statement

7.20 The development will provide 39 residential units (less than 150 houses, flats or houses and flats as highlighted in **Table 5.4**) and has not been subject to an Environmental Impact Assessment (EIA).

7.21 Therefore, the development does not meet any of the GLA's criteria for requiring an Air Quality Positive Statement (AQPS) and no further assessment of the Air Quality Positive approach is considered required.

8 Mitigation Measures

Construction Dust

8.1 A Construction Dust Assessment (CDA) has been completed for the proposed development in accordance with the relevant GLA and IAQM guidance and is presented in **Appendix A**. Within the assessment, site specific mitigation measures have been identified which ensure compliance with relevant standards.

8.2 The mitigation measures outlined in **Appendix A** should make up part of a Construction Environmental Management Plan (CEMP) that should be implemented to minimise the potential adverse construction dust impacts throughout all the relevant construction stages.

8.3 It is important that attention is paid to any construction activity that takes place in close proximity to the site boundary, potentially at the closest location to sensitive receptors.

Dust Monitoring:

8.4 The dust monitoring requirements are usually split in three categories as follows:

- **Negligible/Low risk** category sites- should not normally be necessary to undertake any quantitative air quality monitoring, although in some circumstances it may be applicable to undertake occasional surveys in the vicinity of the site boundary at least once on each working day.
- **Medium risk** category sites- should normally be adequate to undertake surveys of dust flux over the site boundary, and/or dust deposition/soiling rates around the site at nearby receptors, although this may have resource implications, and an approach based on continuous particulate matter monitoring may be preferred.
- **High risk** category sites- normally be necessary to supplement the monitoring for medium risk sites with monitoring of ambient PM concentrations. It is recommended that priority be assigned to the measurement of PM_{10}, as emissions of dust from construction sites are predominantly in the coarser fractions.

8.5 The proposed development site has been classified as having a **Low/Negligible risk** of dust soiling.

8.6 Therefore, although it is not normally necessary to undertake any quantitative air quality monitoring, in some circumstances it may be applicable to undertake occasional surveys in the vicinity of the site boundary during the relevant stages of construction to ensure that:

- The construction activities do not give rise to any exceedances of the air quality objectives for PM_{10} or $PM_{2.5}$.
- The agreed mitigation measures to control dust emissions are being applied and are effective.
- Any high levels of dust are attributed to specific activities on site to ensure that appropriate corrective measures take place.

8.7 The implementation of the specific mitigation measures given above within the CEMP will ensure that any potential adverse impacts from construction dust during all construction stages are avoided. It is noted by the IAQM that, through the use of effective mitigation, the effects of dust from construction activity will normally not be considered significant.

Construction Traffic and Plant

8.8 As previously stated, there is potential for air pollutant impacts to arise from construction plant and vehicles associated with the scheme. The following BAT should still be implemented during the construction phase.

- All vehicles should switch off engines when stationary, no idling vehicles;
- On-road vehicles to comply with the requirements of the Low Emission Zone and the London Non-Road Mobile Machinery (NRMM) standards, where applicable;
- All NRMM to use ultra-low sulphur diesel (ULSD) where available;
- Minimise the movement of construction traffic around the site;
- Maximising efficiency (this may include alternative modes of transport, maximising vehicle utilisation by ensuring full loading and efficient routing);
- Vehicles should be well maintained and kept in a high standard of working order;
- Avoid the use of diesel or petrol powered generators by using mains electricity or battery powered equipment where possible; and
- Locate plant away from boundaries close to residential areas.

Operational Traffic

8.9 The AQA has demonstrated that the predicted small net traffic impact associated with the proposed development is unlikely to result in a detrimental pollution impact upon the local road network and the current pollution levels. Therefore, it is not anticipated that mitigation measures will be required.

Building Emissions

8.10 As previously stated, the energy consultants at Stroma Built Environment have indicated that the proposed energy strategy for the proposed development is to be sourced using EAHPs and ASHPs, and Solar PV.

8.11 The suggested systems are fully electric and as such not directly associated with any NOx or Particulate emissions. Therefore, this would be in accordance with the minimum standard/requirements outlined within the EPUK & IAQM criteria and also considered to be Air Quality Neutral in terms of building emissions, in line with the Air Quality Neutral London Plan Guidance.

8.12 Therefore, it is not anticipated that mitigation measured would be required.

Air Quality Neutral Assessment

8.13 The Air Quality Neutral Assessment undertaken predicts that the total proposed trip rates associated with the proposed development are higher than the total benchmark trip rates. Therefore, the proposed development fails to meet the transport benchmarks and subsequently cannot be considered to be Air Quality Neutral in terms of transport emissions. As a result, suitable mitigation measures should be agreed with the local authority, on or off-site (with on-site measures preferred in accordance with Part E of Policy SI 1).

8.14 However, the use of total proposed trip rates is a worse-case scenario. If net proposed trip rates were considered instead of total proposed trip rates, then the development would be considered to be Air Quality Neutral in terms of transport emissions and mitigation measures would not be required.

8.15 Should they be required, any mitigation measures should exceed the minimum requirements in the London Plan policies.

8.16 In line with the recommendations withing the Air Quality Neutral London Plan Guidance, mitigation measures should be agreed following these principles:

- Measures should be demonstrably effective and show how they will reduce local emissions or concentrations.
- Measures should relate to the type of excess emissions – for example, measures to reduce building emissions should not be used to compensate for excess transport emissions. Similarly, local NOx reductions should not be used to compensate for excess particulate matter emissions.
- The measures should be genuinely additional to all the measures already accounted for in the air quality assessment.

- The measures should be in place by the time the development is occupied.
- Implementation of the measures must be robustly secured via planning condition or legal agreement.

8.17 Mitigations measures may be suggested by either the local planning authority or by the applicant, but the local planning authority must determine whether the proposed measures are appropriate to adequately meet the London Plan's policy requirements.

Air Quality Positive Statement

8.18 As stated above, The development will provide 39 residential units (less than 150 houses, flats or houses and flats as highlighted in **Table 5.4**) and has not been subject to an Environmental Impact Assessment (EIA).

8.19 Therefore, the development does not meet any of the GLA's criteria for requiring an Air Quality Positive Statement (AQPS) and as such no mitigation measures are considered required.

Site Suitability

8.20 This AQA has demonstrated that the proposed development site is likely to fall within APEC-A for site suitability.

8.21 In accordance with the exposure criteria in **Table 5.7**, means that there should be no air quality grounds for refusal and the local air quality should be suitable to safeguard the health and amenity of new residents.

8.22 Notwithstanding this, it is important to note that a key factor for reducing exposure is to inform future residents of the potential impacts associated with prolonged exposure to elevated pollution levels. As such, it might be considered beneficial to provide future residents with a welcome pack containing air quality information which will allow them to follow appropriate advice on the protection against high concentration levels during peak periods.

8.23 Examples of free services which provide up to date information on the current air quality levels for residents in London are set out in **Table 8.1**.

Service	Website	Service Provided
Defra	www.twitter.com/defraukair	Official, automated feed for UK Air Quality from Defra. Latest info on Pollution, Forecasts & Health Advice.
airText	www.airtext.info	Free text message service providing air quality alerts for Greater London.
London Air	www.londonair.org.uk	Free downloadable air quality app providing real time air quality index across London, in addition LAQM data for London Boroughs is available.

Table 8.1: London Air Quality Information Services

9 Residual Effects and Conclusions

9.1 The London Borough of Hillingdon (LBH) have declared one Air Quality Management Area (AQMA). Defra define the AQMA as being "the area from the southern boundary north to the border defined by, the A40 corridor from the western borough boundary, east to the intersection with the Yeading Brook north until its intersection with the Chiltern-Marylebone railway line". The AQMA was declared in 2003 as a result of exceedances of the annual mean objective for Nitrogen Dioxide (NO_2). The site does not lie within the LBH AQMA.

9.2 A review of the monitoring sites within the Borough has been undertaken. It has been concluded that the closest, most representative monitoring location is >5% below the annual mean objective for NO_2 during 2019.

9.3 In accordance with the exposure criteria in **Table 5.7**, the site is likely to fall within APEC-A for site suitability, which states the following:

"*No air quality grounds for refusal; however, mitigation of any emissions should be considered."*

9.4 A construction dust assessment has been undertaken for the four stages of construction activities associated with the proposed development in accordance with the relevant GLA and IAQM guidance on the assessment of dust from demolition and construction (**Appendix A**).

9.5 Mitigation measures have been proposed for construction traffic and stationary plant associated with the proposed development.

9.6 Following the successful implementation of the specific mitigation measures, the residual effects of construction dust and emissions from construction plant/vehicles upon the local area and sensitive receptors although adverse, will be temporary and considered to be 'not significant'.

9.7 The predicted small net traffic increase associated with the proposed development is unlikely to result in a detrimental pollution impact upon the local road network and the current pollution levels.

9.8 The energy consultants at Stroma Built Environment have indicated that the proposed energy strategy for the proposed development is to be sourced using EAHPs and ASHPs, and Solar PV.

9.9 The suggested systems are not directly associated with any NOx or Particulate emissions. Therefore, this would be in accordance with the minimum standard/requirements outlined within the EPUK & IAQM criteria and also considered to be Air Quality Neutral in terms of building emissions, in line with the Air Quality Neutral London Plan Guidance.

9.10 The Air Quality Neutral Assessment undertaken predicts that the total proposed trip rates associated with the proposed development are higher than the total benchmark trip rates. Therefore, the proposed development fails to meet the transport benchmarks and subsequently cannot be considered to be Air Quality Neutral in terms of transport emissions.

9.11 However, the use of total proposed trip rates is a worse-case scenario. If net proposed trip rates were considered instead of total proposed trip rates, then the development would be considered to be Air Quality Neutral in terms of transport emissions.

9.12 Compliance to all relevant regulations and standards should be secured through planning conditions, where necessary.

Appendix A: Construction Dust Assessment

CONSTRUCTION DUST ASSESSMENT

A.1 The construction dust assessment has been completed in accordance with 2014 IAQM guidance and follows the procedures as outlined in **Section 5** of this report.

Screen the Need for a Detailed Assessment

A.2 The following screening criterion has been applied to the assessment: An assessment will normally be required where there is:

- a 'human receptor' within:
  - 350m of the boundary of the site; or
  - 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).
- an 'ecological receptor' within:
  - 50m of the boundary of the site; or
  - 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).

A.3 There are a number of human receptors within 350m of the site boundary. Therefore, a dust assessment is required due to the proposed development location meeting some of the above criteria.

Assess the Risk of Dust Impacts

A.4 The construction activities associated with the proposed development have been separated into four stages:

- Demolition/Site Clearance;
- Earthworks;
- Construction; and
- Trackout.

A.5 The assessment of the risk of dust impacts has been completed in two stages:

- Determine the potential dust emission magnitude; and
- Determine the sensitivity of the area to dust impacts.

A.6 The potential dust emission magnitude for all four of the construction stages have been determined to be either Small, Medium or Large according to the criteria presented in **Table A.1** below.

Construction Activity	Dust Emission Magnitude Scale		
	Small	Medium	Large
Demolition/Site Clearance	Total building volume <20,000m^3, construction material with low potential for dust release, demolition activities <10m above ground, works during wetter months.	Total building volume 20,000-50,000m^3, potentially dusty construction material, demolition activities 10-20m above ground level.	Total building volume >50,000m^3, potentially dusty material, on-site crushing and screening, activities >20m above ground level.
Earthworks	Total site area <2,500m^2, soil type with large grain size, <5 heavy earth moving vehicles active at one time, bunds <4m high, total material moved <20,000t, works during wetter months.	Total site area 2,500-10,000m^2, moderately dusty soil type, 5-10 heavy earth moving vehicles active at one time, bunds 4-8m high, total material moved 20,000-100,000t.	Total site area >10,000m^2, potentially dusty soil type, >10 heavy earth moving vehicles active at one time, bunds >8m high, total material moved >100,000t.
Construction	Total building volume <25,000m^3, construction material with low potential for dust release.	Total building volume 25,000-100,000m^3, potentially dusty construction material, on site concrete batching.	Total building volume >100,000m^3, on site concrete batching, sandblasting.
Trackout	<10 HDV* outwards movements in any one day, surface material with low potential for dust release, unpaved road length <50m.	10-50 HDV outward movements in any one day, moderately dusty surface material, unpaved road length 50-100m.	>50 HDV outward movements in any one day, potentially dusty surface material, unpaved road length >100m.
* HDV – Heavy Duty Vehicle (>3.5t), Note – In each case, not all the criteria need to be met, and that other criteria may be used if justified.			

Table A.1: Dust Emission Magnitude Criteria

A.7 The completed assessment of Dust Emission Magnitude is shown in **Table A.2** below.

Construction Activity	Dust Emission Magnitude	Justification
Demolition/Site Clearance	Small	Estimated total building volume to be demolished <20,000m^3
Earthworks	Large	Estimated total site area >10,000m^2
Construction	Small	Estimated total building volume to be <25,000m^3,
Trackout	Medium	Estimated to be >10-50 HDV outward movements in any one day.

Table A.2: Dust Emission Magnitude Assessment

A.8 Due to the scale of the proposed development the magnitude of dust emissions has been assessed as **Medium**. According to guidance the site area should trigger a large magnitude of dust emissions, however due to the limited earthworks needed for this development and the location and nature of the proposed development, the overall magnitude has been concluded as medium.

A.9 The sensitivity of the area has been assessed in relation to a number of factors such as; the specific sensitivities of receptors in the area, the proximity and number of those receptors and in the case of PM_{10}, the local background concentration and by following the significance criteria in **Tables A.3, A.4** and **A.5** below.

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 Dust Soiling Effects of People and Property

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	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m^3	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m^3	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m^3	>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
		1-10	Medium	Low	Low	Low	Low
	28-32 µg/m^3	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m^3	>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 Human Health Impacts

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

Table A.5: Sensitivity of the Area to Ecological Impacts

A.10 In addition to **Tables A.3, A.4** and **A.5** any site-specific factors have been taken into account when defining the sensitivity of the area:

- 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; and
- the duration of the potential impact, as a receptor may become more sensitive over time.

A.11 The completed assessment of Sensitivity of the Area in **Table A.6** below.

Receptor Sensitivity	Sensitivity of the Surrounding Area			
	Demolition/Site Clearance	Earthworks	Construction	Trackout
Dust Soiling	Low	Low	Low	Low
Human Health	Low	Low	Low	Low
Ecological	Low	Low	Low	Low

Table A.6: Sensitivity of the Surrounding Area Assessment

A.12 The completed pre-mitigation impact risk assessment incorporating the sensitivity of the area and the dust emissions magnitude for the four construction activities is shown in **Table A.7** below.

Potential Impact	Risk			
	Demolition/Site Clearance	Earthworks	Construction	Trackout
Dust Soiling	Negligible	Low	Negligible	Low
Human Health	Negligible	Low	Negligible	Low
Ecological	Negligible	Low	Negligible	Low

Table A.7: Summary of Dust Risk (pre-mitigation)

A.13 The risk of dust soiling has been considered **low/negligible** due to the risk of a few human receptors located in close proximity to the proposed site. The human health risk was considered **low/negligible** due to the low PM_{10} background concentrations in the local area for 2019 (14.2µg/m^3), there are no high sensitivity ecological sites within 50m of the proposed site, therefore ecological sensitivity has been assessed as **low/negligible**.

A.14 Additionally, the dust emissions magnitude, pre-mitigation, based on the scale of the development, is considered to be **medium**.

Site-specific Mitigation

A.15 From the identification of the risk of impacts with no mitigation applied in **Table A.7** it is possible to determine the specific mitigation measures that can be applied in relation to the level of risk associated with the construction activity. The mitigation measures described below are suggested as measures that should be included in a site-specific Construction Environmental Management Plan (CEMP). Due to the site being considered **Low/Negligible Risk** for the following mitigation measures are either D=Desirable, H=Highly Recommended or N=Not Required in **Tables A.8**, **A.9**, **A.10**, **A.11** and **A.12** below.

Demolition:

Mitigation Measures	Low Risk	Medium Risk	High Risk
Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).	D	D	H
Ensure effective water suppression is used during demolition operations. Hand-held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.	H	H	H
Avoid explosive blasting, using appropriate manual or mechanical alternatives.	H	H	H
Bag and remove any biological debris or damp down such material before demolition.	H	H	H

Table A.8: Site Specific Mitigation Measures for Demolition/Site Clearance Activities

Earthworks:

Mitigation Measures	Low Risk	Medium Risk	High Risk
Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.	N	D	H
Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable	N	D	H
Only remove the cover in small areas during work and not all at once	N	D	H

Table A.9: Site Specific Mitigation Measures for Earthwork Activities

Construction:

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

Table A.10: Site Specific Mitigation Measures for Construction Activities

Trackout:

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

Table A.11: Site Specific Mitigation Measures for Trackout Activities

General Mitigation Measures:

Mitigation Measures	Low Risk	Medium Risk	High Risk
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	N	H	H
Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary.	H	H	H
Display the head or regional office contact information	H	H	H
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, realtime PM_{10} continuous monitoring and/or visual inspections.	D	H	H
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.	H	H	H
Make the complaints log available to the local authority when asked.	H	H	H
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.	H	H	H
Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.	N	N	H
Monitoring			
9. 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 100 m of site boundary, with cleaning to be provided if necessary.	D	D	H
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	H	H	H
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	H	H	H

dust are being carried out and during prolonged dry or windy conditions.			
Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.	N	H	H
Preparing and Maintaining the Site			
Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	H	H	H
Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	H	H	H
Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period	D	H	H
Avoid site runoff of water or mud.	H	H	H
Keep site fencing, barriers and scaffolding clean using wet methods.	D	H	H
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.	D	H	H
Cover, seed or fence stockpiles to prevent wind whipping.	D	H	H
Operating Vehicle/Machinery and Sustainable Travel			
Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable.	H	H	H
Ensure all vehicles switch off engines when stationary - no idling vehicles.	H	H	H
Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	H	H	H
Impose and signpost a maximum-speed-limit of 15 mph on surfaced 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)	D	D	H
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	N	H	H
Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)	N	D	H
Operations			
Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.	H	H	H

Ensure an adequate water supply on the site for effective dust/particulate matter suppression/ mitigation, using non-potable water where possible and appropriate.	H	H	H
Use enclosed chutes and conveyors and covered skips.	H	H	H
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	H	H	H
Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	D	H	H
Waste Management			
Avoid bonfires and burning of waste materials.	H	H	H

Table A.12: Site Specific Mitigation Measures for General Activities

A.16 It is important that attention is paid to any construction activity that takes place in close proximity to the site boundary, potentially at the closest location to sensitive receptors.

Determine Significant Effects

A.17 Prior to the implementation of any mitigation measures the highest significance of adverse effects was **low/negligible** risk for dust soiling, human health and ecology, with dust emissions magnitude considered to be **medium**.

A.18 The mitigation measures listed above are chosen based on their suitability to the site and to reduce the risk of adverse effects from the four stages of construction.

A.19 Through the implementation of site-specific mitigation measures (secured by planning condition), which are designed to mitigate potential dust impact, will ensure that potential significant adverse dust effects will not occur, and the residual effect will normally be 'not significant'. Appropriate mitigation measures should be secured by planning condition where necessary.

Dust Monitoring:

A.20 The dust monitoring requirements are usually split in three categories as follows:

- **Negligible/Low risk** category sites- should not normally be necessary to undertake any quantitative air quality monitoring, although in some circumstances it may be applicable to undertake occasional surveys in the vicinity of the site boundary at least once on each working day.
- **Medium risk** category sites- should normally be adequate to undertake surveys of dust flux over the site boundary, and/or dust deposition/soiling rates around the site at nearby receptors, although this may have resource implications, and an approach based on continuous particulate matter monitoring may be preferred.

- **High risk** category sites- normally be necessary to supplement the monitoring for medium risk sites with monitoring of ambient PM concentrations. It is recommended that priority be assigned to the measurement of PM_{10}, as emissions of dust from construction sites are predominantly in the coarser fractions.

A.21 The proposed development site has been classified as having a **low/negligible risk** of dust soiling.

A.22 Therefore, although it is not normally necessary to undertake any quantitative air quality monitoring, in some circumstances it may be applicable to undertake occasional surveys in the vicinity of the site boundary during the relevant stages of construction to ensure that:

- The construction activities do not give rise to any exceedances of the air quality objectives for PM_{10} or $PM_{2.5}$.
- The agreed mitigation measures to control dust emissions are being applied and are effective.
- Any high levels of dust are attributed to specific activities on site to ensure that appropriate corrective measures take place.

A.23 The implementation of the specific mitigation measures given above within the CEMP will ensure that any potential adverse impacts from construction dust during all construction stages are avoided. It is noted by the IAQM that, through the use of effective mitigation, the effects of dust from construction activity will normally not be considered significant.

A.24 Compliance should be secured through planning conditions, where necessary.

Conclusions of Construction Dust Assessment

A.25 The completion of the construction dust assessment has shown that the residual effect of the proposed development in the context of construction dust emissions will be 'not significant' after mitigation. This conclusion has been made based on the **medium** dust emissions magnitude related to the scale of development and the assumption that the suggested mitigation measures will be implemented (secured by planning condition) and is relevant for all sensitive receptors within 350m of the site.

A.26 It should be noted that even with a rigorous CEMP in place, it is not possible to guarantee that all mitigation measures will be effective at all times. If there is an interruption in the water supply used for dust suppression or adverse weather conditions are experienced that exacerbate dust emissions, the receptors may experience occasional, short term dust annoyance. However, the likely scale of this would not normally be considered sufficient to change the conclusion of this assessment. It is therefore important to consider all mitigation measures and provide a frequent review and assessment procedure at each stage, to ensure that mitigation measures continue to provide the maximum attenuation level possible.

Appendix B:
Air Quality Neutral Assessment

AIR QUALITY NEUTRAL ASSESSMENT

B.1 The following air quality neutral assessment has been undertaken in accordance with the adopted London Plan Guidance Air Quality Neutral: (GLA, 2023)[28] and the Update to Benchmarks: Air Quality Neutral Assessment (Air Quality Consultants, 2020)[29] which is an update built upon the Air Quality Neutral Planning Support Update: GLA 80371 (Air Quality Consultants and Environ, 2014)[30].

B.2 The energy consultants at Stroma Built Environment have indicated that the associated energy strategy for the proposed development is likely to use a 'JOULE Victorum HW Exhaust Air Heat Pumps (EAHPs)' for each apartment. EAHPs are multipurpose in that they will serve for central heating, domestic hot water and centralised mechanical extract ventilation uses within the flats. Additionally, Solar Photovoltaic Panels (Solar PV) have also been proposed along the Eastern, Western and Southern roof areas of the apartments and the houses will include individual Air Source Heat Pumps (ASHPs) providing space heating and domestic hot water.

B.3 The associated energy strategy for the proposed development is to be fully electric. As such, the proposed systems, being 100% electric, are not directly associated with any NOx or Particulate emissions.

B.4 The proposed building emissions are therefore in accordance with the minimum standards/requirements outlined within the EPUK & IAQM criteria and also considered to be Air Quality Neutral in terms of building emissions, in line with the London Plan Guidance Air Quality Neutral. Therefore, it is not considered necessary to undertake any further assessment of the building emissions in this air quality neutral assessment.

B.5 The key element to be considered in this assessment is transport emissions associated with the operation of the proposed development.

Transport Emissions Calculations

Transport Emissions Benchmarks

B.6 The Transport Emissions Benchmarks (TEB) are defined as the predicted number of single trips per m^2 of floorspace (GIA) over a year (trips/m^2 /year) for non-residential use, or the anticipated number of single trips per dwelling (trips/dwelling/year) for residential use.

B.7 The corresponding trip rate benchmarks for different land uses and different areas of London, as defined within **Table B.1** below, have been used in this assessment.

[28] Greater London Authority (GLA). (2023). London Plan Guidance Air Quality Neutral. GLA. London
[29] Air Quality Consultants (AQC) (2020). Update to Benchmarks: Air Quality Neutral Assessment. AQC. Bristol
[30] Air Quality Consultants (AQC) & ENVIRON. (2014). Air Quality Neutral Planning Support Update: GLA 80371. AQC and ENVIRON. London

Land Use	Annual trips per	Central Activities Zone (CAZ)	Inner London (excluding CAZ)	Outer London
Residential (including student accommodation and large-scale purpose-built shared living development)	dwelling	68	114	447
Offices/light industrial	m^2 (GIA)	2	1	16
Retail (superstore)	m^2 (GIA)	39	73	216
Retail (convenience)	m^2 (GIA)	18	139	274
Restaurants/cafés	m^2 (GIA)	64	137	170
Drinking establishments	m^2 (GIA)	0.8	8	N/A
Hot food takeaway	m^2 (GIA)	0	32.4	590
Industrial	m^2 (GIA)	0	5.6	6.5
Storage and distribution	m^2 (GIA)	0	5.5	6.5
Hotels	m^2 (GIA)	1.0	1.4	6.9
Care homes and hospitals	m^2 (GIA)	0	1.1	19.5
Schools, nurseries, doctors' surgeries, other non-residential institutions	m^2 (GIA)	0.1	30.3	44.4
Assembly and leisure	m^2 (GIA)	3.6	10.5	47.2

Table B.1: Benchmark trip rates

B.8 The proposed development consists of a residential development with 39 dwellings (Class C3).

B.9 A total of 58 car parking spaces will also be provided within the site, of which 20% will have access to active electric vehicle charging provision and all others will be provided with passive provision. Three covered and secure cycle stores will provide parking space for 70 bicycles.

B.10 TEB's are calculated by multiplying the number of residential dwellings by the benchmark trip rates in **Table B.1.** This is presented in **Table B.2** below.

Land Use	Number of Dwellings/m^2GIA	Trip Rate Benchmark /Per Dwelling*	Total Benchmark Trip Rate (Trips/Year)
C3	39 Residential Units	447	17,433

*Trip Rate Benchmark – Outer London

Table B.2: Total Benchmark Trip Rates (Trips/Year)

Proposed Trip Generation

B.11 The predicted daily single trip generation associated with the proposed development has been provided by Mayer Brown Limited's Transport Consultants. This is presented in **Table B.3** below.

Land Use	Number of Dwellings/m²GIA	Daily Trip Attraction
C3	39 Residential Units	179

Table B.3: Predicted Daily Single Trip Generation for the Proposed Development

B.12 It is important to note that the predicted daily trip generation in **Table B.3** above is the total daily trip generation for the proposed development, not taking into account the existing trip generation associated with the site's consented use. Only 18 net daily single trips are anticipated between the proposed development and the scheme formerly approved in 2012.

B.13 The proposed annual trips associated with the proposed development are then calculated by multiplying the number of proposed single way daily trips by 365 in order to obtain the total annual single trips**.** This is presented in **Table B.4**.

Land Use	Proposed single Way Trips	Total Proposed Trip Rate (Trips/Year)*
C3	179	65,335

*Daily single trips multiplied by 365

Table B.4: Proposed Annual Trip Rates for the Site

B.14 The potential for transport neutrality is then calculated by comparing the total benchmark trip rates (**Table B.2**) with the proposed annual trip rates for the proposed development (**Table B.4**). This is presented in **Table B.5** below.

Land Use	Total Benchmark Trip Rate (Trips/Year)	Total Proposed Trip Rate (Trips/Year)	Difference
C3	17,433	65,335	+47,902

Table B.5: Comparison Between Total Benchmark Trip Rates and the Total Proposed Trip Rates

B.15 **Table B.5** demonstrates that the total proposed trip rates are higher than the total benchmark trip rates.

B.16 Therefore, the proposed development fails to meet the transport benchmarks and subsequently **cannot be considered to be Air Quality Neutral** in terms of transport emissions. As a result, suitable mitigation measures should be agreed with the local authority, on or off-site (with on-site measures preferred in accordance with Part E of Policy SI 1).

B.17 However, it is important to note that the use of total proposed trip rates is a worse-case scenario. If the net proposed trip rates were considered instead of total proposed trip rates (the true impact as a result of the current proposals), then the development would be considered to be Air Quality Neutral in terms of transport emissions, and mitigation measures would not be required.

B.18 Should they be required, any mitigation measures should exceed the minimum requirements in the London Plan policies.

B.19 In line with the recommendations withing the London Plan Guidance Air Quality Neutral, mitigation measures should be agreed following these principles:

- Measures should be demonstrably effective and show how they will reduce local emissions or concentrations.
- Measures should relate to the type of excess emissions – for example, measures to reduce building emissions should not be used to compensate for excess transport emissions. Similarly, local NOx reductions should not be used to compensate for excess particulate matter emissions.
- The measures should be genuinely additional to all the measures already accounted for in the air quality assessment.
- The measures should be in place by the time the development is occupied.
- Implementation of the measures must be robustly secured via planning condition or legal agreement.

B.20 Mitigations measures may be suggested by either the local planning authority or by the applicant, but the local planning authority must determine whether the proposed measures are appropriate to adequately meet the London Plan's policy requirements.