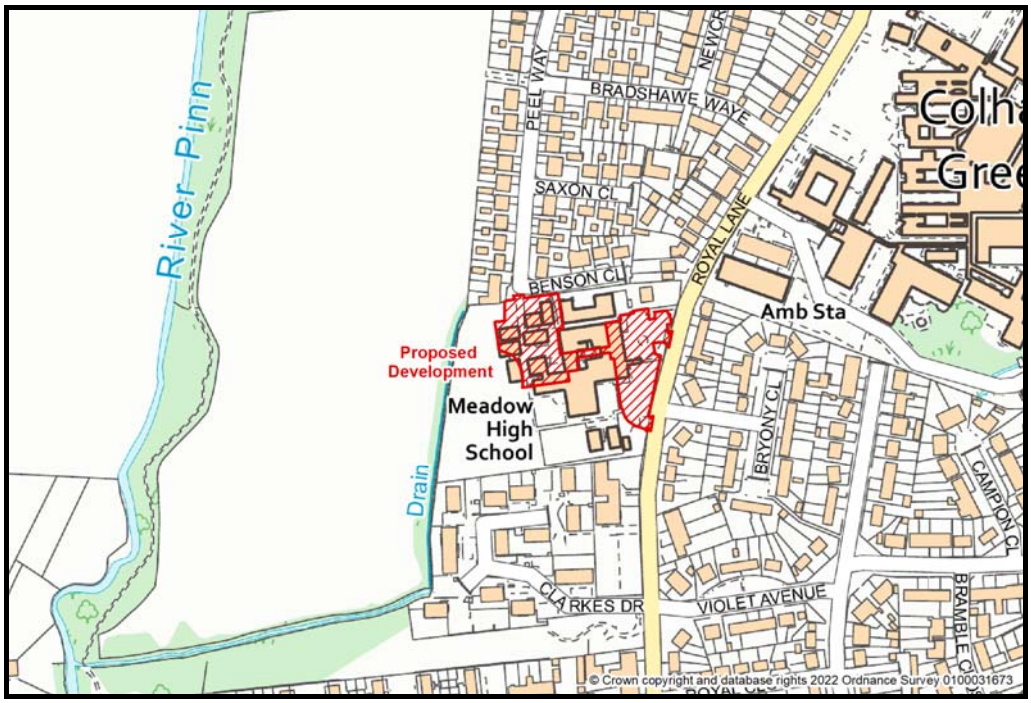
LONDON BOROUGH OF HILLINGDON

MEADOW HIGH SCHOOL – NEW TEACHING BUILDING:

AIR QUALITY ASSESSMENT



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Independent Air Quality & Odour Specialists

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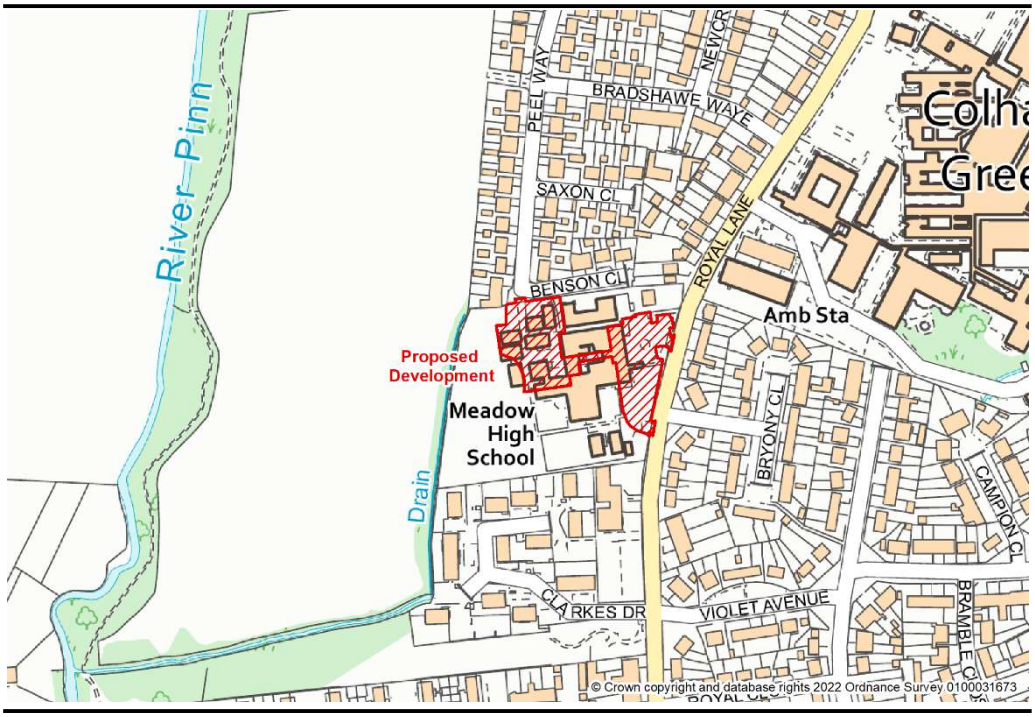
1 INTRODUCTION

1.1 PURPOSE OF THE ASSESSMENT

Gair Consulting Ltd has been commissioned by CDC Studio, on behalf of the London Borough of Hillingdon, to undertake an assessment of potential air quality impacts to support an application for full planning permission for a new teaching building at the Meadow High School, London Borough of Hillingdon. The location of the development site is presented in *Figure 1.1*. The site is located within the Hillingdon Air Quality Management Area (AQMA) which has been designated due to exceedances of the annual mean air quality objective for nitrogen dioxide (NO_2).

FIGURE 1.1 LOCATION OF THE DEVELOPMENT SITE



Meadow High school is a community special school located in the northwest of the London borough of Hillingdon. The school supports a range of pupils with complex learning difficulties. The school site consists of a number of buildings of varying ages, the most recent of which was a new build teaching extension and refurbishment commissioned by the Department of Education. This planning application is for the development of a further new teaching block to add additional general-purpose classrooms and specialist teaching spaces.

The project aims to create a new teaching block which provides additional general-purpose classrooms and specialist subject specific teaching spaces. In addition to this the new teaching block will provide a number of administrative spaces, support spaces (including physio room and sensory space), and new common room for the sixth form. The project includes the demolition of a

number of temporary teaching spaces that currently sit on the proposed site of the new teaching block. In addition to these temporary teaching spaces, a portion of the existing main school building will be demolished and refurbished to allow the new teaching block to have an interior connection to the main school. As part of the overall demolition works, services are likely to be removed or relocated and the existing landscape treatment/hard surface areas within the site red line removed or refurbished. The project will aim to redesign the landscape and external space in this portion of the school site to provide better external space provision for pupils and staff.

The site is located within a predominantly residential area with two to three storey housing to the north, east and south. The Hillingdon Hospital is located to the northeast of the school and there is open space and playing fields to the west. The nearest residential properties to the construction site boundary are located on Benson Close to the immediate north. Access to the school is from Royal Lane to the east of the school site.

1.2 SCOPE OF THE ASSESSMENT

The assessment has considered the impact of traffic and construction impacts on existing sensitive receptors.

A significant proportion of the development's energy needs will be fulfilled by renewable energy sources generated on site. Energy would be provided through a combination of 156 photovoltaic panel arrays and two air source heat pumps. Therefore, there will be no combustion type generating units on site and the impact of emissions from energy generation can be screened out from requiring further assessment.

Guidance is provided by the Institute of Air Quality Management (IAQM) [1] on indicative criteria for requiring a detailed traffic-related air quality assessment in their land-use planning development control: planning for air quality (January 2017). For sites that are not located within an air quality management area (AQMA), these are 500 light duty vehicles (LDVs) annual average daily traffic (AADT) and/or 100 heavy duty vehicles (HDVs). Where there is an AQMA this is reduced to 100 LDVs and 25 HDVs as the AADT. It should be noted that the development site is located within an AQMA.

The number of construction vehicles will vary and on average would be below the IAQM criteria (within an AQMA) for requiring a detailed traffic-related air quality assessment. There will be an increase in pupil numbers at the school from an existing school roll of 257 to 265 (eight additional students). There will be an increase in traffic for the additional pupil attendance but no increase in teaching staff. This will result in an additional one car (total of four movements, two in the morning and two in the afternoon). The remainder of additional

1 Land-Use Planning & Development Control: Planning for Air Quality, EPUK and IAQM (January 2017)

students would likely be absorbed by the current minibuses and coaches attending the school. Therefore, the total additional traffic movements during occupation of the school would be four movements. This is well below the IAQM screening criteria for requiring a detailed traffic-related air quality assessment.

1.3 STRUCTURE OF THE REPORT

The remainder of this report is presented as follows:

- *Section 2* provides an overview of legislation and policy of relevance to the proposed development.
- *Section 3* summarises the relevant assessment criteria, reviews air quality monitoring data in the vicinity of the proposed development and provides a discussion of local meteorological conditions affecting the dispersion and dilution of emissions.
- *Section 4* provides an assessment of the potential air quality impacts associated with the construction of the proposed development (e.g. construction dust impacts).
- *Section 5* provides an air quality neutral assessment for the proposed development.
- *Section 6* summarises and concludes the assessment and provides recommendations for further work or consultation, where necessary.

2 LEGISLATION AND POLICY

2.1 LEGISLATION

The Air Quality Standards Regulations (2010) and subsequent amendments came into force on 11th June 2010 and include air quality assessment levels (AQALs) for the following pollutants:

- nitrogen dioxide (NO_2);
- sulphur dioxide (SO_2);
- lead;
- particulate matter with an aerodynamic diameter of less than 10 µm (PM_{10});
- particulate matter with an aerodynamic diameter of less than 2.5 µm ($PM_{2.5}$);
- benzene; and
- carbon monoxide (CO).

Target Values are also provided for an additional five pollutants. These include:

- ozone (O_3);
- arsenic;
- cadmium;
- nickel; and,
- benzo(a)pyrene.

Air quality assessment levels of relevance to this assessment are provided in *Table 2.1*.

TABLE 2.1 AIR QUALITY ASSESSMENT LEVELS

Pollutant	Averaging Period	AQAL (µg m^{-3})	Comments
Nitrogen dioxide (NO_2)	Annual mean	40	UK AQO and EU limit value
	1-hour mean	200	UK AQO and EU limit value, not to be exceeded more than 18 times per annum, equivalent to the 99.8th percentile of 1-hour means
Fine particles (as PM_{10})	Annual mean	40	UK AQO and EU limit value
	24-hour mean	50	UK AQO and EU limit value, not to be exceeded more than 35 times per annum, equivalent to the 90.4th percentile of 24-hour means
Fine particles (as $PM_{2.5}$)	Annual mean	20	EU limit value

The Environment Act (2021) was published on 9th November 2021 and makes provision for the setting of lower $PM_{2.5}$ targets. The final criteria will be included in legislation to be put before parliament by 31st October 2022. Prior to this time the AQLV outlined in *Table 2.1* remains the adopted air quality standard within the UK.

A summary of the advice provided in the Greater London Authority (GLA) guidance [2] on where the AQALs for pollutants considered within this report apply is provided in *Table 2.2*.

TABLE 2.2 GUIDANCE ON WHERE THE AIR QUALITY ASSESSMENT LEVELS APPLY

Averaging Period	AQAL should apply at	AQAL should not apply at
Annual mean	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools (including all of playgrounds), hospitals (and their grounds), care homes (and their grounds) etc.	Building façades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
24-hour mean	All locations where the annual mean objective would apply, together with hotels. Gardens of residential properties.	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
1-hour mean	All locations where the annual mean and 24 and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations etc which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer.	Kerbside sites where the public would not be expected to have regular access.

2 London Local Air Quality Management (LLAQM), Technical Guidance 2019 (LLAQM.TG (2019)), GLA, 2019.

2.2 LOCAL AIR QUALITY MANAGEMENT

Part IV of the Environment Act 1995 also requires local authorities to periodically review and assess the quality of air within their administrative area. The Reviews are required to consider the present and future air quality and whether any air quality objectives prescribed in the Regulations are being achieved or are likely to be achieved in the future.

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

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

2.3 NUISANCE

The main requirements with respect to dust control from industrial or trade premises not regulated under the Environmental Permitting (England and Wales) Regulations (2016) and subsequent amendments, such as construction sites, is that provided in Section 79 of Part III of the Environmental Protection Act (1990). The Act defines nuisance as:

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

Enforcement of the Act, in regard to nuisance, is currently under the jurisdiction of the local Environmental Health Department, whose officers are deemed to provide an independent evaluation of nuisance. If the local authority is satisfied that a statutory nuisance exists, or is likely to occur or happen again, it must serve an Abatement Notice under Part III of the Environmental Protection Act (1990). The only defence is to show that the process to which the nuisance has been attributed and its operation are being controlled according to best practicable means.

2.4 NATIONAL PLANNING POLICY

2.4.1 National Planning Policy Framework

The revised National Planning Policy Framework[3] (NPPF) was published in July 2021 and sets out the Government's planning policies for England and how these are expected to be applied.

3 NPPF, Ministry of Housing, Communities and Local Government, 2021.

The purpose of the planning system is to contribute to the achievements of sustainable development. In order to ensure this, the NPPF recognises three overarching objectives including the following of relevance to air quality:

> *"c) An environmental objective – to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."*

Chapter 15 of the NPPF details objectives in relation to conserving and enhancing the natural environment. It states that:

> *"Planning policies and decisions should contribute to and enhance the natural and local environment by:*
>
> *…..preventing new and existing development from contributing to, or being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality….."*

The NPPF specifically recognises"air quality as part of delivering sustainable development and states that:

> *"Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan."*

The implications of the NPPF have been considered throughout this assessment.

2.4.2 National Planning Practice Guidance

The National Planning Practice Guidance [4] (NPPG) web-based resource was launched by the Department for Communities and Local Government on 6th March 2014 and updated on 1st November 2019 to support the NPPF and make

4 https://www.gov.uk/guidance/air-quality--3

it more accessible. The air quality pages are summarized under the following headings:

1. What air quality considerations does planning need to address?
2. What is the role of plan-making with regard to air quality?
3. Are air quality concerns relevant to neighbourhood planning?
4. What information is available about air quality?
5. When could air quality considerations be relevant to the development management process?
6. What specific issues may need to be considered when assessing air quality impacts?
7. How detailed does an air quality assessment need to be?
8. How can an impact on air quality be mitigated?

These were reviewed and the relevant guidance considered as necessary throughout the undertaking of this assessment.

2.5 LOCAL PLANNING POLICY

2.5.1 The London Plan

The London Plan 2021 [5] is the Spatial Development Strategy for Greater London. It sets out a framework for how London will develop over the next 20 to 25 years and the Mayor's vision for Good Growth. A review of the plan indicated the following of relevance to this assessment:

"Policy SI 1 – Improving Air Quality

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

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

v. *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

5 The London Plan March 2021, GLA (2021)

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

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

a) development proposals must be at least Air Quality Neutral

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

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

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

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

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

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

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

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

The requirements of these policies have been considered throughout this assessment.

2.5.2 Sustainable Design and Construction Supplementary Planning Guidance

The Sustainable Design and Construction Supplementary Planning Guidance (SPG)[6] was published by the GLA in April 2014. The document aims to support developers, local planning authorities and neighbourhoods to achieve sustainable development, as well as providing guidance on to how to achieve the London Plan objectives effectively.

The document provides guidance on the following key areas when undertaking an Air Quality Assessment:

- assessment requirements;
- construction and demolition;
- design and occupation;
- air quality neutral policy for buildings and transport; and
- emissions standards for combustion plant.

These key areas were taken into consideration during the undertaking of this assessment.

2.5.3 London Borough of Hillingdon Local Plan

The Local Plan for LboH is provided in two parts, the Hillingdon Local Plan: Part 1 – Strategic Policies [7] and the Hillingdon Local Plan: Part 2 Development Management Policies [8], adopted in November 2012 and January 2020, respectively.

Hillingdon Local Plan: Part 1 comprises a spatial vision, strategic objectives, a spatial strategy, core policies and a monitoring and implementations framework with clear objectives for achieving delivery. A review of the plan indicated the following policy in relation to air quality that is relevant to this assessment:

EM8: Land, Water, Air and Noise

Air Quality

"All developments 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 AQMA should demonstrate air quality neutrality (no worsening impacts) where appropriate; actively contribute to the promotion of sustainable transport measures such as vehicle charging points and the increased

6 Sustainable Design and Construction SPG, GLA (2014)

7 Hillingdon Local Plan: Part 1 Strategic Policies, LBoH (2012)

8 Hillingdon Local Plan: Part 2 Development Management Policies, LBoH (2020)

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 AQMAs 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."

Hillingdon Local Plan: Part 2 sets out the detail of the strategic policies outlined in the Local Plan Part 1. Together they form a comprehensive development strategy for the borough for the period up to 2026. A review of the plan indicated the following policies of relevance to this assessment:

Policy DMEI 14: Air Quality

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:

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.

Policy DMT 1: Managing Transport Impacts

v) 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.

…..

Policy DMT 2: Highways Impacts

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;
…..

These policies have been considered throughout this report by assessing potential air quality impacts as a result of the proposed development.

3 BASELINE CONDITIONS

3.1 INTRODUCTION

This section of the report defines the baseline environment for the assessment and provides a review of background monitoring data and meteorological data for the local area.

The construction of the development will have the potential to generate dust from construction activities and the generation of combustion-type pollutants (e.g. oxides of nitrogen and fine particles) from construction traffic accessing the site and from on-site construction plant.

As discussed in *Section 1.2*, vehicle movements during construction and operation of the proposed development would be below the criteria for requiring a detailed traffic-related air quality assessment.

3.2 METEOROLOGICAL CONDITIONS

3.2.1 The Dispersion and Dilution of Emissions

The most important climatological parameters governing the atmospheric dispersion of pollutants are as follows:

- **Wind direction** determines the broad transport of the emission and the sector of the compass into which the emission is dispersed.

- **Wind speed** will affect low level emissions by increasing the initial dilution of pollutants in the emission.

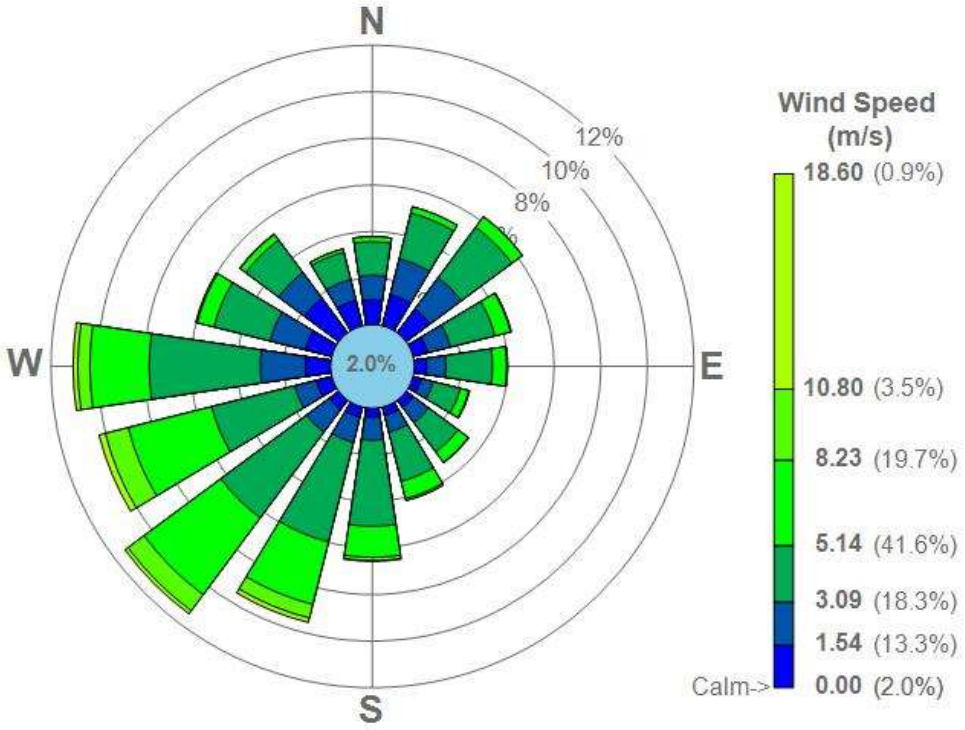
- **Atmospheric stability** is a measure of the turbulence, particularly of the vertical motions present.

3.2.2 Local Meteorological Conditions

Met Office observing stations provide good quality data for dispersion modelling purposes and for describing local climate conditions. The most appropriate Met Office observing station to the proposed development site, is located at London Heathrow Airport, approximately 6 km to the south. Five years of meteorological data have been obtained (2016 to 2020) and a wind rose for the five years is presented in *Figure 3.1*.

The predominant wind direction is from the southwest (11.4%). Calm conditions occur for 2.0% of the time.

FIGURE 3.1 WIND ROSE FOR LONDON HEATHROW AIRPORT (2016 TO 2020)



3.3 BACKGROUND AIR QUALITY

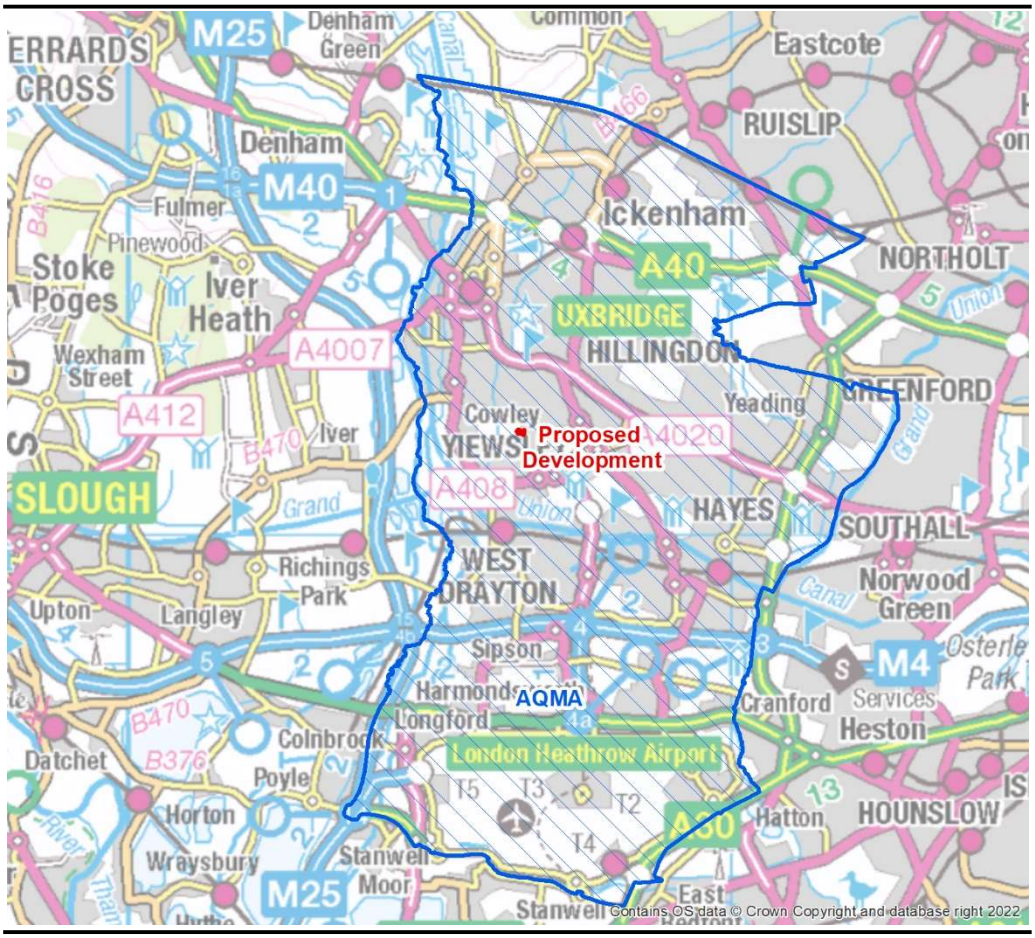
3.3.1 Local Air Quality Management

The Department for Environment, Food and Rural Affairs (Defra) has published technical guidance for use by local authorities in their Review and Assessment work [9]. This guidance, referred to as LAQM.TG(16), has been used where appropriate in the assessment.

The site is located within the administrative area of the London Borough of Hillingdon (LBoH). LBoH has declared one area as an AQMA. This was declared in 2003 due to exceedance of the objectives for NO_2. Air quality problems in the Borough continue to be most severe around Heathrow Airport and the major road network that goes through the Borough, reflecting the largest sources of nitrogen oxide (NOx) emissions within the AQMA which covers the southern half of the Borough (refer *Figure 3.2*).

9 Department for Environment, Food and Rural Affairs (Defra), (February 2018): Part IV The Environment Act 1995 Local Air Quality Technical Guidance LAQM.TG(16).

FIGURE 3.2 LONDON BOROUGH OF HILLINGDON AIR QUALITY MANAGEMENT AREA



LBoH published their Air Quality Action Plan (AQAP) for 2019 to 20124 in May 2019.

3.3.2 Existing Air Quality

Nitrogen Dioxide (NO_2)

LBoH carried out automatic ambient air quality monitoring of NO_2 at eleven sites in 2021. Monitoring of PM_{10} and $PM_{2.5}$ was carried out at a further location. The majority of the monitoring sites are located around Heathrow Airport and would not be representative of air quality at the proposed development site.

LBoH also has an extensive network of diffusion tube locations within the Borough. Four of these are located within 2 km of the proposed development site (refer *Figure 3.3* and *Table 3.1*).

FIGURE 3.3 DIFFUSION TUBE MONITORING SITES WITHIN 2 KM OF THE PROPOSED DEVELOPMENT

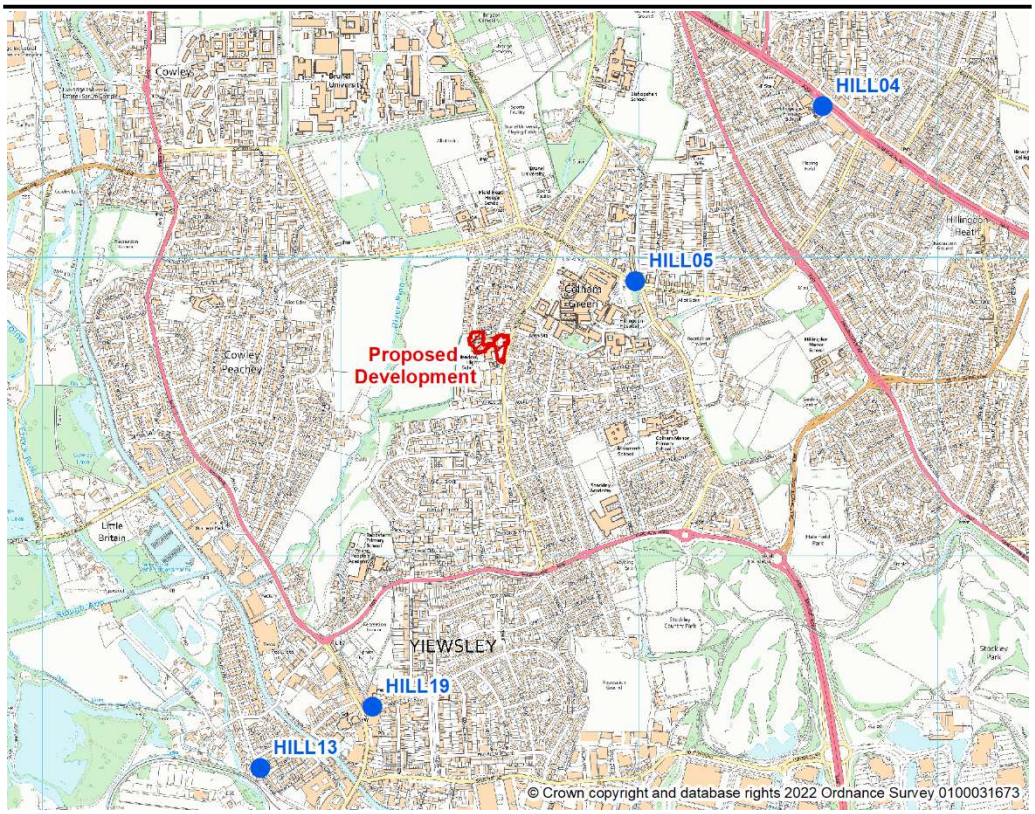


TABLE 3.1 LONDON BOROUGH OF HILLINGDON – DIFFUSION TUBE MONITORING SITES WITH 2 KM OF THE DEVELOPMENT SITE

Site Name	Type	Distance to Relevant Exposure	Distance to Kerb of Nearest Road
HILL04 Hillingdon Primary School	Roadside	0 m	5 m
HILL05 Colham Road/Pield Heath Road	Roadside	7 m	2 m
HILL13 Tavistock Road	Roadside	3 m	1 m
HILL19 Yiewsley High Street	Background	9 m	37 m

A summary of measured concentrations at these four monitoring sites is presented in *Table 3.2* for 2017 to 2021.

Measured concentrations for all sites and all years are below the AQAL of 40 µg m^{-3} except at HILL19 in 2017. Measured concentrations in 2020 were significantly lower than 2019 and likely due to the COVID pandemic. Concentrations measured in 2021 are unlikely to be representative of pre-pandemic conditions. Highest concentrations are measured at HILL19 despite this being assigned as a background monitoring site (the site location indicates it is close to the roadside). The average concentration for the four sites in 2019 was 31.8 µg m^{-3} (78% of the AQAL).

TABLE 3.2 MEASURED ANNUAL MEAN NITROGEN DIOXIDE CONCENTRATIONS (µg m^{-3})

Site Name	Type	2017	2018	2019	2020	2021
HILL04 Hillingdon Primary School	R	28.2	28.5	27.8	22.6	23.3
HILL05 Colham Road/Pield Heath Road	R	36.1	33.4	34.1	27.4	25.4
HILL13 Tavistock Road	R	26.9	29.5	27.9	19.9	21.0
HILL19 Yiewsley High Street	B	**49.0**	38.5	37.4	29.9	27.6

Fine Particles (PM_{10} and $PM_{2.5}$)

LBoH did not undertake any monitoring of fine particles within the vicinity of the proposed development site. Annual mean PM_{10} and $PM_{2.5}$ background concentrations for 2022 have been obtained from the Defra UK Background Air Pollution Maps. The latest background maps were issued in August 2020 and are based on 2018 monitoring data. The maximum Defra background mapped concentrations for 2022 are 16.1 µg m^{-3} for PM_{10} and 10.9 µg m^{-3} for $PM_{2.5}$ for the nine 1 km^2 grids located around the site. The maximum concentration is used to avoid underestimating the contribution from other local sources. Therefore, these concentrations are considered reasonable baseline PM_{10} and $PM_{2.5}$ concentrations for the assessment. The concentrations are well below the AQALs of 40 µg m^{-3} for PM_{10} and 20 µg m^{-3} for $PM_{2.5}$.

4 IMPACT OF DUST-GENERATING ACTIVITIES DURING THE CONSTRUCTION PHASE

4.1 DUST ANNOYANCE

4.1.1 Introduction

Dust in the community is normally perceived as an accumulated deposit on surfaces such as washing, window ledges, paintwork and other light coloured horizontal surfaces, e.g. car roofs. When the rate of accumulation is sufficiently rapid to cause noticeable fouling, discoloration or staining (and thus decrease the time between cleaning) then the dust is generally considered to be an annoyance. However, the point at which an individual makes a complaint regarding dust is highly subjective.

Any form of demolition or construction activity has the potential to generate dust emission and thereby cause annoyance to people in the vicinity.

4.1.2 Characterisation of Particles

Principally, particles are characterised by their size and their chemical composition. Particle emissions arising from construction activities will vary, particularly with regard to their size. Large particles (in excess of 10 μm) are associated with annoyance impacts, as these particles are rapidly removed from the atmosphere and deposit onto horizontal surfaces where they may cause a soiling affect.

Smaller particles (less than 10 μm) are of concern due to their potential impact on human health. The size distribution of particles in urban air is conventionally characterised by three modes. The smallest of these, below 0.1 μm in diameter, is called the nucleation mode and is formed by condensation of hot vapour from combustion sources and from chemical conversion of gases to particles in the atmosphere. Particles of this size have a high chance of deposition in the gas-exchanging (alveolar) part of the lung; they are relatively short-lived and grow into larger particles between 0.1 and about 1 μm in diameter, known as the accumulation mode. These particles remain suspended for up to several weeks in the air and are not readily removed by rain. The third, coarse, mode comprises particles greater than about 2 μm in diameter. These are generally formed by the break-up of larger matter, and include wind-blown dust and soil, particles from construction and sea spray. Their size means that they remain in the air for relatively short periods. Conventionally, for the classification of health impacts, fine particles are referred to as $PM_{2.5}$ (particles with an aerodynamic diameter of less than 2.5 μm).

Particles are also frequently referred to as PM_{10} (aerodynamic diameter of less than 10 μm); these include the coarse (greater than 2 μm in diameter) and the fine fraction. Particles larger than PM_{10} are mainly associated with annoyance impacts and tend to be generated by mechanical processes. A large proportion of the particle releases from construction activities will comprise this larger fraction (i.e. larger than PM_{10}), particularly from the handling and processing of materials. Finer particles may also arise from on-site mobile and fixed construction plant.

4.2 METHODOLOGY

The impact of dust generated during the construction phase of the proposed development has been assessed using the methodology described by the Institute of Air Quality Management (IAQM) Construction Dust Guidance [10].

The most common air quality impacts relating to construction activities are as follows:

- dust deposition, resulting in the soiling of surfaces;
- visible dust plumes, which are evidence of dust emissions;
- elevated PM_{10} concentrations, as a result of dust generating activities on site; and
- an increase in concentrations of airborne particles and nitrogen dioxide due to exhaust emissions from diesel powered vehicles and equipment used on site (non-road mobile machinery, NRMM) and vehicles accessing the site.

The risk of dust emissions from a demolition/construction site causing loss of amenity and/or health or ecological impact is related to:

- the activities being undertaken;
- the duration of these activities;
- the size of the site;
- the meteorological conditions (wind speed, direction and rainfall);
- the proximity of receptors to the activities;
- the adequacy of the mitigation measures applied to reduce or eliminate dust; and
- the sensitivity of the receptors to dust.

10 Guidance on the Assessment of Dust from Demolition and Construction, Institute of Air Quality Management, June 2016.

The IAQM methodology considers four aspects that may give rise to dust emissions:

- demolition of existing structures;
- earthworks;
- construction of the new facilities; and
- 'track out' of dust on vehicles.

The potential for dust emissions is assessed for each activity that is likely to take place. If an activity is not taking place (e.g. demolition) then it does not need to be assessed. The assessment methodology considers three separate dust impacts as follows:

- annoyance due to dust soiling;
- the risk of health effects due to an increase in exposure to PM_{10}; and
- harm to ecological receptors.

Step 1 of the IAQM Guidance is to screen the requirement for a more detailed assessment. An assessment will normally be required where there is a human receptor within:

- 350 m of the construction site boundary; or
- 50 m of a road used by construction traffic up to 500 m from the site entrance.

For ecological receptors, an assessment will be required where a sensitive habitat site is within:

- 50 m of the boundary of the site; or
- 50 m of a road used by construction traffic up to 500 m from the site entrance.

It should be noted that the criteria are deliberately conservative and detailed assessments are required for most proposed developments, recognising that dust arising from construction activities within urban areas is a significant source of airborne particles.

Where appropriate, the four potential sources of dust and PM_{10} (demolition, construction, earthworks and track-out) are considered individually, adopting the methodology in the IAQM guidance to assess the risk of dust annoyance (soiling), adverse impact on human health due to elevated PM_{10} concentrations and adverse impact on habitat sites from dust deposition.

In Step 2, a site is allocated a risk category based on two factors:

- the scale and nature of the works, which determines the potential dust emission magnitude as small, medium or large; and
- the sensitivity of the area to dust impacts which is defined as low, medium or high sensitivity.

The dust emission magnitude is based on the scale of the anticipated works and example definitions are presented in *Table 4.1*.

TABLE 4.1 POTENTIAL DUST EMISSION MAGNITUDE

Activity	Large	Medium	Small
Demolition	Building volume >50,000 m^3, potentially dusty construction materials, demolition at above 20 m in height	Building volume 20,000 to 50,000 m^3, potentially dusty construction materials, demolition height 10-20 m in height	Building volume <20,000 m^3, material with low potential for dust release, demolition height <10 m
Earthworks	Site area >10,000 m^2, potentially dusty soil type, >10 heavy earth moving vehicles, bunds >8 m in height, total material moved >100,000 tonnes	Site area of 2,500 to 10,000 m^2, moderately dusty soil type, 5-10 heavy earth moving vehicles, bunds 4-8 m in height, total material moved 20,000 to 100,000 tonnes	Site area <2,500 m^2, low dust potential soil type, <5 heavy earth moving vehicles, bunds <4 m in height, total material moved <20,000 tonnes
Construction	Total building volume >100,000 m^3, on site concrete batching, sandblasting	Total building volume 25,000 to 100,000 m^3, potentially dusty construction material	Total building volume <25,000 m^3, material with low potential for dust release
Track out	>50 outbound HGV movements in any day, potentially dust surface material, unpaved road length >100 m	10-50 outbound HGV movements in any day, moderately dusty surface material, unpaved road length 50 to100 m	<10 outbound HGV movements in any day, surface material with low potential for dust, unpaved road length <50 m

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

- the specific sensitivities of receptors in the area;
- the proximity and number of those receptors;
- in the case of PM_{10}, the local background concentration; and
- site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

The IAQM document provides guidance on the categorisation of receptors into high, medium and low sensitivities for dust soiling, health effects and ecological effects. For dust soiling, the sensitivity of people and their property to soiling will depend on the level of amenity and the appearance aesthetics and value of property. For health effects from exposure to PM_{10}, sensitivity will depend on

whether or not the receptor is likely to be exposed over relevant timescales to elevated concentrations over a 24-hour period. For ecological effects, the sensitivity will depend on the type of the habitat designation (e.g. European site, national or local designations) and the sensitivity of the habitat to dust deposition effects.

4.3 ASSESSMENT OF IMPACTS

4.3.1 Description of Development and Surroundings

The proposed development site is located within a predominantly residential area with residential properties to the north and the remainder of the school facilities to the east, south and west. The Hillingdon Hospital is located to the northeast of the school site. There is an open area of land to the west of the school site of which the immediate area is used as sports fields. Beyond the sports fields there is an area designated for nature conservation (The Grove).

There are existing temporary school buildings located on the proposed development site and these will need to be demolished prior to earthworks and construction commencing. During construction, access to the site will be via Peel Way to the north of the site.

The proposed construction works are estimated to take approximately 54 weeks with activities scheduled as follows:

- Site mobilisation and demolition activities – July to August 2023;
- Construction of foundations and sub-structure – August to October 2023;
- Construction of super-structure – October 2023 to March 2024; and
- Internal partitions, mechanical, electrical and plumbing, and finishes and fitting out – March to July 2024.

It is expected that a Construction Environmental Management Plan (CEMP) will be a condition of the planning permission for the proposed development. This would be submitted to the planning authority for approval once a contractor has been appointed. The contractor will be registered with the Considerate Constructors Scheme.

4.3.2 Meteorological Influences

In addition to the magnitude of the release, dust impacts in the vicinity of the development site will be dependent on the frequency of wind speeds capable of carrying airborne dust (i.e. greater than 3 m/s [11]) and frequency of rainfall

11 K. W. Nicholson (1988) A review of particle re-suspension. Atmospheric Environment Volume 22, Issue 12, 1988, Pages 2639-2651

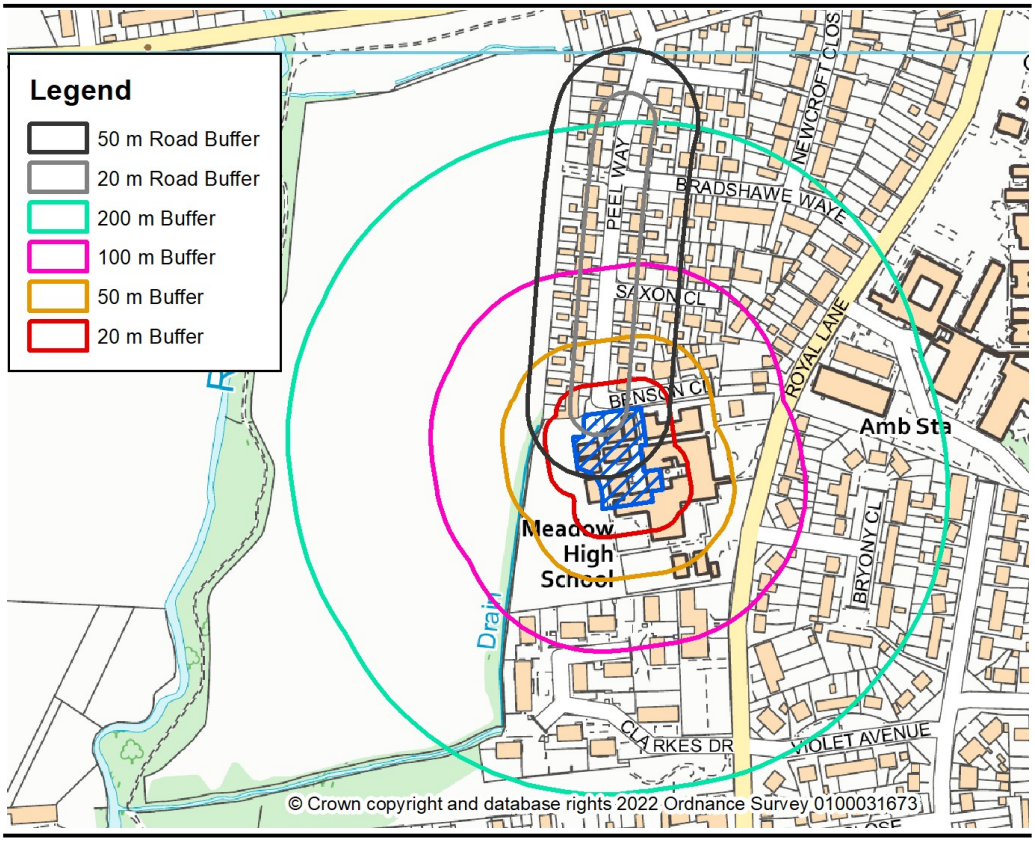
considered sufficient to effectively suppress wind-blown dust emissions (greater than 0.2 mm/day [12]).

Based on the average wind rose for Heathrow Airport (see *Figure 3.1*) wind speeds in excess of 3 m/s, occur for 66% of the time. Daily rainfall of less than 0.2 mm occurs for 54% of the time. Combined, hourly wind speeds of greater than 3 m/s and daily rainfall of less than 0.2 mm (i.e. capable of exacerbating dust impacts) occur for 32% of the time. Therefore, there is a moderate risk of dust emissions from the site under ambient conditions.

4.3.3 Screening of Impacts

Buffer distances (20 m, 50 m, 100 m and 200 m) from the main construction site boundary and site access road are provided in *Figure 4.1*. The buffer distances consider only the area where main construction activities would take place.

FIGURE 4.1 BUFFER DISTANCES FOR THE CONSIDERATION OF CONSTRUCTION DUST IMPACTS



The main construction site itself at around 2.9 hectares (ha) would be classed as a medium site and track out should be considered out to a distance of 200 m from the site entrance. Buffer distances of 20 m and 50 m along the construction route are also provided in *Figure 4.1* out to a distance of 200 m from construction

12 Arup Environmental and Ove Arup and Partners (Dec 1995), The Environmental Effects of Dust from Surface Mineral Workings Volume 2. Prepared for Department of the Environment Minerals Division

site entrance. It is assumed that construction traffic will travel along Peel Way to the north of the site.

Based on the IAQM Guidance there are sensitive receptors within 350 m of the construction site boundary and within 50 m of a road used by construction traffic 200 m from the site entrance (assumed to be a medium construction site). Therefore, a more detailed assessment of construction dust impacts will be required.

There are demolition activities required at the site. Therefore, demolition, earthworks, construction and track out activities will need to be assessed.

The nearest habitat site is The Grove Site of Importance for Nature Conservation (SINC) but this is in excess of 50 m from the development site boundary and the impact of construction activities on habitat sites would not be required.

Therefore, the assessment has considered the following:

- the impact of demolition on human receptors;
- the impact of earthworks on human receptors;
- the impact of construction on human receptors; and
- the impact of track out on human receptors.

4.3.4 Define the Potential Dust Emission Magnitude

The assessment has considered the overall construction of the development such that any mitigation measures can be focussed where required for each activity. A description of the emission magnitude for the anticipated works is provided in *Table 4.2*.

TABLE 4.2 ASSESSMENT OF POTENTIAL DUST EMISSION MAGNITUDE

Demolition	Earthworks	Construction	Track Out
There are around 2,500 m^3 of temporary classrooms and sheds to be demolished. The classroom construction materials are unknown but likely to comprise timber, steel, render, particle board, roofing felt, glass reinforced plastic, UPVC windows and concrete. Demolition height is less than 10 m. Therefore, based on the size of the buildings being demolished, the potential dust emission magnitude is defined as *Small*.	The site is already relatively flat and levelling of the site won't be required. There will be some earthworks required for foundations and site drainage and other utilities. It is estimated that there will be around 1,150 m^3 of soil excavated during earthworks. It is unlikely that there would be more than two mobile plant on site during earthworks. Therefore, overall, the potential dust emission magnitude is defined as *Small*.	The total building volume for construction is around 8,150 m^3. Building materials would be brick cladding supported by a steel framed structure. It is unlikely that a concrete batch plant will be required and concrete for the sub-structure etc would be brought in wet. Therefore, construction methods are considered to have a low dust potential. The potential dust emission magnitude is defined as *Small*.	There would be less than 10 outbound HDV movements at peak levels. Due to the size of the site, the unpaved road length is likely to be less than 50 m. Surface material on site is likely to be low to moderately dusty. Therefore, overall, the potential dust emission magnitude is defined as *Small*.

For demolition earthworks, construction and track out the assessment of the potential dust emission magnitude is summarised in *Table 4.3*.

TABLE 4.3 SUMMARY OF DUST EMISSION MAGNITUDE

Demolition	Earthworks	Construction	Track Out
Small	Small	Small	Small

4.3.5 Define the Sensitivity of the Area

Dust Soiling

The sensitivity of the area to the potential impacts assessed (dust soiling) have been defined using the IAQM guidance as presented in *Table 4.4*. Receptors are identified as being of High, Medium or Low sensitivity as follows:

- High – users can reasonably be expected to enjoy a high level of amenity or the appearance or aesthetics or value of their property would reasonably be expected to be present continuously. These would include dwellings, museums, car show rooms etc.
- Medium - users would expect to enjoy a reasonable level of amenity but not at the same level as in their home or the appearance, aesthetics or value of their property could be diminished by soiling. People or property would not be expected to be present continuously. Examples include places of work and parks.

- Low – the enjoyment of amenity would not reasonably be expected or property would be expected to diminish in appearance, aesthetics or value and there would be transient exposure. Examples include playing fields, farmland, footpaths and short term car parks.

TABLE 4.4 METHODOLOGY ON ASSESSING THE SENSITIVITY OF THE AREA TO DUST SOILING

Phase/ Receptor Sensitivity	No. of Receptors	Distance from the Source			
		< 20 m	<50 m	< 100 m	<350 m
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

Using GIS and the buffer distances provided in *Figure 4.1*, the number of receptors located within the distances identified by the IAQM has been determined and the sensitivity of these to dust soiling has been assessed. This is summarised in *Table 4.5*.

TABLE 4.5 SUMMARY OF SENSITIVITY OF THE AREA TO DUST SOILING

Demolition	Earthworks	Construction	Track Out
Medium	Medium	Medium	High

There are between 1 and 10 high sensitivity receptors located within 20 m and 10 to 100 high sensitivity receptors within 50 m of the construction site including the existing site buildings. Therefore, the sensitivity of the area to dust soiling for demolition, earthworks and construction would be assessed as *Medium*. For track out, the sensitivity of the area to dust soiling has been assessed as *High* as there are between 10 and 100 high sensitivity receptors within 20 m of the site access road.

Human Health Impacts

The sensitivity of the area to human health impacts is assessed on the distance of receptors from the various activities and the existing background PM_{10} concentration. As discussed in *Section 3.3.2*, background PM_{10} concentrations for the local area are estimated at 16.1 $\mu g\ m^{-3}$. Therefore, the sensitivity of the area to human health impacts is determined based on the IAQM guidance as presented in *Table 4.6* for background PM_{10} concentrations of less than 24 $\mu g\ m^{-3}$. Receptors are identified as being of High, Medium or Low sensitivity as follows:

- High – locations where members of the public are exposed over a time period relevant to the air quality objective (e.g. exposed for 8 hours or more

per day). Indicative examples include residential properties, hospitals, schools and residential care homes.

- Medium – locations where people exposed are workers and are exposed for 8 hours or more per day. Receptors would include office and shop workers but not workers occupationally exposed to PM_{10}.
- Low – locations where human exposure is transient and would include public footpaths, playing fields, parks and shopping streets.

TABLE 4.6 METHODOLOGY FOR ASSESSING THE SENSITIVITY OF THE AREA TO HUMAN HEALTH IMPACTS

Phase/ Receptor Sensitivity	No. of Receptors	Distance from the Source			
		< 20 m	<50 m	< 100 m	<350 m
High PM_{10} less than 24 µg m^{-3}	> 100	Medium	Low	Low	Low
	10 - 100	Low	Low	Low	Low
	1 – 10	Low	Low	Low	Low
Medium	> 10	Low	Low	Low	Low
	1- 10	Low	Low	Low	Low
Low	> 1	Low	Low	Low	Low

Using GIS and the buffer distances provided in *Figure 4.1*, the number of receptors located within the distances identified by the IAQM has been determined and the sensitivity of these to human health impacts has been assessed. This is summarised in *Table 4.7*.

TABLE 4.7 SUMMARY OF SENSITIVITY OF THE AREA TO HUMAN HEALTH IMPACTS

Demolition	Earthworks	Construction	Track Out
Low	Low	Low	Low

There are less than 100 high sensitivity receptors (e.g. residential) within 20 m of the construction boundary (as discussed for dust soiling) and for demolition, earthworks and construction the area would be assessed as *Low* sensitivity for health impacts. For track out, the sensitivity of the area to health impacts has also been assessed as *Low* as there are less than 100 high sensitivity receptors within 20 m of the road used by construction traffic.

4.3.6 Define the Risk of Impacts

The dust emission magnitude and sensitivity of the area are combined to determine the risk of impacts using Table 6 (demolition), Table 7 (earthworks), Table 8 (construction) and Table 9 (track out) of the IAQM guidance. A summary of the risks is presented in *Table 4.8*. These are defined on the basis of no mitigation beyond that required by legislation. Where the risk is assessed as 'negligible' no additional mitigation is considered necessary.

TABLE 4.8 SUMMARY OF DUST SOILING RISK AND HUMAN HEALTH RISK TO DEFINE SITE-SPECIFIC MITIGATION

Impact	Demolition	Earthworks	Construction	Track Out
Dust soiling	Low risk	Low risk	Low risk	Low risk
Human health	Negligible	Negligible	Negligible	Negligible

For dust soiling, the risk is identified as 'low risk' for demolition, earthworks, construction and track out but negligible for human health impacts. Therefore, additional mitigation measures may be required to alleviate dust annoyance for sensitive receptors.

4.4 CONSTRUCTION DUST MITIGATION MEASURES

It is not possible to eliminate emissions of dust from the construction activities completely. In order to minimise the impacts of construction activities, a mitigation programme will be developed and incorporated into a Construction Environmental Management Plan (CEMP). It will be necessary to ensure that site-specific mitigation measures within the CEMP include the following mitigation measures.

- The name and contact details of person(s) accountable for air quality and dust issues will be displayed on the site boundary/construction main access.
- The head office contact information will also be displayed at the site boundary.
- All dust and air quality complaints should be recorded, the cause identified and appropriate measures taken to reduce emissions in a timely manner. The complaints log should be made available to the local authority when requested.
- Any exceptional incidents giving rise to dust and or air emissions, either on or off-site should be recorded and the action taken to resolve the situation should be recorded.
- Carry out regular site inspections to monitor compliance with the DMPCEMP, record inspection results and make an inspection log available for the local authority when required.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

- Plan site layout so that machinery and dust causing activities are located away from receptors (including habitat receptors) as far as possible. Erect solid screens or barriers around dusty activities.
- Avoid site runoff of water or mud.
- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable.
- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction.
- Ensure an adequate supply water supply on the site for the effective dust/particle suppression mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment where appropriate.
- Avoid bonfires and burning of waste material.
- Ensure effective water suppression is used during demolition operations.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.

Tarmac laying and the associated use of hot bitumen, if required, can generate significant amounts of black smoke particles as well as odours. This can be minimised by the application of the following measures suggested by the Building Research Establishment [13]:

- bitumen should not be overheated;
- pots and tanks containing hot bitumen should be covered to minimise fume production;
- spillages should be minimised; and
- where possible, bitumen should not be heated with open flame burners.

13 Developing a Code of Practice on Controlling Particles from Construction and Demolition: A Review of Current Position. Buildings Research Establishment (BRE), Prepared for the former DETR. March 2000.

4.5 RESIDUAL IMPACT

The main objective of the IAQM methodology is to determine the risk of dust emissions from construction sites and then to define the mitigation measures required to ensure that impacts are 'not significant'. Therefore, with the adoption of the recommended mitigation measures provided in *Section 4.4*, it is concluded that the residual risk would be '*negligible*' and the impact on dust soiling and human health would be '*not significant*'.

4.6 MONITORING OF DUST IMPACTS

The IAQM has published guidance relating to the monitoring of dust at demolition and construction sites [14]. The IAQM guidance states that as part of the Dust Management Plan for the site, monitoring of dust impacts should be carried out on a daily basis. This ensures that the mitigation measures employed on site are adequately controlling dust emissions, thereby reducing the risk of dust annoyance or exceedances of the air quality objectives for PM_{10} and/or $PM_{2.5}$.

The level of dust monitoring that should be carried out is dependent on the phase of the development and the estimated risk of impacts occurring. For example, steelwork erection, cladding and fit-out would be very low risk.

As a negligible risk following the implementation of mitigation measures provided in *Section 4.4*, visual monitoring of dust is proposed along with dust monitoring using sticky pads at adjacent properties. This would involve a daily visual inspection of dust deposition to surfaces both on and off-site. The sticky pads would confirm that mitigation measures are effective. Monitoring is particularly important at times where meteorological conditions are likely to increase impacts off-site (e.g. dry and windy) or if the prevailing wind is in the direction of sensitive receptors. Observations should be recorded in a site log, providing a useful reference document in the event of complaints relating to dust annoyance. A log of complaints from the public, and the measures taken to address any complaints, where necessary, would also be maintained.

Visual assessment of on-site dust releases such as stockpiling and earthwork activities should also be carried out as a matter of course to ensure the mitigation measures employed are effective.

14 Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites, IAQM, October 2018

5 AIR QUALITY NEUTRAL ASSESSMENT

5.1 INTRODUCTION

The London Plan includes a policy relating to 'air quality neutral development' and aims to bring forward developments that are air quality neutral or better and that do not degrade air quality in areas where EU limit values or air quality objectives are being exceeded. The policy considers the generation of pollutants from transport emissions and from building emissions (e.g. centralised energy centres).

The air quality neutral assessment for the additional road traffic associated with the proposed development compares the road traffic related emissions against calculated benchmark values which are based upon land use, the number of anticipated trips per year, and the average distance travelled per trip.

It is proposed that energy requirements for the development will be fulfilled by renewable energy sources generated on site. Energy would be provided through a combination of 146 photovoltaic panel arrays and two air source heat pumps. Therefore, there will be no combustion type generating units on site and it is not necessary to carry out an air quality neutral assessment for building emissions for the proposed development.

It is noted that consultation documents on Air Quality Neutral and Air Quality Positive assessments were published in November 2021, but these are still at the consultation stage and have not been currently adopted (as of December 2022). Therefore, the assessment is based on the current guidance.

5.2 OVERVIEW OF THE ASSESSMENT

5.2.1 Introduction

The Air Quality Neutral Planning Support document was published in March 2013 and updated in April 2014 [15] to accompany the publication of the GLA's Sustainable Design and Construction SPG [16].

The current approach most widely adopted in London is to calculate the change in concentrations of key pollutants to determine the impact of emissions on local air quality. Through a range of mitigation measures the concentration of pollutants that receptors are exposed to can be controlled so that the impact is not significant. However, the emitted pollutants contribute to the background pollutant concentrations in London as a whole and in combination are helping to maintain pollutant concentrations in excess of air quality standards and

15 Air Quality Neutral Planning Support Update: GLA 80371, Air Quality Consultants (April 2014)

16 Sustainable Design and Construction, Supplementary Planning Guidance, Mayor of London (April 2014)

objectives. Therefore, the air quality neutral approach compares the amount of pollutant emitted against a benchmark level with the aim of minimising the mass of pollutant emitted instead of focussing on the ambient concentration of that pollutant.

The air quality neutral assessment has been carried out by comparison of emissions from transport with the 'air quality neutral' emissions benchmarks for transport as provided in the Sustainable Design and Construction SPG.

The assessment takes into consideration the update to benchmarks issued in March 2020 [17].

5.2.2 Calculation of the Building Emissions

There are no combustion sources associated with the proposed development and the development is therefore air quality neutral with respect to building emissions.

5.2.3 Calculation of the Transport Emissions

It is estimated that the proposed development would generate four additional traffic movements per day for the increase in pupils, there would be no increase in staff numbers. Assuming the school is open for 39 weeks per year, then the total number of additional trips generated by the proposed development would be 780 trips per annum.

There are no Transport Emission Benchmarks (TEB) provided by the Air Quality Neutral (AQN) guidance for schools (former land use class D1) and so the assessment has been made against the benchmark trip rates.

The existing development has a gross internal area (GIA) of 602 m^2 and the new development will have a GIA of 1,569 m^2. Therefore, the change in GIA will be 967 m^2. Applying a factor of 44.4 trips/m^2/annum (Outer London for Class D1) would provide a trip benchmark for the change in GIA of 42,934 trips per annum.

Therefore, the proposed number of additional vehicle trips (780) are substantially below the trip benchmark of 42,934 (1.8%) and the development would be assessed as air quality neutral for transport emissions.

17 Air Quality Neutral: Update to Benchmarks, Air Quality Consultants (March 2020)

6 SUMMARY AND CONCLUSIONS

6.1 SUMMARY

An air quality assessment has been undertaken to determine the potential impacts to support an application for full planning permission for permission for a new teaching building at the Meadow High School in the London Borough of Hillingdon.

The assessment has considered the impact of construction and operational traffic and the impact of construction activities on existing sensitive receptors.

The anticipated number of peak construction vehicles and operational vehicle movements would be below those requiring a detailed assessment as indicated by the IAQM planning guidance. Therefore, the impact of additional transport emissions on existing receptors has been screened out of the assessment.

A construction dust assessment has been carried out in accordance with guidance provided by the IAQM. This has considered the impact of construction activities (demolition, earthworks, construction and track out) on dust soiling and human health impacts. The assessment concluded that the risk of dust soiling was 'low' (demolition, earthworks, construction and track out) but 'negligible' for human health impacts. As a consequence of the low risk of dust soiling, a number of mitigation measures have been recommended and should be included in the Construction Environmental Management Plan (CEMP) for the development. Therefore, with the adoption of the recommended mitigation measures provided, it is concluded that the residual risk would be '*negligible*' and the impact on dust soiling and human health would be '*not significant*'.

The proposed development is assessed as air quality neutral for both building and transport emissions.

6.2 CONCLUSIONS AND RECOMMENDATIONS

Providing the recommended mitigation measures are adopted, it is concluded that the proposed development would not have a detrimental impact on local air quality.

It is recommended that the construction dust mitigation measures identified in this assessment are included in the CEMP and approval of these by the London Borough of Hillingdon should be a condition of the planning permission.

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