



**Hayes Park**

**Air Quality Assessment**

**September 2023**

## Document Control Sheet

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## Contents

<b>1 INTRODUCTION.....</b>	<b>3</b>
1.1 Scope .....	3
<b>2 POLLUTANTS &amp; LEGISLATION .....</b>	<b>4</b>
2.1 Pollutant Overview.....	4
2.2 Air Quality Strategy.....	4
2.3 A guide to the assessment of air quality impacts on designated nature conservation sites (May 2020) Version 1.1 (IAQM). .....	5
2.4 The Conservation of Habitats and Species Regulations (2019).....	5
<b>3 PLANNING POLICY &amp; GUIDANCE .....</b>	<b>6</b>
3.1 National Planning Policy & Guidance.....	6
3.1.1 National Planning Policy Framework.....	6
3.1.2 Land-Use Planning & Development Control .....	6
3.2.1 Supplementary Planning Guidance (SPG).....	8
3.2.2 Sustainable Design and Construction SPG .....	8
3.3 Local Planning Policy.....	9
3.3.1 INSERT BOROUGH POLICY.....	9
<b>4 ASSESSMENT METHODOLOGY.....</b>	<b>11</b>
4.1 Operational Phase (Traffic Emissions).....	11
4.1.1 Modelled Scenarios.....	11
4.1.2 Emission Factors .....	11
4.1.3 Traffic Data .....	11
4.2 Background Concentrations .....	12
4.3 Meteorological Data.....	13
4.4 Model Verification .....	13
4.5 Receptor Locations .....	14
4.6 Operational Phase.....	15
<b>5 AIR QUALITY ASSESSMENT .....</b>	<b>16</b>
5.1 Impact of Vehicle Emissions .....	16
5.1.1 Model Verification.....	16
5.1.3 Nitrogen Dioxide .....	16
5.1.4 Particulate Matter.....	17
<b>6. AIR QUALITY NEUTRAL ASSESSMENT .....</b>	<b>18</b>
6.1 Introduction.....	18
6.2 Building Emissions.....	18
6.3 Transport Emissions.....	19
<b>7. CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>20</b>
7.1 Impact of Vehicle Emissions .....	20
7.2 Building Mitigation .....	20

## 1 INTRODUCTION

### 1.1 Scope

NRG Consulting has been commissioned to undertake an air quality assessment based on the potential impacts of existing and future traffic levels on a new large-scale residential development, located at the former commercial complex at Hayes Park, Hayes End Road, Hayes, UB4 8FE and lies within the jurisdiction of the London Borough of Hillingdon.

The development is described as: “Change of use of the existing buildings to provide new homes (Use Class C3), together with internal and external works to the buildings, landscaping, car and cycle parking, and other associated works.”

The pollutants modelled as part of this assessment are nitrogen oxides ( $\text{NO}_x$ ) and particulate matter ( $\text{PM}_{10}$ ).

The impacts of vehicle emissions have been assessed using the techniques detailed within Volume 11, Section 3 of the Design Manual for Roads and Bridges (DMRB)<sup>1</sup> and the Local Air Quality Management Technical Guidance (LLAQM.TG16)<sup>2</sup>. The impact of road traffic emissions will be assessed using the ADMS-Roads air dispersion model. This model has been devised by Cambridge Environmental Research Consultants (CERC) and is described as a “*comprehensive tool for investigating air pollution problems due to small networks of roads*”.

It should be noted that the short-term impacts of  $\text{NO}_2$  and  $\text{PM}_{10}$  emissions have not been modelled as dispersion models are inevitably poor at predicting short-term peaks in pollutant concentrations, which are highly variable from year to year, and from site to site. Notwithstanding this, general assumptions have been made about short-term concentrations based on the modelled annual mean concentrations.

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<sup>1</sup> Design Manual for Roads and Bridges, Sustainability & Environment Appraisal LA 105 Air Quality – November 2019

<sup>2</sup> London Local Air Quality Management (LLAQM), Technical Guidance, April 2016 (LLAQM.TG (16))

## 2 POLLUTANTS & LEGISLATION

### 2.1 Pollutant Overview

In most urban areas of the UK, traffic-generated pollutants have become the most common pollutants. These are nitrogen dioxide (NO<sub>2</sub>), fine particulates (PM<sub>10</sub>), carbon monoxide (CO), 1, 3-butadiene and benzene, as well as carbon dioxide (CO<sub>2</sub>). This air quality assessment focuses on NO<sub>2</sub> and PM<sub>10</sub>, as these pollutants are least likely to meet their Air Quality Strategy objectives near roads.

Pollutant	Properties	Anthropogenic Sources	Natural Sources	Potential Effects
Particles (PM <sub>10</sub> )	Tiny particulates of solid or liquid nature suspended in the air.	Road transport; Power generation plants; Production processes e.g. windblown dust.	Soil erosion; Volcanoes; Forest fires; Sea salt crystals.	Asthma; Lung cancer; Cardiovascular Problems.
Nitrogen Dioxide (NO <sub>2</sub> )	Reddish-brown coloured gas with a distinct odour.	Road transport; Power generation plants; Fossil fuels – extraction & distribution; Petroleum refining.	No natural sources, although nitric oxide (NO) can form in soils.	Pulmonary oedema; Various environmental impacts e.g. acid rain.

### 2.2 Air Quality Strategy

The UK Government and the devolved administrations published the latest Air Quality Strategy for England, Scotland, Wales and Northern Ireland on 17 July 2007<sup>3</sup>. The Air Quality Strategy contains national air quality standards and objectives established by the Government to protect human health. These can be seen below.

Pollutant	Objective	Concentration measured as
Particles (PM <sub>10</sub> )	50µg/m <sup>3</sup> not to be exceeded more than 35 times a year	24-hour mean
	40µg/m <sup>3</sup>	Annual mean
Particles (PM <sub>2.5</sub> )	25µg/m <sup>3</sup> (except Scotland)	Annual Mean
Nitrogen Dioxide (NO <sub>2</sub> )	200µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean
	40µg/m <sup>3</sup>	Annual mean

Objectives for PM<sub>2.5</sub> were also introduced by the UK Government and the Devolved Administrations in 2010. Background PM<sub>2.5</sub> concentrations are well below the limit value of 25.0 µg/m<sup>3</sup>. As such, no further consideration has been given to PM<sub>2.5</sub> within this assessment.

<sup>3</sup> The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Department for Environment, Food and Rural Affairs in partnership with the Scottish Executive, Welsh Assembly Government and Department of the Environment Northern Ireland, July 2007

## 2.3 A guide to the assessment of air quality impacts on designated nature conservation sites (May 2020) Version 1.1 (IAQM).

The principal purpose of this document is to set out a procedure for air quality specialists to follow when evaluating the impacts of airborne pollution at designated sites. Whilst an air quality specialist may be able to conclude that there are no likely significant effects using established thresholds, they will not generally be able to assess the effects of the air pollution on the integrity of the designated site.

Road transport emissions near designated sites are often the result of many projects and plans located some distance from the site. It is normal in an air quality assessment to include traffic growth estimates using the Department of Transport's TEMPRO36 growth factors or from a strategic transport model that explicitly includes traffic from other projects and/or plans.

A quantitative air quality assessment is required if European Sites are within 200 m of affected roads. Within this context, the distance of the affected road from the designated site is an important consideration. Air pollution levels fall sharply within the first few tens of metres from a road before reducing more slowly with distance. The air quality impact of a given change in traffic on a designated site where the relevant habitat/species is 100 m from a road will be very different to one that abuts the road.

MAGIC website or similar online resources from the relevant SNCO. If local sites are to be assessed, details can be obtained by consulting the Environment Agency or local biodiversity records office which may charge a nominal fee for this service. Sufficient time should be allowed to obtain this data.

**Based on this guidance, and using the tool provided by DEFRA (Magic<sup>4</sup>) there are no European or UK Designations (Statutory – NNRs, Areas of Outstanding Natural Beauty, Ramsar Sites, SSSIs, SACs, SPAs) within 200m of the site. The closest designation to the site is the Local Nature Reserve of Yeading Meadows – which is approximately 800m from the site boundary. Therefore no further consideration has been made here.**

## 2.4 The Conservation of Habitats and Species Regulations (2019).

The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, SI 2019/579 are in force from Implementation Period (IP) completion day. These regulations make changes to the three existing instruments which transpose Directive 92/43/EEC, (the Habitats Directive) and Directive 79/409/EEC, (the Birds Directive) so that they continue to work upon the UK's exit from the EU. The existing instruments are:

- the Conservation of Habitats and Species Regulations 2017, SI 2017/1012
- the Conservation of Offshore Marine Habitats and Species Regulations 2017, SI 2017/1013, and
- the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001, SI 2001/1754

The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, SI 2019/579 also amend section 27 of the Wildlife and Countryside Act 1981 to ensure existing protections continue.

References throughout the regulations are amended to a UK-only context. Sites designated under the Habitats Directive and the Birds Directive previously contributed to the EU's Natura 2000 network.

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<sup>4</sup> <https://magic.defra.gov.uk/MagicMap.aspx>

## 3 PLANNING POLICY & GUIDANCE

### 3.1 National Planning Policy & Guidance

#### 3.1.1 National Planning Policy Framework

On a national level, air quality can be a material consideration in planning decisions. The updated National Planning Policy Framework (NPPF) for England, released in July 2021, is considered a key part of the Government's reforms to make the planning system less complex and more accessible, to protect the environment and to promote sustainable growth.

Paragraph 103 within the NPPF states that "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, by 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. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making."

It goes on to state in paragraph 181 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".

#### 3.1.2 Land-Use Planning & Development Control

In January 2017, Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) produced guidance to ensure that air quality is adequately considered in the land-use planning and development control processes<sup>5</sup>.

The guidance document 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. It is also relevant to other forms of development where a proposal could affect local air quality and for which no other guidance exists.

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<sup>5</sup> Land-Use Planning & Development Control: Planning for Air Quality. Guidance from Environmental Protection UK and the Institute of Air Quality Management for the consideration of air quality within the land-use planning and development control processes. EPUK & IAQM. January 2017

### 3.2 London Plan 2021 & London Planning Guidance

The London Plan Guidance (LPG)<sup>6</sup> and London Plan information for undertaking Air Quality Assessments (AQA) has been used as primary methodology guidance for this report. The LPG has been primarily used to aid in the Air Quality Neutral Assessment (AQNA) within this AQA., this is my new draft of Air Quality Neutral Guidance. In March 2021, the new London Plan was published by the Greater London Authority<sup>7</sup>. The London Plan provides an overall strategic plan for London, setting out an integrated economic, environmental, transport and social framework for the development of London over the next 20–25 years. The Plan brings together the geographic and locational aspects of the Mayor's other strategies, including a range of environmental issues such as climate change (adaptation and mitigation), air quality, noise and waste.

Policy SI1 relates specifically to air quality and states the following:

A Development Plan, 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 borough's 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 an unacceptable risk of high levels of exposure to poor air quality.
- 2) 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.

<sup>6</sup> [https://www.london.gov.uk/sites/default/files/air\\_quality\\_neutral\\_lpg\\_-\\_consultation\\_draft\\_0.pdf](https://www.london.gov.uk/sites/default/files/air_quality_neutral_lpg_-_consultation_draft_0.pdf)

<sup>7</sup> <https://www.london.gov.uk/what-we-do/planning/london-plan/new-london-plan/publication-london-plan>

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 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. 147

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.

### **3.2.1 Supplementary Planning Guidance (SPG)**

#### Control of Dust and Emissions during Construction and Demolition SPG

The Greater London Authority (GLA) released the “Control of Dust and Emissions during Construction and Demolition” SPG in July 2014<sup>8</sup>. The guidance seeks to reduce emissions of dust and PM<sub>10</sub> from construction and demolition activities in London. It also aims to manage emissions of nitrogen oxides (NO<sub>x</sub>) from construction and demolition machinery. The SPG:

- Provides more detailed guidance on the implementation of all relevant policies in the London Plan and the Mayor’s Air Quality Strategy to neighbourhoods, boroughs, developers, architects, consultants and any other parties involved in any aspect of the demolition and construction process;
- Sets out the methodology for assessing the air quality impacts of construction and demolition in London; and
- Identifies good practices for mitigating and managing air quality impacts that are relevant and achievable, with the overarching aim of protecting public health and the environment.

The principles of the SPG apply to all developments in London as their associated construction and demolition activity may all contribute to poor air quality unless properly managed and mitigated.

### **3.2.2 Sustainable Design and Construction SPG**

The Greater London Authority (GLA) released the “Sustainable Design and Construction” SPG in July 2014<sup>9</sup>. The SPG aims to support developers, local planning authorities and neighbourhoods to achieve sustainable development. It guides on to how to achieve the London Plan objectives effectively, supporting the Mayor’s aims for growth, including the delivery of housing and infrastructure.

<sup>8</sup> The Control of Dust and Emissions during Construction and Demolition SPG. Greater London Authority, July 2014

<sup>9</sup> Sustainable Design and Construction SPG. Greater London Authority, July 2014

### 3.3 Local Planning Policy

#### 3.3.1 London Borough of Hillingdon Local Plan (2012)<sup>10</sup>

##### 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:

1. Prioritising higher density development in urban and town centres that are well served by sustainable forms of transport.
2. Promoting a modal shift away from private car use and requiring new development to include innovative initiatives to reduce car dependency.
3. Ensuring development meets the highest possible design standards whilst still retaining competitiveness within the market.
4. Working with developers of major schemes to identify the opportunities to help provide efficiency initiatives that can benefit the existing building stock.
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.
7. Encouraging sustainable techniques to land remediation to reduce the need to transport waste to landfill. In particular developers should consider bioremediation as part of their proposals.
8. Encouraging the installation of renewable energy for all new development in meeting the carbon reduction targets savings set out in the London Plan. Identify opportunities for new sources of electricity generation including anaerobic digestion, hydroelectricity and a greater use of waste as a resource.
9. Promoting new development to contribute to the upgrading of existing housing stock where appropriate.

The Borough will ensure that climate change adaptation is addressed at every stage of the development process by:

10. Locating and designing development to minimise the probability and impacts of flooding.
11. Requiring major development proposals to consider the whole water cycle impact which includes flood risk management, foul and surface water drainage and water consumption.
12. Giving preference to development of previously developed land to avoid the loss of further green areas.

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<sup>10</sup> <https://www.hillingdon.gov.uk/local-plan>

## Policy EM8: Land, Water, Air and Noise

Air Quality 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.

**Hillingdon has a declared Air Quality Management Area (AQMA) that spans from the Chiltern-Marylebone Railway Line southwards. The site lies within this AQMA.**

### 3.3.2 London Borough of Hillingdon Local Plan (2020) Part 2

#### 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.

## 4 ASSESSMENT METHODOLOGY

### 4.1 Operational Phase (Traffic Emissions)

#### 4.1.1 Modelled Scenarios

Two scenarios have been modelled as part of this assessment. These are as follows:

- **Scenario 1 (2021)** – existing levels of air quality/model verification (baseline); and
- **Scenario 2 (2026)** – the future impact of traffic emissions on the proposed development

This **2026** year includes two scenarios of

- i) 'Do nothing' (no modelled future emissions from proposed development) and
- ii) 'Do something' (**Marked as "DS"**) (modelled future emissions with impact from proposed development).

The current baseline year (2021) has been modelled as this corresponds with the air quality monitoring undertaken by the Council (via Air Quality England<sup>11</sup>) and the latest traffic data supplied by DEFRA. A future year has been chosen (2026) representing the baseline year plus 5 years and will provide an assessment of the future impact of traffic emissions on the proposed development once completed and fully occupied.

#### 4.1.2 Emission Factors

Defra and the Devolved Administrations have provided an updated Emission Factors Toolkit (Version 11) which incorporates updated NO<sub>x</sub> emissions factors and vehicle fleet information<sup>12</sup>. These emission factors have been integrated into the latest ADMS-Roads modelling software.

#### 4.1.3 Traffic Data

Baseline traffic flows along the local roads are available from the Department for Transport (DfT)<sup>13</sup>. Projection of traffic data has been undertaken using growth factors specific to Hillingdon obtained from TEMPro<sup>14</sup>. The projected flow rates are provided below. It is assumed that the percentage of HDV and speed will remain unchanged in future years.

The modelled speeds have been derived from the National Atmospheric Emissions Inventory (NAEI)<sup>15</sup>, specifically for major road networks and local roads. However, where a link approaches a junction a speed of 20 kph has been modelled to represent queuing traffic at a junction.

<sup>11</sup> [https://www.airqualityengland.co.uk/site/statistics?site\\_id=HIL5](https://www.airqualityengland.co.uk/site/statistics?site_id=HIL5)

<sup>12</sup> <https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html>

<sup>13</sup> <http://www.dft.gov.uk/traffic-counts/>

<sup>14</sup> TEMPro (Trip End Model Presentation Program) version 7, Department for Transport

<sup>15</sup> <https://naei.beis.gov.uk/>

Link Name	AADT 2021	AADT 2026 - DM	AADT 2026 - DS	HDV (%)	Speed (kph)
A4020	817	842	1213	1.17	32
A312	1825	1882	2253	2.21	32
A40	3907	4030	4401	6.99	32
A4180	908	937	1308	4.20	32
A437	870	897	1268	2.20	32
M4	4316	4452	4822	6.31	32

## 4.2 Background Concentrations

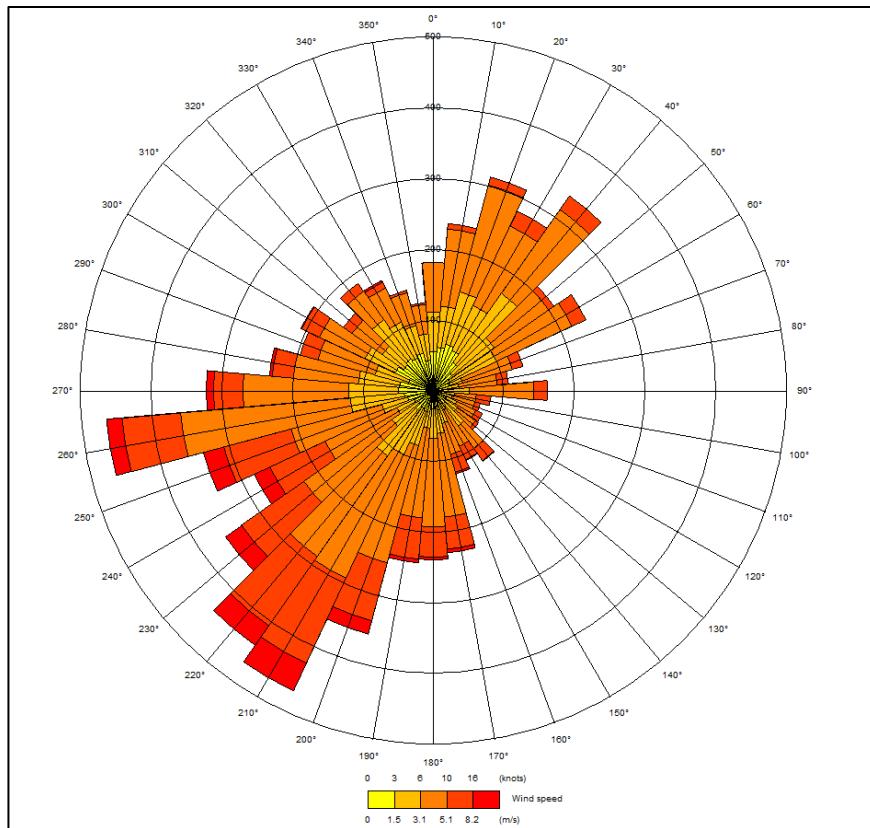
Background NO<sub>x</sub>, NO<sub>2</sub> and PM<sub>10</sub> concentrations have been obtained from Defra<sup>16</sup>. These 1 km x 1 km grid resolution maps are derived from the base year of 2021 (for NO<sub>x</sub>, NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> only). Background concentrations of NO<sub>x</sub>, NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>.

Location	Pollutant	2021
Proposed Development	NO <sub>2</sub>	24.82
	NO <sub>x</sub>	32.11
	PM <sub>10</sub>	15.13
	PM <sub>2.5</sub>	9.17

<sup>16</sup> <https://uk-air.defra.gov.uk/data/gis-mapping/>

#### 4.3 Meteorological Data

Hourly sequential meteorological data from Heathrow Airport meteorological station (2021) has been used. Wind speed and direction data from the Heathrow Airport meteorological station has been plotted as a wind rose.



#### 4.4 Model Verification

The Council undertakes to monitor NO<sub>2</sub> in the form of automatic monitoring sites across Hillingdon, the sites below are the two nearest automatic monitoring sites to the development and are therefore considered excellent verification locations.

Monitoring ID	Location
HIL5	Hayes
HI1	South Ruislip

#### 4.5 Receptor Locations

To assess the potential impact of the traffic emissions from the local road network, several receptors have been identified representing the different facades of the proposed development.

Proposed receptors above the first floor have not been modelled as predicted concentrations at the lower floors will provide a worst-case assessment, this is due to the dispersion of air-polluting particles as elevation increases.

AQA ID	Height (m)	Description
R1 – R1.1	1.5, 4.5	Ground Floor, First Floor
R2 – R2.1		
R3 – R3.1		
R4 – R4.		



Locations marked in red are modelled receptor positions within elevation. Where applicable receptors are projected vertically. The residential aspect of this development begins on the Ground Floor, and then is projected on the first floor.

## 4.6 Operational Phase

The significance of emissions will be determined by comparing the predicted results to the Air Pollution Exposure Criteria (APEC) detailed in the Air Quality and Planning Guidance written by the London Air Pollution Planning and the Local Environment (APPLE) working group<sup>17</sup>. The Air Pollution Exposure Criteria are considered appropriate to describe the significance of the impacts predicted, together with an indication as to the level of mitigation required for the development to be approved. The APEC table is provided below.

APEC Category	NO <sub>2</sub>	PM <sub>10</sub>	Recommendations
A	>5% below the national annual mean objective	>5% below the national annual mean objective 1 day less than national 24-hour objective	No air quality grounds for refusal; however, mitigation of any emissions should be considered.
B	Between 5% below or above the national annual mean objective	Between 5% above or below the national annual mean objective Between 1-day above or below the national 24-hour objective	May not be sufficient air quality grounds for refusal, however appropriate mitigation must be considered
C	>5% above national annual mean objective	>5% above national annual mean objective > 1 day more than national 24-hour 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

<sup>17</sup> Air Quality and Planning Guidance, written by the London Air Pollution Planning and the Local Environment (APPLE) working group, January 2007

## 5 AIR QUALITY ASSESSMENT

### 5.1 Impact of Vehicle Emissions

#### 5.1.1 Model Verification

The modelled output has been verified against the monitoring data obtained from the sites. The following tables provide a summary of the model verification process for NO<sub>x</sub>/NO<sub>2</sub> concentrations. For verification in this report, multiple verification locations have been used, to demonstrate the spread of reliability in the model.

Where the following tables within this section denote 'DM' and 'DS' this is for Do-minimum and Do-something scenarios which can be seen described below.

**Do-minimum scenario.** *The prediction of future air quality without the development in place.*

**Do-something scenario.** *The prediction of future road transport emissions and air quality with the development in place.*

Verification Location	Modelled Concentration	Monitored Concentration	Difference [(modelled - monitored)/monitored] x100
HI5	2.66	2.18	19.8%
HI1	10.20	9.18	10.5%

As described in the Technical Guidance (LAQM.TG16), to provide more confidence in the model predictions and the decisions based on these, the majority of results should be within  $\pm 25\%$  (ideally  $\pm 10\%$ ) of the monitored concentrations. It can be stated that the model provides good confidence within the reasonable range of  $\pm 25\%$ .

#### 5.1.3 Nitrogen Dioxide

Receptor ID	2021		DM 2026		DS 2026	
	GF	1 <sup>st</sup>	GF	1 <sup>st</sup>	GF	1 <sup>st</sup>
R1 - R1.1	30.51	30.38	30.75	30.60	30.86	30.71
R2 - R2.1	31.04	30.87	31.29	31.12	31.42	31.26
R3 - R3.1	30.45	30.33	30.67	30.56	30.79	30.67
R4 - R4.1	30.96	30.78	31.19	31.03	31.33	31.15
Objective	40					

The ADMS predictions for annual mean NO<sub>2</sub> concentrations in 2021 and 2026 indicate that the annual mean objective (40 µg/m<sup>3</sup>) would not be breached at any of the facades of the location, on each floor. Every receptor is categorized as APEC-A categorisation which states, "No air quality grounds for refusal; however, mitigation of any emissions should be considered."

### 5.1.4 Particulate Matter

Predicted annual mean concentrations for PM<sub>10</sub> in 2021 and 2026 are provided below.

Receptor ID	2021		DM 2026		DS 2026	
	GF	1 <sup>st</sup>	GF	1 <sup>st</sup>	GF	1 <sup>st</sup>
R1 – R1.1	16.27	16.27	16.28	16.28	16.28	16.28
R2 – R2.1	16.28	16.28	16.29	16.29	16.29	16.29
R3 – R3.1	16.27	16.27	16.28	16.28	16.28	16.28
R4 – R4.1	16.28	16.28	16.29	16.29	16.29	16.29
Objective	40.0					

The ADMS predictions for annual mean PM<sub>10</sub> concentrations in 2021 and 2026 indicate that the annual mean objective (40 µg/m<sup>3</sup>) would be achieved at all the modelled receptor locations.

Predicted annual mean concentrations for PM<sub>2.5</sub> in 2021 and 2026 are provided below.

Receptor ID	2021		DM 2026		DS 2026	
	GF	1 <sup>st</sup>	GF	1 <sup>st</sup>	GF	1 <sup>st</sup>
R1 – R1.1	10.05	10.05	10.05	10.05	10.05	10.05
R2 – R2.1	10.05	10.05	10.05	10.05	10.07	10.07
R3 – R3.1	10.05	10.05	10.05	10.05	10.05	10.05
R4 – R4.1	10.05	10.05	10.05	10.05	10.05	10.05
Objective	10					

The ADMS predictions for annual mean PM<sub>2.5</sub> concentrations in 2021 and 2026 indicate that the annual mean objective (20 µg/m<sup>3</sup>) would not be achieved at any the modelled receptor locations. This is in line with the Environmental Act 2021. Although this is only a very small margin over the limiting parameter, the scheme has been designed with MVHR for its ventilation which will mitigate this issue and is described in the final section.

## 6. AIR QUALITY NEUTRAL ASSESSMENT

### 6.1 Introduction

Being “air quality neutral” assesses a development’s energy and transport impacts to ensure that new developments do not lead to further deterioration of existing poor air quality by heating choices or increasing traffic flow to an extent that would create air pollution issues for residents.

This air quality neutral assessment has followed the methodology outlined in the London Plan Guidance<sup>18</sup> as this provides up-to-date guidance on assessing a development’s Air Quality Neutral status. Within these documents, benchmarks have been provided about building and transport emissions, together with a methodology for calculating the building and transport-related emissions for a particular development.

### 6.2 Building Emissions

The Building Emissions Benchmarks (BEBs) for the land use category applicable to residential properties are seen below. Emissions of PM<sub>10</sub> and PM<sub>2.5</sub> have not been considered as oil and/or solid fuel are not proposed to be used at the development. The development will be using Electric Heating and therefore will have an overall NO<sub>x</sub> and PM<sub>10</sub> local contribution of zero. This is because these systems do not produce local NO<sub>x</sub> or PM<sub>10</sub> emissions.

Land Use Class	NO <sub>x</sub> (gNO <sub>x</sub> /m <sup>2</sup> /annum)
C3	3.5

Using the method described within the London Plan Guidance, the site-specific benchmarked emissions have been calculated using the emission rates below.

Land Use	Dwellings	Building Emissions Benchmarks (gNO <sub>x</sub> /m <sup>2</sup> /annum)	Benchmarked Emissions (gNO <sub>x</sub> /annum)
C3	11,767	3.5	41,185

Land Use	Estimated Gas Usage (MWh/annum)	NO <sub>x</sub> Emission Rate (mg / KWh)	Total Building Emissions (mg/annum)
C3	0	40	0

Based on the comparison between the total building emissions and Building Emissions Benchmarks the proposed development meets the air quality neutral requirements, and no mitigation is required.

18 [https://www.london.gov.uk/sites/default/files/air\\_quality\\_neutral\\_lpg\\_-\\_consultation\\_draft\\_0.pdf](https://www.london.gov.uk/sites/default/files/air_quality_neutral_lpg_-_consultation_draft_0.pdf)

Total Benchmarked Emissions (gNO <sub>x</sub> /annum)	Total Building Emissions (mg/annum)	Difference
41,185	0	-41,185

### 6.3 Transport Emissions

The Transport Emissions Benchmarks (TEBs) are calculated by multiplying the relevant tip rate (by location) by the number of residential properties.

Land use	No of Dwellings / Area	Benchmark Trip Rate	Total Benchmark Trip Rate
C3	124	447	55,428

The trip generation figures about have been supplied by the *Waterman Group* on the 27<sup>th</sup> of January 2023 as part of their holistic transport assessment for Hayes Park. These trip generation figures suggested that the new development would contribute to 432 new two-way movements per day, and therefore 157,680 movements per year. This would therefore be over the TEBs. Although the development meets BEBs by virtue of electric heating, some mitigation will be required to account for the TEBs.

## 7. CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this report relating to the experienced Air Quality for new residents at the development - it is considered that Air Quality does not present a constraint for the grant of planning permission. Given the parameters below.

**It should be noted that during construction and demolition the appointed contractor will avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where possible.**

**During operation, any backup generators will be designed to avoid diesel- or -petrol powered generators also. In the event that gas backup generators are used, low NOx generators will be designed for.**

### 7.1 Impact of Vehicle Emissions

The predicted concentrations of PM<sub>10</sub> in all modelled years are below the relevant objectives. Predicted concentrations at all the modelled receptors fall within APEC Category A and therefore do not present a constraint for planning.

The ADMS predictions for annual mean NO<sub>2</sub> concentrations in 2021 and 2026 indicate that the annual mean concentration would not be exceeded along any of the façades of the new development. predicted concentrations at these receptors fall within APEC Category A and therefore do not present a constraint for planning.

The predicted concentrations of PM<sub>2.5</sub> in all modelled years are above the relevant objectives. Predicted concentrations at all the modelled receptors fall within APEC Category C, which states that there are “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.”

### 7.2 Building Mitigation

Based on the results of this assessment there is some need to consider for building mitigation. This is because the scheme fails under the PM<sub>2.5</sub> limiting parameter by 0.5%. As this is a marginal pass, it still falls within APEC-A categorisation.

The scheme has been designed for to include MVHR in either of the methods below as per the overheating assessment produced by Hoare Lea – May 2023:

1. *Natural Ventilation with Ambient MVHR at 1ACH +g -Value reduced to 0.4 a.*
2. *Natural Ventilation with Ambient MVHR at 1ACH +g -Value reduced to 0.4 + Internal Blinds*
3. *Tempered Mech Ventilation at 16 OC MVHR at 1ACH +g -Value reduced to 0.4*
4. *Tempered Mech Ventilation at 16 OC MVHR at 1ACH +g -Value reduced to 0.4+ Internal Blinds 47% PASS*

It is the conclusion of this AQA that any of the above implementations would allow the internal air quality of the scheme would aid in improving continuous fresh air supply, improved filtration, and control of indoor pollutants by expelling stale air.

### 7.3 Air Quality Neutral Benchmarks

Air Quality Neutral benchmarks consider both Building Emission Benchmarks (BEBs) and Transport Emissions Benchmarks (TEBs). The development at Hayes Park passes BEBs and therefore no further consideration is required here. The development does not pass TEBs and therefore some mitigation will need to be considered.

This mitigation for Hayes Park presents itself in the form of:

- Complete passive and active provision for every car parking space at the development for EVCP.
  - o Subject to MEP for EVCP requirements, there will be a minimum of 20% active / 80% passive provision.
- Cycle Parking is being provided across the scheme to meet sustainable transport provision needs:
  - o Central - Long-stay: 79; Short-stay: 2
  - o South - Long-stay: 124; Short-stay: 2
  - o Total - Long-stay: 203; Short-stay: 4
  - o 5% Accessible Parking and ~20% Sheffield stands. Remainder double stackers.
- Multiple additional Sustainable Transport initiatives are being undertaken at the scheme:
  - o Car Club – 1 no. from Enterprise Car Club, initial provision for 2-3 years funded through S106
  - o Santander Cycle Hire – (not yet confirmed if on-site, or contribution to elsewhere), but confirmed commitment as part of development.
  - o Travel Packs – standard requirement as part of the Site's Travel Plan, confirmed commitment.
- Car Parking Standards are at a 1:1, which is lower than LBH and London Plan maximum standards.
- Public transport – identifying measures to improve access to bus stops, stations, local destinations through the Active Travel Zone assessment. TfL may still seek contributions to bus services.

Based on this above mitigation and given the location of the scheme it is considered that Air Quality issues from TEBs does not present a constraint for the grant of planning permission.

