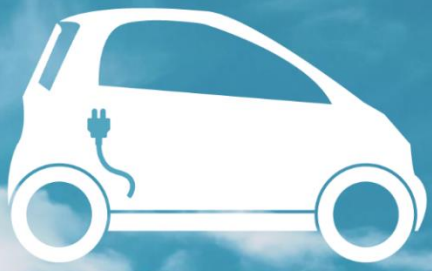
Air Quality Assessment for the Proposed Development at 11 Swakeleys Road, Ickenham

Report to Nexus Planning

April 2024



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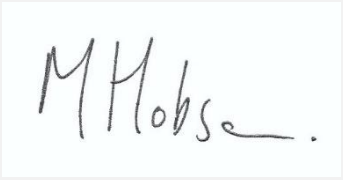
Signature	
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1 Introduction

Aether has been commissioned by Nexus Planning on behalf of Swakeleys Ltd, to undertake an air quality assessment for the proposed redevelopment at 11 Swakeleys Road, Ickenham, UB10 8DF.

The proposal is to convert the first floor and roof space above an existing public house to fully residential use, and to extend the existing building at the rear upwards to form additional flats. In total the scheme will provide six flats in place of the existing one flat. The use as a public house will be retained.

The site lies in the London Borough of Hillingdon (LBH), which declared an Air Quality Management Area (AQMA)[1] in 2003, covering the Borough from the Chiltern-Marylebone railway line southwards. This is due to exceedances of the annual mean nitrogen dioxide (NO_2) objective. As the site is situated within an AQMA, it is important to assess whether there will be an exceedance of the air quality objectives for particulate matter (PM_{10} and $PM_{2.5}$) or nitrogen dioxide (NO_2) at the proposed site. By establishing this, it can then be advised whether any action is required to reduce the site users' exposure to air pollution.

1.1 Assessment Scope

This report describes the existing air quality within the study area and assesses the impact of the construction and operation of the proposed development on air quality in the surrounding area. Consideration is given to the suitability of the site for the proposed development and the need for additional mitigation. Potential sources of emissions have been identified and assessed in the context of existing air quality and the nature and location of receptors.

The existing site currently houses The Tichenham Inn public house, with one residential unit on the first floor. Plans for redevelopment propose to demolish the residential unit and convert the first floor and roof space above the public house, and the existing building at the rear into additional flats. The scheme will provide six flats in total in place of the existing one flat, and the public house will be retained. The planning application relates to a development with a small amount of construction work expected at the site and the land use will be unchanged.

Vehicle movements associated with demolition and construction will likely vary through the construction period, with short periods of peak Heavy Goods Vehicles (HGV) movements associated with demolition and the delivery of materials during the construction phase. However, when the HGV movements are averaged over a full year period (24 hour and 7 days period Annual Average Daily Traffic - AADT) and distributed along the road network, these will be significantly lower than peak movements.

The Demolition and Construction Management Statement[2] outlines the following number of HGV movements:

1 https://uk-air.defra.gov.uk/aqma/details?aqma_ref=28

[2] Pulsar Transport Planning. 11 Swakeleys Road, Ickenham. Draft Demolition and Construction Management Statement. R01-AH-Swakeleys Road DCMS 240125. January 2024.

- 16 tipper lorries are expected to visit the site in an 8 week period for demolition and site setup.
- For superstructure, 32 vehicles over a 16 week period are expected to visit the site.
- For cladding, 32 vehicles over a 16 week period are expected to visit the site.
- For fit-out, testing and commissioning, 64 vehicles are likely to visit over a 16 week period.

The number of HGV movements during the demolition and construction phase are therefore expected to be below the threshold of 25 daily movements that requires further assessment according to Institute of Air Quality Management's (IAQM) guidance. They are therefore not considered to be significant and have therefore been scoped out of this assessment.

For designated nature conservation sites, the criteria for an assessment to be undertaken is a change in traffic of more than 1,000 vehicles per day or 200 HDVs on a road within 200 m of a designated habitat, alone or in combination with other developments[3]. The proposed development predicted traffic level increase is well below the thresholds and, therefore, the impact of traffic emissions on ecological receptors has been scoped out of the assessment.

An assessment of operational phase emissions to determine whether the proposed development is air quality neutral has been carried out.

The Air Quality Positive guidance[4] approach applies to large developments that are subject to an Environmental Impact Assessment (EIA) and therefore does not apply to the proposed development.

1.2 Pollutants of Concern

The main air pollutants of concern related to construction are dust and particulate matter with an aerodynamic diameter of less than 10 µm (PM_{10}), and for road traffic are nitrogen dioxide (NO_2), PM_{10} and particulate matter with an aerodynamic diameter of less than 2.5 µm ($PM_{2.5}$).

The oxides of nitrogen (NO_X) comprise principally of nitric oxide (NO) and NO_2. NO_2 occurs as a result of the oxidation of NO, which in turn originates from the combination of atmospheric nitrogen and oxygen during combustion processes. NO_2 can also form in the atmosphere due to a chemical reaction between NO and ozone (O_3). Health based standards for NO_X generally relate to NO_2, where acute and long-term exposure may adversely affect the respiratory system.

Particulate matter is a term used to describe all suspended solid matter, sometimes referred to as Total Suspended Particulate matter (TSP). Sources of particles in the air include road transport, power stations, quarrying, mining and agriculture. Chemical processes in the atmosphere can also lead to the formation of particles. Particulate

[3] Holman et al., 2020. A guide to the assessment of air quality impacts on designated nature conservation sites – version 1.1, Institute of Air Quality Management, London.
[4] Greater London Authority, 2023. London Plan Guidance Air Quality Positive. February 2023

matter with an aerodynamic diameter of less than 10 µm is the subject of health concerns because of its ability to penetrate deep within the lungs and is known in its abbreviated form as PM_{10}.

A growing body of research has also pointed towards the smaller particles as a metric more closely associated with adverse health impacts. In particular, particulate matter with an aerodynamic diameter of less than 2.5 micrometres, known as $PM_{2.5}$. Ultimately, Local Authorities in England have a flexible role[5] in working towards reducing emissions and concentrations of $PM_{2.5}$ as there is no specific objective for them as the responsibility sits with national government.

Further information on the health effects of air pollution can be found in the reports produced by the Committee on the Medical Effects of Air Pollutants[6].

[5] LAQM TG22 – paragraph 1.14 and 1.15 https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/
[6] https://www.gov.uk/government/collections/comeap-reports

2 Site Description

2.1 Site Location and Site Designations

The proposed development site is located at 11 Swakeleys Road, Ickenham, UB10 8DF within the London Borough of Hillingdon, as shown in Figure 1.

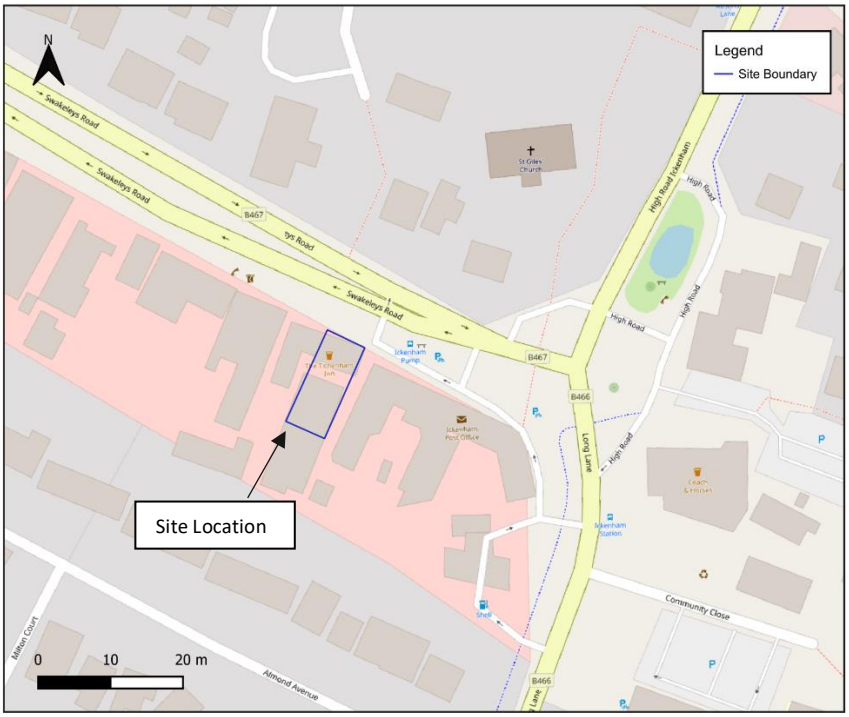

Figure 1: Location of the development site, site boundary outlined in blue.

The site is situated immediately to the east of a row of shops running along the south side of Swakeleys Road, and approximately 400m to the west of Ickenham Station. The building is currently utilised as The Tichenham Inn public house and has one residential unit on the first floor. The site is located in the centre of Ickenham Village, in a predominantly commercial and residential setting, and is within the Ickenham Village Conservation Area, the Ickenham Local Centre and a Primary Shopping Area, as outlined in the Hillingdon Local Plan[7].

Local authorities are required to review and assess the current and future quality of air in their areas. Where it is determined that an air quality objective is not likely to be met, the authority must designate an AQMA and produce an Air Quality Action Plan (AQAP).

The AQMA covers two thirds of LBH due to exceedances of the annual mean NO_2 objective. The development site falls within this AQMA.

[7] https://www.hillingdon.gov.uk/media/3085/Hillingdon-Local-Plan-Part-2-Site-Allocations-and-Designations/pdf/pmLPP2_Site_Allocations_and_Designations_-_ADOPTED_VERSION_JAN_2020.pdf?m=1598370680123

Air Quality Focus Areas (AQFA) are areas where high levels of pollution are combined with high levels of human exposure. The Greater London Authority (GLA) has identified the following twelve Air Quality Focus Areas (AQFA) in the borough[8]:

- M4 Focus Area
- Hayes Town Botwell Lane/ Pump Lane
- Hayes North Hyde Road
- Heathrow area
- A40/Swakeleys Road
- A40/ South Ruislip
- Ossie Garvin to Southall Park
- West Drayton/Yiewsley
- A40/Long Lane
- Uxbridge Town Centre
- Uxbridge Road corridor
- Ruislip town centre

These are locations associated with some of the worst air quality, where the GLA wants focused actions to be taken. However, the proposed development site is not situated within, or close to, these areas and therefore the additional AQFA actions are not applicable to the site. The closest AQFA to the site is the A40/Swakeleys Road AQFA which is 0.6 miles from the site, as shown in Figure 2.

Figure 2: Proposed development site location and nearest AQFA, A40/Swakeleys Road

[8] The London Borough of Hillingdon, 2019. Air Quality Action Plan 2019-2024. https://modgov.hillingdon.gov.uk/documents/s45069/Air%20Quality%20Action%20Plan%202019-2024.pdf

Figure 3: Proposed development site location

Source: Extracted from Marcus Beale Architects LLP drawing 735/000 B. 753_Planning combined_240208.pdf

2.2 Proposed Development Description

Proposed redevelopment plans for the site relate to the demolition of the existing first floor and roof of 11 Swakeleys Road. These will be replaced with a first and second floor conversion for full residential use. Currently the first floor level contains a single residential flat, office space and facilities which are ancillary to the public house. The existing building at the rear upwards will be converted to form additional flats. The proposed scheme will provide a mix of five, three person flats and one, two person flat; a total of six flats. Construction is estimated to be completed by 2025.

Initial architectural plans outline that the front extension to 11 Swakeleys Road will involve revisions to the front roof slope. The eaves level will be maintained but the pitch of the roof will be raised to match the adjoining building to the west. As outlined in the Design and Heritage Statement document[9], 12 cycle parking spaces will be provided with semi vertical cycle stands, in compliance with The London Plan. Additionally, the development will provide 1,440 litres of waste storage capacity for residents, split evenly between refuse and recycling. The rear of the ground floor of the pub will be reconfigured to accommodate the bathrooms and storage currently located on the first

[9] Marcus Beale Architects. Design and Heritage Statement, 11 Swakeleys Road, Ickenham, UB10 8DF. 19 February 2024.

floor, resulting in a loss of overall floor area for the public house. A detailed drawing for the ground floor of the development is provided in the figure below.

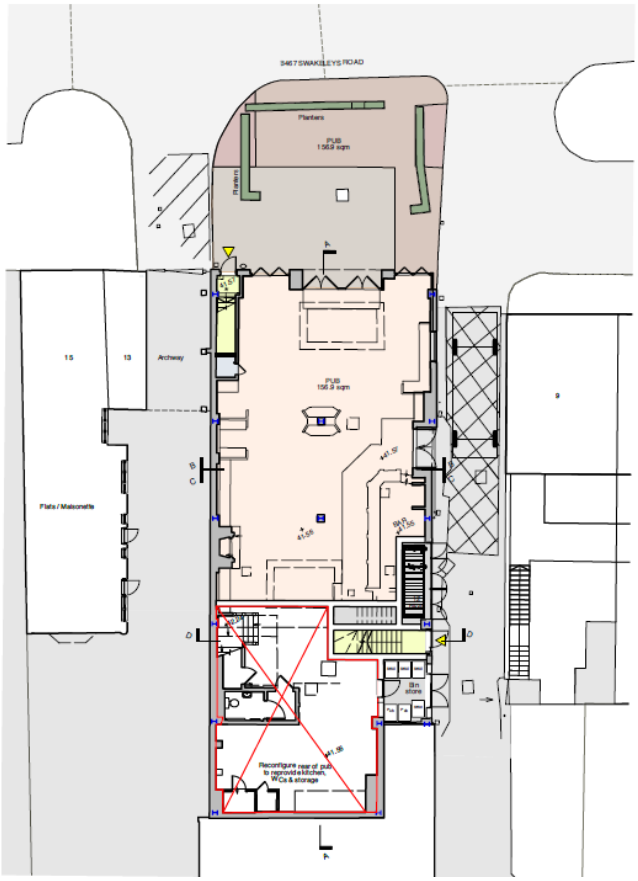

Figure 4: Proposed Development Ground Floor Plan

Source: Extracted from Marcus Beale Architects LLP drawing 735/000 B. 753_Planning combined_240208.pdf

3 Policy Context

The assessment has been informed by the following legislation, policies and published guidance:

- International Legislation including:
  - The European Air Quality Framework Directive and Daughter Directives[10,11], which set out a series of limit values for the protection of human health
- National Legislation and Policy including:
  - Air Quality Standards (Amendment) Regulations 2016[12], which amended the Standard Regulations 2010[13]
  - The Environment Act[14]
  - Part IV of the Environment Act 1995 (as amended)[15]
  - Clean Air Strategy[16]
  - National Planning Policy Framework (NPPF)[17] and Planning Practice Guidance (PPG)[18]
  - Environmental Improvement Plan 2023[19]
  - Regulation 2 of the Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020/1313 ("Environment EU Exit Regulations 2020")[20]
- National guidance and industry standards, including:
  - Air Quality Strategy for England, Scotland, Wales and Northern Ireland, which implements the European Union's Directives and sets out the air quality objectives (AQOs) and government policy on achieving these objectives[21]
  - Local Air Quality Management Technical Guidance 2022 (LAQM.TG(22))[22], which provides advice as to where the national AQOs apply and support to local authorities in carrying out their duties under the Environment Act 1995 and subsequent regulations

[10] Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe.
[11] European Air Quality Directive 2004/107/EC. European Air Quality Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air.
[12] Secretary of State, 2016. Statutory Instrument 2016, No. 1184, The Air Quality Standards (Amendment) Regulations 2016. HMSO, London.
[13]Secretary of State, 2010. Statutory Instrument 2010, No. 1001, The Air Quality Standards Regulations 2010. HMSO, London.
[14] Secretary of State, 2021. The Environment Act Chapter 30. HMSO
[15] Secretary of State, The Environment Act 1995 part IV Air Quality. HMSO.
[16] Department for Environment, Food and Rural Affairs (Defra), 2019. Clean Air Strategy.
[17]Ministry of Housing, Communities and Local Government, 2023. National Planning Policy Framework. HMSO.
[18]Ministry of Housing, Communities and Local Government, 2019. Planning Practice Guidance. Available from: https://www.gov.uk/government/collections/planning-practice-guidance
[19] https://www.gov.uk/government/publications/environmental-improvement-plan
[20] https://www.legislation.gov.uk/uksi/2020/1313/made
[21]Department of the Environment, Transport and the Regions in Partnership with the Welsh Office, Scottish Office and Department of the Environment for Northern Ireland, 2007. The Air Quality Strategy for England, Scotland, Wales, Northern Ireland. HMSO, London.
[22]Defra, 2022. Local Air Quality Management Technical Guidance (England) 2022 (TG22). HMSO. https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance/

- London Local Air Quality Management Technical Guidance (LLAQM TG19), 2019[23]
- IAQM guidance on the Assessment of Dust from Demolition and Construction[24]
- IAQM guidance on Land-Use Planning and Development Control: Planning for Air Quality[25]
- Greater London Authority (GLA) Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance (SPG), 2014[26]
- GLA The Sustainable Design and Construction SPG, 2014[27]
- London Plan Guidance Air Quality Neutral, 2023[28]
- London Plan Guidance Air Quality Positive, 2023[29]

3.1 Regional Planning Policy

3.1.1 The London Plan 2021

The London Plan 2021[30] 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. The Plan is part of the statutory development plan for London, meaning that the policies in the Plan should inform decisions on planning applications across the capital. Borough's Local Plans must be in 'general conformity' with the London Plan, ensuring that the planning system for London operates in a joined-up way and reflects the overall strategy for how London can develop sustainably, which the London Plan sets out.

The Policy Planning policy GG3 on Creating a healthy City states:

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

Policy D3 on Optimising site capacity through the design-led approach states:

> *"D Development proposals should:*
>
> *9) help prevent or mitigate the impacts of noise and poor air quality. "*

Policy 'SI 1 Improving Air Quality' states:

> *"A Development Plans, through relevant strategic, site-specific and area based policies, should seek opportunities to identify and deliver further improvements to air*

[23]Mayor of London, 2019. London Local Air Quality Management Technical Guidance (LLAQM.TG(19))
[24] Holman et al, 2014. IAQM Guidance on the Assessment of Dust from Demolition and Construction, Institute of Air Quality Management, London. http://iaqm.co.uk/guidance/
[25] Moorcroft and Barrowcliffe et al., 2017. Land-use Planning & Development Control: Planning for Air Quality. v1.2. Institute of Air Quality Management, London. http://iaqm.co.uk/guidance/
[26] Greater London Authority, 2014. The Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance. London. GLA.
[27] Greater London Authority, 2014. Sustainable Design and Construction. Supplementary Planning guidance.
[28] Greater London Authority, 2023. London Plan Guidance Air Quality Neutral. February 2023.
[29] Greater London Authority, 2023. London Plan Guidance Air Quality Positive. February 2023
[30] Greater London Authority, 2021. The London Plan. March 2021. London.

quality and should not reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality.

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

1) Development proposals should not:

a) lead to further deterioration of existing poor air quality

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

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

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

a) development proposals must be at least Air Quality Neutral

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

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

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."

3.1.2 London Environmental Strategy

The London Environmental Strategy[31], published in May 2018, aims, among other objectives:

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

[31] Greater London Authority, 2018. London Environment Strategy. London.

Improving London's air quality requires the following actions:

reducing exposure of Londoners to harmful pollution across London – especially at priority locations like schools – and tackling health inequality

achieving legal compliance with UK and EU limits as soon as possible, including by mobilising action from the London boroughs, government and other partners

establishing and achieving new, tighter air quality targets for a cleaner London,

meeting World Health Organization (WHO) health-based guidelines by 2030 by transitioning to a zero emission London."

Policy 4.3.1.a states:

"The Mayor will set new concentration targets for $PM_{2.5}$, with the aim of meeting World Health Organization guidelines by 2030."

3.1.3 Air Quality Positive Guidance

The Air Quality Positive (AQP) London Plan Guidance[32], published in February 2023, explains how to apply the air quality positive approach required by Policy SI1 (Part C) of the London Plan. The air quality approach applies to large-scale developments proposals subject to an Environmental Impact Assessment (EIA). Therefore this aspect is not required in this assessment.

3.1.4 Air Quality Neutral Guidance

The air quality neutral guidance[33] provides an update to the Air Quality Neutral benchmarks considering the most up-to-date evidence and provides clarification on how to apply the benchmarks to support planning applications.

3.2 Local Planning Policy

3.2.1 Adopted Local Plan

The Hillingdon Local Plan Part 1: Strategic Policies, adopted in November 2012[34], outlines the Council's vision for 2026 for the Borough. Eleven strategic objectives are put forward to help achieve the vision of an

"*improved environment and infrastructure [that] is supporting healthier living and helping the borough to mitigate and adapt to climate change"*

SO11 specifically outlines the need to:

"Address the impacts of climate change, and minimise emissions of carbon and local air quality pollutants from new development and transport".

Building upon the strategic objectives, the Hillingdon Local Plan Part 2: Development Management Policies 2020[35], sets out the detailed policies of how the Council will seek

[32] Greater London Authority, 2023. London Plan Guidance Air Quality Positive. February 2023
[33] Greater London Authority, 2023. London Plan Guidance Air Quality Neutral. February 2023.
[34] The London Borough of Hillingdon, 2013. Local Plan Part 1: Strategic Policies. November 2012.
[35] The London Borough of Hillingdon, 2020. Local Plan Part 2: Development Management Policies 2020. January 2020.

to ensure all new development coming forward in the Borough takes account of air quality and contamination.

Policy DMEI 14 Air Quality states:

> *"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."*

To deliver this, the Council advises:

6.63 *Stringent mitigation measures will need to be outlined before consideration is given to a new development along major roads and around Heathrow Airport, due to the consistently high level of atmospheric pollutants. "Especially where any development proposal either introduces new residents into areas of poor air quality or would lead to deterioration in air quality for existing residents.*

6.64 The main focus of improvement will be on those areas where air quality objectives are currently exceeded. However, it is important to make certain that work continues to ensure that the recommended levels are, at the very minimum, maintained and, preferably showing continued improvement for all the residents in the Borough.

6.65 Planning applications for all relevant development should contain an assessment of the likely future levels of air quality in the area and take account of the provisions of the Mayor of London's Sustainable Design and Construction SPD."

3.2.2 London Borough of Hillingdon Air Quality Action Plan 2019-2024

The LBH Air Quality Action Plan 2019-2024[36] sets out measures that will be undertaken to improve air quality in the borough. The objectives defined for Hillingdon's AQAP are to focus actions to:

> *"A. improve the areas of poorer air quality as soon as possible*
>
> *B. continue to improve air quality across the borough and reduce public exposure to air pollution, especially for vulnerable groups within our communities such as the young, the old and those especially already suffering with associated respiratory illnesses".*

[36] The London Borough of Hillingdon, 2019. Air Quality Action Plan 2019-2024.

3.2.3 Hillingdon Local Planning Validation Checklist

The Hillingdon Local Planning Validation Checklist for February 2024[37] outlines as a local requirement that for every planning application an:

> *"Air Quality Assessment should be submitted in areas where air quality is already poor and could have an adverse impact on the proposed development"*

The assessment should confirm whether:

> *"air quality is an issue and demonstrate what mitigation measures will be implemented to ensure the inhabitants of the proposed development are not negatively affected by the existing poor air quality".*

This report provides that information.

[37] https://www.hillingdon.gov.uk/media/5135/Validation-checklist-June-2020/pdf/PUBLICATION_Validation_Checklist_June_2020.pdf?m=1613489637773

4 Methodology

4.1 Assessment Criteria

A summary of the air quality objectives (AQOs) relevant to the proposed development, as set out in the UK Air Quality Strategy[38] and Air Quality Standards Regulations 2010 (as amended by the Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020[39]), is presented in Table 1 below.

Table 1: UK Air Quality Objectives for NO_2 and PM_{10} and target for $PM_{2.5}$

Pollutant	Concentration	Measured as
NO_2	40 µg/m^3	Annual mean
	200 µg/m^3	Hourly mean not to be exceeded more than 18 times per year (99.8th percentile)
PM_{10}	40 µg/m^3	Annual mean
	50 µg/m^3	24 hour mean not to be exceeded more than 35 times a year (90.4th percentile)
$PM_{2.5}$	20 µg/m^3	Annual mean

In January 2023, a legally binding $PM_{2.5}$ Annual Mean Concentration Target (AMCT) was prescribed in the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023[40] and also published in the Environmental Improvement Plan[41]. The $PM_{2.5}$ AMCT to be achieved by the end of 2040 are:

- Annual average of 10 µg/m^3 not to be exceeded at any monitoring station. With an interim target of 12 µg/m^3 to be achieved by the end of January 2028.
- Population exposure at least 35% less than in 2018. With an interim target of 22% reduction to be achieved by the end of January 2028.

The Mayor of London has also adopted a more ambitious target to meet World Health Organization (WHO) guidelines of 10 µg/m^3 for $PM_{2.5}$ by 2030[42].

Analysis of long-term monitoring data[43] suggests that if the annual mean NO_2 concentration is less than 60 µg/m^3 then the one-hour mean NO_2 objective is unlikely to be exceeded where road transport is the main source of pollution; this concentration has been used in this assessment to screen whether the one-hour mean objective is

[38] Department for Environment, Food and Rural Affairs. Air Quality Strategy – Framework for Local Authority Delivery. 2023. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1180706/Air_Quality_Strategy_Web.pdf

[39] Statutory Instrument 2020, No. 000, The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020.

[40] Statutory Instrument 2023, No. 96, The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023.

[41] Defra, 2023. Environmental Improvement Plan 2023. Available from: https://www.gov.uk/government/publications/environmental-improvement-plan/environmental-improvement-plan-2023-executive-summary

[42] Greater London Authority, 2018. London Environment Strategy. London.

[43] Defra, 2022. Local Air Quality Management Technical Guidance (England) 2022 (TG22). HMSO.

likely to be achieved. Similar to NO_2, a PM_{10} annual mean below 32 µg/m^3 is used to screen whether the 24-hour PM_{10} mean objective is likely to be achieved.

As defined by the regulations, the AQOs for the protection of human health are applicable outside of buildings (or other natural or man-made structures above or below ground) and where members of the public are regularly present. AQOs do not apply in workplace locations, to internal air or where people are unlikely to be regularly exposed (i.e., centre of roadways). Guidance on where the AQOs should and should not apply is provided within LAQM.TG (22), as detailed in Table 2.

Table 2: Locations where the AQOs should and should not generally apply

Averaging Period	Objectives Should Apply at	Objectives Should Generally Not Apply at
Annual mean	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes 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.
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 expect to spend one hour or longer.	Kerbside sites where the public would not be expected to have regular access.

4.1.1 Air Quality Objectives Applicable to the Proposed Development

Using these recommendations, the annual mean objectives will apply at locations where members of the public might be regularly exposed such as building façades of residential properties, schools and hospitals and will not apply at the building façades of offices or other places of work, where members of the public do not have regular access.

Since the intended use for the site is for a public house and residential, the annual mean, 24-hour and 1-hour mean objectives will all apply at the proposed development site.

4.2 Baseline

The baseline air quality within in the vicinity of the site was established based on review of relevant monitoring data. Data was obtained from the following sources:

- Air quality monitoring conducted by the LBH[44] latest Annual Status Report (ASR).
- National background pollution maps published by Defra[45]. These cover the whole country on a 1x1 km grid.

4.3 Operational Impacts

4.3.1 Road traffic emissions

Emissions associated with vehicles flows generated by the proposed development were assessed following IAQM guidance[46]. The guidance provides indicative criteria for when an air quality assessment might be required:

- A change of Light Duty Vehicles (LDVs) flows of more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an AQMA or more than 500 AADT elsewhere
- A change of Heavy-Duty Vehicles (HDVs) flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere.

If traffic from a development exceeds these levels, then it does not necessarily mean that a detailed modelling assessment is required, only that air quality impacts of traffic require more detailed consideration.

Traffic flows associated with the proposed development were compared against the IAQM criteria to determine whether they would result in significant increases in traffic on the local road network.

4.4 Air Quality Neutral

Policy SI1 Part B(2)(a) and Part E of the London Plan 2021 and Policy DME1 14: Air Quality of the Hillingdon Local Plan Part 2 requires development proposals to be 'air quality neutral'. The air quality neutral in relation to buildings and transport emissions has been evaluated following the methodology described in the air quality neutral guidance[47]. The guidance sets out benchmarks that developments must meet to be considered air quality neutral.

[44] The London Borough of Hillingdon, 2023. Air Quality Annual Status Report for 2022. http://www.hillingdon-air.info/pdf/LB_Hillingdon_ASR_2023_Final_GLA_approved_AG.pdf

[45] Defra, 2019. 2018 Based Background Maps for NOx, NO_2, PM_{10} and $PM_{2.5}$. Available from: https://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html

[46] Moorcroft and Barrowcliffe et al., 2017. Land-use Planning & Development Control: Planning for Air Quality. v1.2. Institute of Air Quality Management, London.

[47] Greater London Authority, 2023. London Plan Guidance Air Quality Neutral. February 2023.

5 Baseline Assessment

5.1 Local Pollutant Sources and Concentrations

This section provides an overview of the local data available for use in the assessment.

Local authorities are required to periodically review and assess the current and future quality of air in their areas. Where it is determined that an air quality objective is not likely to be met, the authority must designate an AQMA and produce an Air Quality Action Plan (AQAP).

LBH's latest AQAP[48] analysed the main sources of air pollution in the borough, where road transport is the main contributor. LBH's monitoring data over the last few years show that Hillingdon is meeting all the national objectives other than for NO_2.

5.1.1 Nitrogen Dioxide

The LBH has twelve automatic continuous monitoring sites which measure NO_2. This pollutant is also measured passively at 44 diffusion tube sites across the Borough. Details of the monitoring sites located nearest to the development site are provided in Table 3 and Figure 3. However, unfortunately none of these are located in close proximity to the proposed development site.

Table 3: Measured NO_2 concentrations in proximity to the development site

Monitoring Site Name	Site Type	Distance to the kerb (m)	Distance to the dev site (m)	NO_2 Annual Mean (µg/m^3)			
				2019	2020	2021	2022
HILL06 Warren Road Ickenham Uxbridge (1st lamp post on left)	R	23	1,726	35.0	30.9	29.7	32.2
HILL23 198 Harefield Road, Uxbridge Lamp Post (2)	UB	33	1,921	29.3	22.1	23.8	25.0
HILL30 Lamp-post down alley next to No 60a The Chase, Ickenham. Red garage door, set back from road. UB10 8ST.	UB	25	1,130	25.3	20.0	19.2	19.9
HILL36 Lamp-post outside Vodafone, 69 High Street Ruislip. HA4 8JB	R	3	1,776	38.5	28.1	31.6	32.7
HILL37 2/6 High St. Ruislip Lamp-post with Parking and church sign. HA4 7AW	R	1	1,855	39.9	28.1	30.4	31.7
HILL42 Telegraph pole next to big house/field on South corner of The Drive. UB10 8DA	R	1.5	1,795	39.6	28.9	29.3	31.5
AQO				**40**			

Note = R = roadside, UB = Urban Background,

[48] The London Borough of Hillingdon, 2019. Air Quality Action Plan 2019-2024.

The data shows measured annual mean NO_2 concentrations at the closest monitoring sites were well below the AQO between 2019 and 2022.As expected, concentrations are lower in 2020 and 2021 due to the impact of the Covid 19 pandemic travel restrictions.

In addition, the measured annual mean NO_2 concentrations in 2022 were well below 60 µg/m^3, which indicates that the hourly mean objective was unlikely to have been exceeded at the monitoring sites.

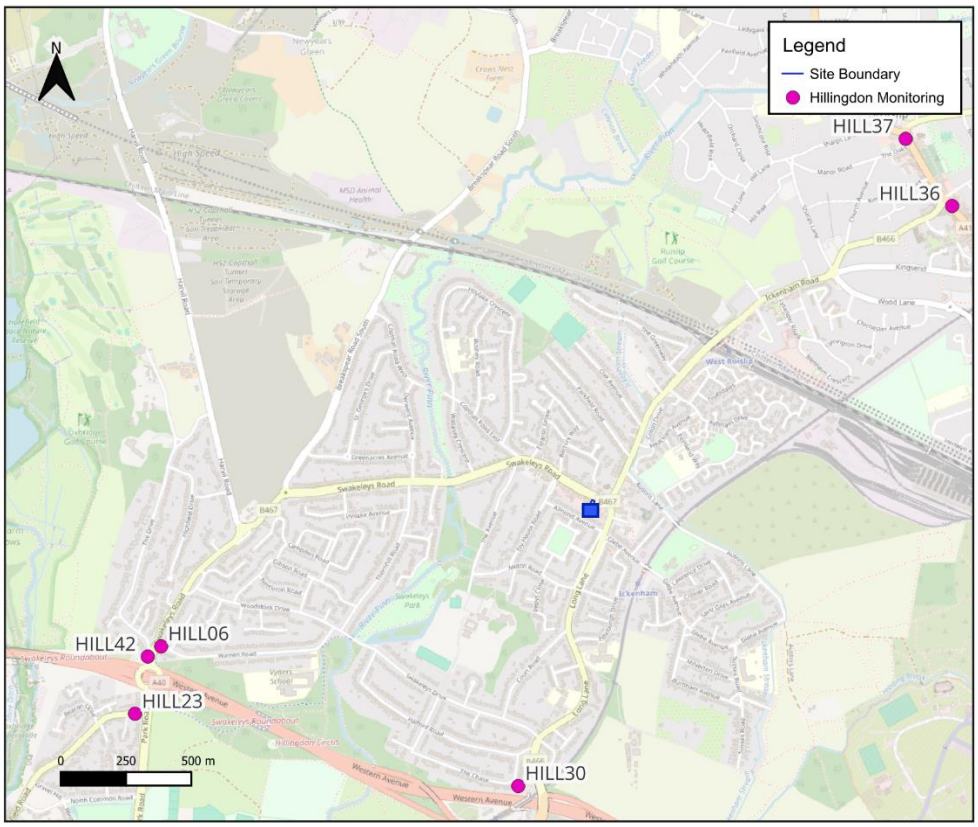

Figure 5: Hillingdon monitoring locations within the vicinity of the site

Source: OS Data © Crown

5.1.2 Particulates (PM_{10} and $PM_{2.5}$)

PM_{10} and $PM_{2.5}$ are monitored together at all the automatic monitoring sites within the Borough, apart from HI1, HI3, SIPS and HIL. There are no automatic monitoring sites in close proximity to the development site that monitor PM_{10} or $PM_{2.5}$. However, there were no exceedances of the relevant AQOs recorded at automatic monitoring sites between 2019 and 2022 in LBH.

5.1.3 London Atmospheric Emissions Inventory

The LAEI estimates key pollutant concentrations (NO_x, PM_{10}, $PM_{2.5}$) by source type for the base year 2019 and forecast year 2025. These were estimated at ground level using an atmospheric dispersion model.

Predicted air quality concentrations at the Swakeleys Road site for 2019 and 2025, the year of expected completion for the proposed development, have been extracted from the latest available LAEI for NO_2, PM_{10} and $PM_{2.5}$ and are shown in Figure 6 to 9.

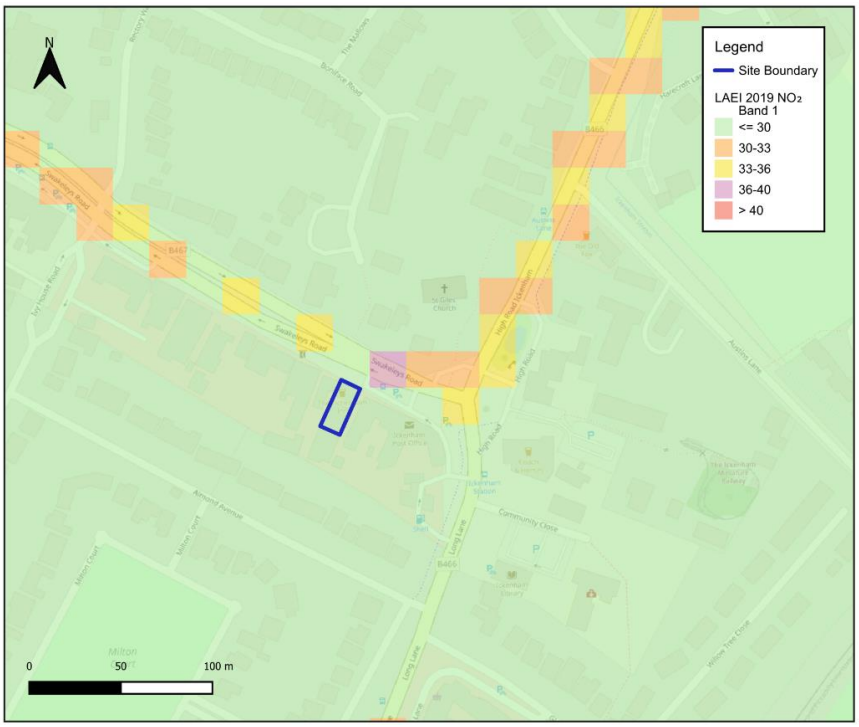

Figure 6: LAEI NO2 annual mean predicted concentrations for 2019 (µg/m^3)

The LAEI data shows that annual mean NO_2 concentrations are expected to be 30µg/m^3 or below at the proposed development site in 2019 and 2025.

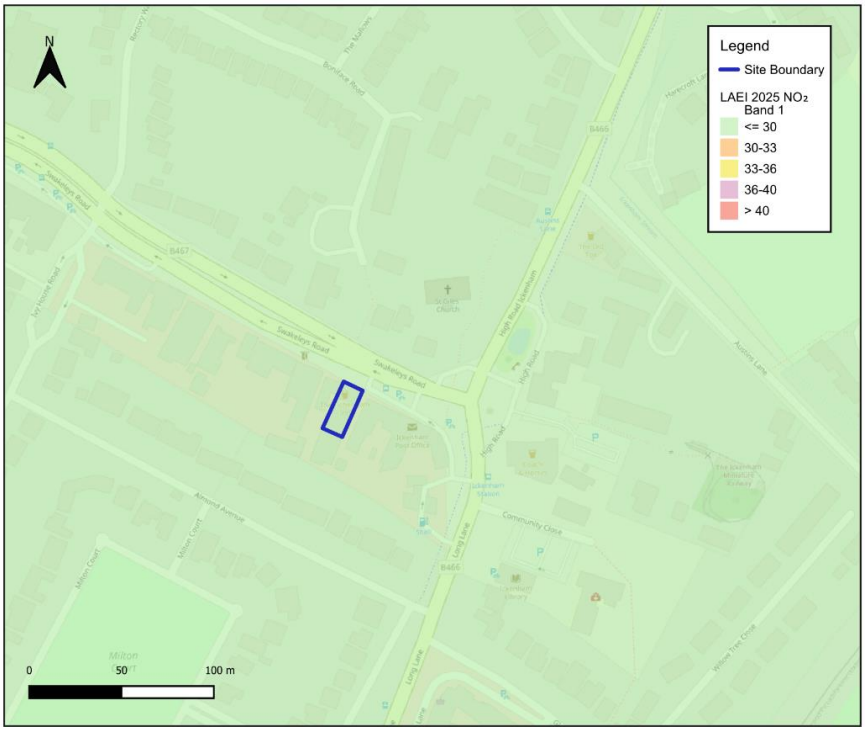

Figure 7: LAEI NO2 annual mean predicted concentrations for 2025 (µg/m^3)

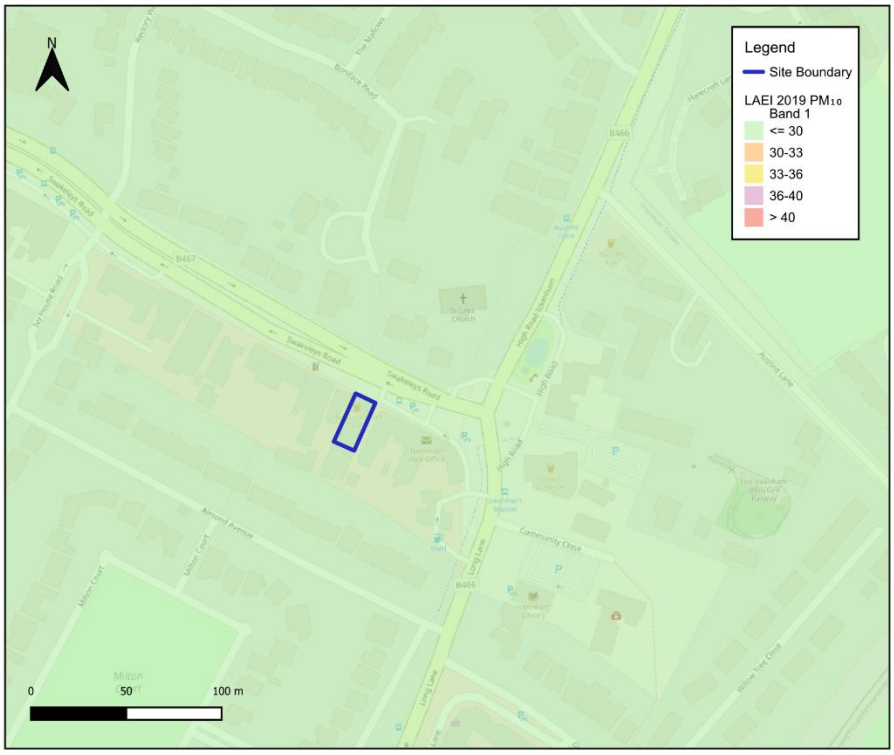

Figure 8: LAEI PM10 annual mean predicted concentrations for 2019 (µg/m^3)

Ground level annual mean PM_{10} concentrations predicted by the LAEI in 2019 indicate concentrations at the site are below 30 µg/m^3. This means the AQO is unlikely to be exceeded at the proposed development site. As concentrations of PM_{10} are significantly below the objective the risk of exceeding the objective is low.

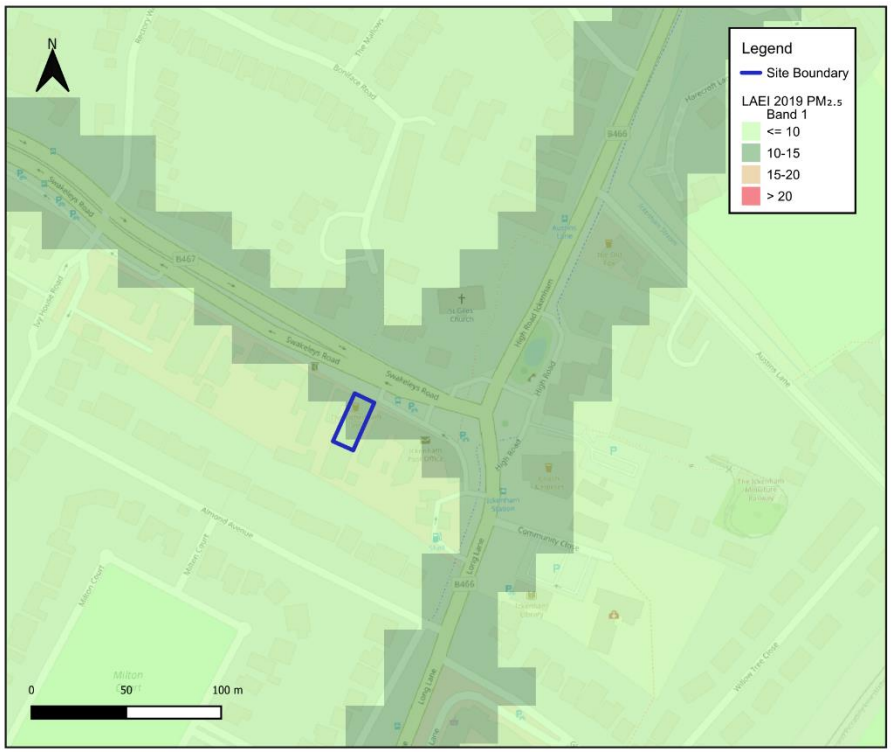

Figure 9: LAEI PM2.5 annual mean predicted concentrations for 2019 (µg/m^3)

Ground level annual mean $PM_{2.5}$ concentrations predicted by the LAEI indicate concentrations at the site are below 20 µg/m^3 and therefore the AQO is unlikely to be exceeded at the development site. However, the LAEI estimates an exceedance of the Mayor of London's target to meet the WHO guidelines of 10 µg/m^3 for $PM_{2.5}$ by 2030.

5.1.4 Background Mapped Data

Background concentrations are those levels that would be observed away from specific sources such as roads and industry. Background pollutant concentration maps are available from the Defra LAQM website[49]. These 2018 baseline, 1 kilometre grid resolution maps are derived from a complex modelling exercise that takes into account emissions inventories and measurements of ambient air pollution from both automated and non-automated sites.

The projections in the 2018 LAQM background maps are based on assumptions which were current before the Covid-19 outbreak in the UK. In consequence these maps do not reflect short or longer term impacts on emissions in 2020.

The estimated mapped background NO_2, PM_{10} and $PM_{2.5}$ concentrations at the development site are presented in Table 4.

Table 4: Defra's Projected Mapped Annual Mean Background Concentrations (µg/m^3)

Year	Grid Ref	Annual Mean (µg/m^3)		
		NO_2	PM_{10}	$PM_{2.5}$
2023	507894, 186203	15.1	14.4	9.9
2025		13.8	14.1	9.6
UK AQO/Target		**40**	**40**	**20**
WHO AQG		**40**	**20**	**10**

The background concentrations are substantially below the annual mean NO_2, PM_{10} and $PM_{2.5}$ objectives for 2023 and are expected to be even lower in 2025. It is therefore expected that concentrations will be below the relevant AQOs during the operational phase.

However, the $PM_{2.5}$ concentrations almost exceed the Mayor's target of 10µg/m^3 in 2030. This is however the case across much of London.

5.2 Assessment of Baseline Data

The background and LAEI measured concentrations for NO_2, PM_{10} and $PM_{2.5}$, in proximity to the development site, show that the AQOs are unlikely to be exceeded in 2025. Combined with the measured concentration data, it is therefore expected that concentrations at the site currently meet and will remain below the AQOs.

[49] LAQM Background Mapping data for Local Authorities, available at: https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018

Concentrations at the site are likely to be highest at the façade facing Swakeleys Road, reducing gradually to values similar to background concentrations as distance from the road increases.

Pollutant concentrations at background and roadside locations are predicted to decrease in future years due to the gradual renewal of the road transport fleet with less polluting models and implementation of national policies, such as the intention to ban new combustion engine private vehicle sales by 2030[50, 51], and regional policies, such as London's Ultra Low Emission Zone (ULEZ) recently expanded in August 2023[52]. Evidence has suggested that since the introduction of the ULEZ in February 2017, there has been an overall reduction of 44% in NO_2 concentrations at roadside sites in the central zone[53].

6 Operational Phase Assessment

6.1 Impact of the development

The proposed site energy configuration will utilise existing individual gas boilers. No centralised energy plant is proposed and therefore the development will likely not include any substantial combustion processes or emissions.

The proposed site will be car free and accessible by foot and bicycle only. Site plans include the provision of 12 long stay cycle parking spaces with semi vertical cycle stands.

Whilst there is no car parking for general use, visitors may choose to drop people off at the site, resulting in an increase in emissions from idling at the entrance to the site. However, the issue of potential idling already exists due to the building being occupied by the public house.

Due to the small size of the development, it is expected that there will be minimal travel activity increase. The proposed development is expected to be substantially below the IAQM guidance threshold for requiring further assessment of 100 daily movements, and therefore the traffic emissions impacts and associated effects on local air quality are not considered to be significant.

6.2 Site Suitability

The proposed development at the Swakeley Road site will replace the existing first floor and roof of the property, to provide additional residential space for five households. The proposed development is therefore expected to introduce new sensitive receptors.

[50] https://www.gov.uk/government/news/government-takes-historic-step-towards-net-zero-with-end-of-sale-of-new-petrol-and-diesel-cars-by-2030
[51] Air Quality Consultants, 2020. Nitrogen Oxides Trends in the UK 2013 to 2019. January 2020. Available at: https://www.aqconsultants.co.uk/resources. Air Quality Consultants (AQC) published a study looking at trends in nitrogen oxides in the UK between 2013 to 2019. The study concluded that there is an overall reduction trend in NOx concentrations that have continued through 2019 'with NOx concentrations at roadside sites have reduced by an average of 5.14% per year since 2013'.
[52] https://www.london.gov.uk/press-releases/mayoral/dramatic-improvement-in-londons-air-quality.
[53] https://www.london.gov.uk/WHAT-WE-DO/environment/environment-publications/central-london-ulez-ten-month-report

As detailed in Section 5, measured concentrations at the closest monitoring sites along with the LAEI pollutant concentrations indicate that pollutant concentrations are below the AQOs.

Concentrations at the site would be expected to remain below all of the AQOs levels as any potential increases in general road traffic would be more than offset by the improvement in vehicle emissions[54, 55]. Therefore the site is considered suitable for the proposed development without the need for specific mitigation measures in relation to operational air quality impacts.

6.3 Air Quality Neutral

The guidance provides two sets of benchmarks which cover the two main sources of air pollution from new developments:

- Building Emissions Benchmark (BEB) – emissions from equipment used to supply heat and energy to the buildings
- Transport Emissions Benchmark (TEB) – emissions from private vehicles travelling to and from the development.

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

6.3.1 Building emissions benchmark

At the time of writing the development's energy strategy has not been finalised. However, the proposed sites energy system is expected to use existing individual gas boilers as outlined in section 1.1.

The development will include less than 9 dwellings and is classed as a minor development according to the air quality neutral guidance. The simplified procedure for the building emissions benchmark therefore applies.

It is assumed that all new individual boilers installed at the development will have NOx emissions rated at less than 40 mg/kWh, and therefore the **proposed development meets the building emission benchmark.**

6.3.2 Transport emissions benchmark

As outlined in Section 6.3.1, the air quality neutral guidance states that "*Developments, including major developments, that do not include additional emissions sources are assumed to be Air Quality Neutral and to meet the Air Quality Neutral benchmarks. As such, there is no need to do an AQN Assessment. This would include, for example, developments that have no additional motor vehicle parking, do not lead to an increase in motor vehicle movements*". The proposed development will not include additional

[54] Air Quality Consultants, 2020. Performance of Defra's Emission Factor Toolkit 2013-2019. February 2020. Available at: https://www.aqconsultants.co.uk/resources. The study concludes that NOx concentrations are most likely to decline more quickly in the future, on average, than predicted by the EFT.
[55] Air Quality Consultants, 2020. Comparison of EFT v10 with EFT v9. September 2020. Available at: https://www.aqconsultants.co.uk/resources. The study concludes that EFT v10 generally predicts lower NOx emissions than EFT v9. It also predicts a greater reduction in emissions over time into the future.

parking (it is car-free) and will not lead to an increase in motor vehicle movements. The proposed development therefore **meets the transport emission benchmark**.

6.4 Mitigation Measures

The air quality objectives are expected to be met at the proposed site, and no significant effects from operational traffic on local air quality are expected. Air quality mitigation measures to protect future site users from poor air quality and to reduce the impacts of the development on local air quality are therefore not required.

As outlined in the Demolition and Construction Management Statement, the Swakeleys Road site has suitable access to active travel and public transport routes. The footways on both sides of the carriageway, 30mph speed limit and zebra crossing on Swakeleys Road, approximately 45m from the site, will aid the safe movement of pedestrians and cyclists. Bus stops are within 20m, 100m and 160m of the site, making local bus routes easily accessible. As the site is in a Local Centre, in close proximity to good quality social infrastructure, the associated emissions from new sensitive receptors are likely to be mitigated by the adequate provision of amenities and services.

7 Summary

This report provides an air quality assessment for the proposed redevelopment of a site located at 11 Swakeleys Road, Ickenham, UB10 8DF. Planning permission is sought for the demolition of the existing first floor and roof of the building and the redevelopment of the site to provide a new three storey building to create six residential units.

The proposed development falls within the administrative boundary of the London Borough of Hillingdon where two thirds of the borough has been declared as an air quality management area (AQMA) due to exceedances of the annual mean nitrogen dioxide (NO_2) objective. The proposed development lies within this AQMA. However, the proposed development site is not situated within, or close to, an air quality focus area.

Measured concentrations at non-automatic monitoring sites in proximity to the development site show that concentrations have been below the air quality objectives in the most recent years. This combined with the LAEI's estimated pollutant concentrations indicates no exceedances of the relevant objectives at the proposed development site in any year that has been assessed. The site is therefore considered suitable for the proposed development without the need for specific mitigation measures.

No additional parking will be created as part of the planning application and no onsite pollutant emitting energy generation is planned. The proposed development therefore would not generate any substantial road traffic or building emissions. The proposed development's traffic emissions impacts and associated effects on local air quality are therefore not considered to be significant. The proposed development is also considered air quality neutral for transport and building emissions.

Overall, it is concluded that there are no air quality constraints to the proposed development at 11 Swakeleys Road and the proposed changes comply with regional and local policies, namely the London Plan and London Borough of Hillingdon air quality action plan.

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