217 High Street, Yiewsley

Air Quality Assessment

On behalf of **Taylor Wimpey West London**

Project Ref: 46187/3003 | Rev: Final | Date: February 2020

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Contents

1 Introduction 1
1.1 Proposed Development 1
1.2 Scope of Assessment 1
2 Legislation, Policy and Guidance 2
2.1 Air Quality Regulations 2
2.2 National Air Pollution Plan for NO_2 in the UK 3
2.3 Air Quality Management 3
2.4 National Planning Policy 4
2.5 Local Planning Policy 8
2.6 Assessment Guidance 12
3 Methodology 16
3.2 Baseline Air Quality 16
3.3 Demolition and Construction Dust Impacts 16
3.4 Demolition and Construction Road Traffic Impacts 17
3.5 Petrol Station Impacts 17
3.6 Operational Road Traffic Emission Impacts 18
3.7 Site Suitability 18
3.8 Air Quality Neutral 20
3.9 Assumptions and Limitations 20
3.10 Air Quality Impacts Significance Criteria 20
4 Baseline Environment 21
4.1 Site Context 21
4.2 Study Area 21
4.3 Sensitive Receptor Locations 21
4.4 Ambient Air Quality 22
4.5 Predicted Background Concentrations 23
5 Predicted Impacts 25
5.1 Construction Dust Impacts 25
5.2 Demolition and Construction Traffic Impacts 26
5.3 Operational Petrol Station Impacts 27
5.4 Operational Road Traffic Impacts 27
5.5 Site Suitability 28
5.6 Air Quality Neutral 28
5.7 Air Quality Positive 29
5.8 Impact Significance 30
6 Mitigation 32
6.1 Demolition and Construction Dust 32
6.2 Demolition, Construction and Operational Traffic and the Proposed Energy Strategy 34

6.3 Site Suitability 34
6.4 Air Quality Neutral 34
7 Summary and Conclusions 35
References 36

Tables

Table 2-1 Relevant Air Quality Objectives 2
Table 2-2 Relevant Public Exposure 4
Table 4-1 Measured Annual Mean NO_2 Concentrations (2014 – 2018) 23
Table 4-2 Estimated Annual Mean Background Concentrations 24
Table 5-1 Risk of Construction Dust Impacts without Mitigation 26
Table 5-2 Predicted Concentrations within the Site 28
Table 5-3 Comparison of Benchmark and Actual Development Trip Rates per Annum 29

Appendices

Appendix A Glossary
Appendix B IAQM Dust Guidance (2014) Approach
Appendix C EPUK / IAQM Guidance (2017) Screening Criteria
Appendix D Model Inputs and Results Processing
Appendix E Model Verification
Appendix F Future Year Modelling – Road Transport Emissions
Appendix G Air Quality Neutral Planning Support Update: GLA 80371 Annual Trip Rates
Appendix H Figures

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1 Introduction

1.1 Proposed Development

1.1.1 Taylor Wimpey West London (the 'Applicant') has commissioned Stantec to undertake an air quality assessment to support a planning application for the proposed mixed-use development at 217 High Street, Yiewsley (the 'Site'). The Site is located within the administrative boundary of the London Brough of Hillingdon (LBH).

1.1.2 The application pertains to the erection of five and six storey buildings to provide a 10,000 sqft D1 Health Facility and 235 residential apartments with associated parking, communal podium garden, landscaping, pedestrian and cycle canal link and external works following the demolition of the existing buildings on site at 217 High Street, Yiewsley (the 'Proposed Development').

1.1.3 The proposed energy strategy will be air-source heat pumps for the development. It is possible that the Proposed Development will also include an emergency back-up diesel generator, however, this is subject to final confirmation.

1.2 Scope of Assessment

1.2.1 This report describes existing air quality within the Study Area, considers the suitability of the Site for the proposed end-use and assesses the impact of the construction and operation of the Proposed Development on air quality in the study area, as well as determining the 'air quality neutrality' of the Proposed Development. The assessment also identifies ways in which the Proposed Development has demonstrated an 'Air Quality Positive' approach, in accordance with the new London Plan: Intend to Publish (GLA, 2019).

1.2.2 The main air pollutants of concern during the construction period are emissions of dust and fine particulate matter (PM_{10}) associated with on-site demolition and construction activities and off-site trackout, and emissions of nitrogen dioxide (NO_2) and fine particulate matter (PM_{10} and $PM_{2.5}$) associated with demolition and construction road vehicles.

1.2.3 The main air pollutants of concern during the operational period are NO_2, PM_{10} and $PM_{2.5}$ emissions associated with proposed and existing road traffic and emissions of benzene (C_6H_6) from the existing petrol station located to the south of the Site. The proposed energy strategy of air-source heat pumps will not have any associated on-site emissions and, as such, will not have any significant effects on air quality.

1.2.4 Should an emergency back-up generator be installed, then there will be the potential for air quality impacts as a result of associated emissions of NO_2, however, as the proposed installation of a generator is yet to be confirmed, and there is limited information regarding this potential plant, then it is not considered appropriate to undertake an assessment of potential impacts at this stage. Should the proposed installation of a generator be confirmed, and details become available, then consideration of the potential impacts is recommended to be undertaken at a later date.

1.2.5 The assessment has been prepared taking into account the requirements of relevant local and national guidance, policy and legislation.

2 Legislation, Policy and Guidance

2.1 Air Quality Regulations

2.1.1 The Air Quality (England) Regulations 2000 and the Air Quality (England) (Amendment) Regulations 2002 (AQR) define National Air Quality Objectives (NAQOs). The Air Quality Standards Regulations 2010 (with subsequent amendments most notably in 2016 and for the devolved administrations), transposed the European Union's (EU) Directive on ambient air quality and cleaner air for Europe (2008/50/EC).

2.1.2 Directive 2008/50/EC consolidated the previous framework directive on ambient air quality assessment and management and its first three daughter directives. The limit values remained unchanged, but it now allows Member States a time extension for compliance, subject to European Commission (EC) approval.

2.1.3 The relevant NAQOs for this assessment are shown in Table 2-1.

Table 2-1 Relevant Air Quality Objectives

Pollutant	Time Period	NAQOs	Source
NO_2	1-hour mean	200 µg/m^3 not to be exceeded more than 18 times a year	NAQO and EU limit value
	Annual mean	40 µg/m^3	NAQO and EU limit value
PM_{10}	24-hour mean	50 µg/m^3 not to be exceeded more than 35 times a year	NAQO and EU limit value
	Annual mean	40 µg/m^3	NAQO and EU limit value
$PM_{2.5}$	Annual mean	25 µg/m^3	Stage 1 limit value by 2015 - NAQO and EU limit value
	Annual mean	20 µg/m^3	Stage 2 limit value by 2020 - EU Directive
C_6H_6	Running annual mean	16.25 µg/m^3	NAQO
	Annual mean	5 µg/m^3	NAQO and EU limit value

2.1.4 The NAQO's for NO_2 and PM_{10} were to have been achieved by 2005 and 2004 respectively, but also continue to apply in all future years thereafter.

2.1.5 The 2019 Clean Air Strategy includes a commitment to set a "*new, ambitious, long-term target to reduce people's exposure to $PM_{2.5}$*" which the Environment Bill commits the Secretary of State to setting. Additionally, the Mayor of London has committed to meeting the World Health Organisation (WHO) guideline of 10 µg/m^3 by 2030.

2.1.6 For the purposes of this assessment the EU Directive Stage 2 limit value for $PM_{2.5}$ has been considered as the relevant NAQO and consideration given to future potential changes.

2.2 National Air Pollution Plan for NO_2 in the UK

2.2.1 The national Air Quality Plan for NO_2 (DEFRA, 2018) sets out how the Government plans to deliver reductions in NO_2 throughout the UK, with a focus on reducing concentrations to below the EU Limit Values throughout the UK within the 'shortest possible time'.

2.2.2 The plan requires all LAs in England which the Department for Environment, Food and Rural Affairs (DEFRA) identified as having exceedances of the Limit Values in their areas past 2020 to develop local plans to improve air quality and identify measures to deliver reduced emissions, with the aim of meeting the Limit Values within their area within "*the shortest time possible*". Potential measures include changing road layouts, encouraging public and private ultra-low emission vehicle (ULEV) uptake, the use of retrofitting technologies and new fuels and encouraging public transport. In cases where these measures are not sufficient to bring about the required change within 'the shortest time possible' then LAs may consider implementing access restrictions on more polluting vehicles (e.g. Clean Air Zones (CAZs)). A CAZ is defined within the plan as being "*an area where targeted action is taken to improve air quality and resources are prioritised and coordinated in a way that delivers improved health benefits and supports economic growth*" and may be charging or non-charging.

2.3 Air Quality Management

The Air Quality Strategy and the Clean Air Strategy

2.3.1 Part IV of the Environment Act 1995 (Environment Act, 1995) required the Secretary of State to prepare and publish and 'strategy' regarding air quality.

2.3.2 The Air Quality Strategy (2007) establishes the policy framework for ambient air quality management and assessment in the UK (DEFRA, 2007). The primary objective of the Air Quality Strategy is to ensure that everyone can enjoy a level of ambient air quality which poses no significant risk to health or quality of life. The Air Quality Strategy sets out the NAQOs and Government policy on achieving these.

2.3.3 The Clean Air Strategy (2019) aims to lower national emissions of pollutants, thereby reducing background pollution and minimising human exposure to harmful concentrations of pollution. The Strategy aims to create a stronger and more coherent framework for action to tackle air pollution (DEFRA, 2019a).

Local Air Quality Management

2.3.4 Part IV of the Environment Act 1995 (Environment Act, 1995) introduced a system of Local Air Quality Management (LAQM) which requires local authorities to regularly and systematically review and assess air quality within their boundary and appraise development and transport plans against these assessments.

2.3.5 Where a NAQO is unlikely to be met, the local authority must designate an Air Quality Management Area (AQMA) and draw up an Air Quality Action Plan (AQAP) setting out the measures it intends to introduce in pursuit of the NAQO's within its AQMA.

2.3.6 The Local Air Quality Management Technical Guidance 2016 (LAQM.TG(16); (DEFRA, 2016), issued by DEFRA for Local Authorities (LAs) provides advice as to where the NAQOs apply. These include outdoor locations where members of the public are likely to be regularly present for the averaging period of the objective (which vary from 15 minutes to a year) as summarised in Table 2-2.

Table 2-2 Relevant Public Exposure

Averaging Period	NAQOs apply at:	NAQOs don't apply at:
Annual mean	All locations where members of the public might be regularly exposed For example: Building facades of residential properties, schools, hospitals, care homes etc	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 residences Kerbside sites Any other location where public exposure is expected to be short term
24-hour mean and 8-hour mean	All locations where the annual mean NAQO would apply, together with hotels and gardens of residences	Kerbside sites 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 NAQOs apply as well as: Kerbside sites Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer.	Kerbside sites where the public would not be expected to have regular access
15-minute mean	All locations where members of the public might reasonably be exposed for a period of 15 minutes or longer.	

2.4 National Planning Policy

National Planning Policy Framework

2.4.1 The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how they are expected to be applied (Ministry of Housing, Communities & Local Government, 2019). The following paragraphs are considered relevant from an air quality perspective.

2.4.2 Paragraph 102 on promoting sustainable transport states:

> *"Transport issues should be considered from the earliest stages of plan-making and development proposals, so that: …*
>
> *d) the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; …"*

2.4.3 Paragraph 103 continues to state:

"Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health."

2.4.4 Paragraph 170 on conserving and enhancing the natural environment states:

"Planning policies and decisions should contribute to and enhance the natural and local environment by: …

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land stability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans, and…"

2.4.5 Paragraph 180 within ground conditions and pollution states:

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

2.4.6 Paragraph 181 states that:

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

2.4.7 Paragraph 182 states that:

"Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed".

National Planning Practice Guidance

2.4.8 Paragraph 005, Reference 32-005-20191101 (revision date 01.11.2019), of the PPG provides guidance on how considerations regarding air quality can be relevant to the development management process as follows:

"Whether air quality is relevant to a planning decision will depend on the proposed development and its location. Concerns could arise if the development is likely to have an adverse effect on air quality in areas where it is already known to be poor, particularly if it could affect the

implementation of air quality strategies and action plans and/or breach legal obligations (including those relating to the conservation of habitats and species). Air quality may also be a material consideration if the proposed development would be particularly sensitive to poor air quality in its vicinity.

- *Where air quality is a relevant consideration the local planning authority may need to establish:*
- *The 'baseline' local air quality, including what would happen to air quality in the absence of the development;*
- *Whether the proposed development could significantly change air quality during the construction and operational phases (and the consequences of this for public health and biodiversity); and*
- *Whether occupiers or users of the development could experience poor living conditions or health due to poor air quality."*

2.4.9 Paragraph 006, Reference 32-006-20191101 (revision date 01.11.2019), of the PPG identifies what specific air quality issues need to be considered in determining a planning application:

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

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

2.4.10 Paragraph 007, Reference 32-007-20191101 (revision date 01.11.2019), of the PPG provides guidance on how detailed an assessment needs to be:

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

and

"The following could form part of assessments:

A description of baseline conditions and any air quality concerns affecting the area, and how these could change both with and without the proposed development;

- Sensitive habitats (including designated sites of importance for biodiversity);
- The assessment methods to be adopted and any requirements for the verification of modelling air quality;
- The basis for assessing impacts and determining the significance of an impact;
- Where relevant, the cumulative or in-combination effects arising from several developments;
- Construction phase impacts;
- Acceptable mitigation measures to reduce or remove adverse effects; and
- Measures that could deliver improved air quality even when legally binding limits for concentrations of major air pollutants are not being breached."

2.4.11 Paragraph 008, Reference 32-008-20140306 (revision date 01.11.2019), of the PPG provides guidance on how an impact on air quality can be mitigated:

"Mitigation options will need to be locationally specific, will depend on the proposed development and need to be proportionate to the likely impact. It is important that local planning authorities work with applicants to consider appropriate mitigation so as to ensure new development is appropriate for its location and unacceptable risks are prevented. Planning conditions and obligations can be used to secure mitigation where the relevant tests are met.

Examples of mitigation include:

- Maintaining adequate separation distances between sources of air pollution and receptors;
- Using green infrastructure, trees, where this can create a barrier or maintain separation between sources of pollution and receptors;
- Appropriate means of filtration and ventilation;
- Including infrastructure to promote modes of transport with a low impact on air quality (such as electric vehicle charging points);
- Controlling dust and emissions from construction, operation and demolition; and
- Contributing funding to measures, including those identified in air quality action plans and low emission strategies, designed to offset the impact on air quality arising from new development."

2.5 Local Planning Policy

The Current London Plan

2.5.1 The London Plan Consolidated with Alterations since 2011 provides strategic planning guidance for Greater London (GLA, 2016a). Each Borough's development plans must be in 'general conformity' with it.

2.5.2 The Plan includes Policy 7.14 (Improving Air Quality) which states that development proposals should "*Minimise increased exposure to existing poor air quality and make provision to address local problems of air quality (particularly within Air Quality Management Areas (AQMAs)) and where development in likely to be used by large numbers of people vulnerable to poor air quality, such as steps to promote greater use of sustainable transport modes*".

2.5.3 The plan also requires that the London Boroughs and others with relevant responsibilities should also have policies that:

- "*Seek reductions in levels of pollutants referred to in the Government's National Air Quality Strategy having regard to the Mayor's Air Quality Strategy; and*
- *Take account of the findings of the Air Quality Review and Assessments and Action Plans, in particular where AQMAs have been designated*."

2.5.4 The Mayor will work with strategic partners to ensure the spatial, transport and design policies of the London Plan support his Air Quality Strategy.

2.5.5 The Plan also includes Policy 8.2 (Planning Obligations) which states that the Mayor will provide guidance for boroughs and other partners on the preparation of frameworks for negotiations on planning obligations reflecting strategic priorities including the improvement of Air Quality.

The New London Plan

2.5.6 The New London Plan: Intend to Publish version (GLA, 2019) was released in December 2019 and sets out the Mayor of London's overall strategic plan for London. The New London Plan runs from 2019 to 2041 in order to provide a longer-term view of London's development to inform decision making.

2.5.7 In relation to Air Quality, the Inspectors Report to the London Plan Examination which was published in October 2019 largely indicates agreement with the policies in the Draft London Plan and therefore policies in the Draft New London Plan have been considered as in-place within this assessment.

2.5.8 Policy Planning for Good Growth 3 (Policy GG3) on creating a healthy City states:

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

2.5.9 The New Plan includes Policy Sustainable Infrastructure 1 (SI1) Improving Air Quality which aims to:

- *"...ensure that new developments are designed and built, as far as is possible, to improve local air quality and reduce the extent to which the public are exposed to poor air quality. This means that new developments, as a minimum, must not cause new*

exceedances of legal air quality standards, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits".

2.5.10 Policy SI1 'Improving Air Quality' states that:

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

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

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

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

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

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

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

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

E. Development proposals should ensure that where emissions need to be reduced to meet the requirements of Air Quality Neutral or to make the impact of the development on local air quality acceptable, this is done on-site. Where it can be demonstrated that emission cannot be further reduced by on-suite 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."

2.5.11 Paragraph 9.1.8 defines Air Quality Focus Areas (AQFA) as:

"*Air Quality Focus Areas (AQFA) are locations that not only exceed the EU annual mean limit value for nitrogen dioxide (NO_2) but are also locations with high human exposure. AQFAs are not the only areas with poor air quality but they have been defined to identify areas where currently planned national, regional and local measures to reduce air pollution may not fully resolve poor air quality issues. There are currently 187 AQFA's across Lon*don."

2.5.12 Paragraph 9.1.2A defines 'Poor Air Quality':

"*Where this policy refers to 'existing poor air quality' this should be taken to include areas where legal limits for any pollutant, or World Health Organization targets for Particulate Matter, are already exceeded and areas where current pollution levels are within 5% of these limits*"

2.5.13 Paragraph 9.1.6C provides advice on the interpretation of the results of 'Air Quality Neutral' Assessments:

"*For most minor developments achieving Air Quality Neutral will be enough to demonstrate that they are in accordance with Part B1 of this policy. However, where characteristics of the development or local features raise concerns about air quality, or where there are additional requirements for assessments in local policy, a full Air Quality Assessment may be required*."

2.5.14 The New London Plan seeks the application of an 'air quality positive approach' to the design of developments; however, it does recognise that this is both site and development specific (para 9.1.6E):

"*Delivery of an air quality positive approach will be project specific and will rely on the opportunities on site or in the surrounding area to improve air quality*."

2.5.15 Policy D3 'Optimising Site Capacity through Design-led Approach' states that *"…Development proposals should…help prevent or mitigate the impacts of…poor air quality…*";

2.5.16 Policy D8 'Public Realm' states that "*Development Plans and development proposals should…reduce exposure to air pollution…*"; and

The London Environment Strategy

2.5.17 The London Environmental Strategy, published in May 2018, evaluates the current condition of London's environment at a city-wide level (Mayor of London, 2018). This is the first strategy to bring together approaches to every aspect of London's environment, including air quality as well as green infrastructure, climate change mitigation and energy, waste, adapting to climate change, ambient noise and low carbon circular economy.

2.5.18 The Strategy 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*".

2.5.19 Chapter 4 on Air Quality includes a series of objectives, policies and proposals to improve air quality. The following key issues have been highlighted to be addressed within the Strategy:

- achieving legal compliance as quickly as possible;
- diesel vehicles, especially cars and vans;
- tackling all sources of pollution;
- government action;
- maximising co-benefits between air quality and climate change policies; and
- Further reductions are needed in PM_{10} and $PM_{2.5}$, particularly from transboundary pollution, tyre and brake wear, and wood burning.

Local Planning Policy

2.5.20 The 'Local Plan: Part 1; Strategic Policies' document (LBH, 2012) was adopted by LBH in November 2012, and includes the following four relevant polices:

- Policy EM8 'Land, Water, Air and Noise' states that "*…All development should not cause deterioration in the local air quality levels and should ensure the protection of both existing and new sensitive receptors.*

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

  The Council seeks to reduce the levels of pollutants referred to in the Government's National Air Quality Strategy and will have regard to the Mayor's Air Quality Strategy. London Boroughs should also take account of the findings of the Air Quality Review and Assessments and Action 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 imporvements";

- Policy BE1 'Built Environment' states that "*The Council will require all new developments to improve and maintain the quality of the built environment in order to create successful and sustainable neighbourhoods, where people enjoy living and working and that serve the long-term needs of all residents. All new developments should:…Maximise the opportunities for all new homes to contribute to…reducing emissions of local air quality pollutants…*";

- Policy EM1 'Climate Change Adaptation and Mitigation' states that "*The Council will ensure that climate change mitigation is addressed at every stage of the development process by:…*

  - *…promoting the use of decentralised energy within large scale development whilst improving local air quality levels;*
  - *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 reduction…"; and

- Policy E2 'Location of Employment Growth' states that "*…The Council will promote development in highly accessible locations that delivers sustainable travel patterns and contributes to the improvement of existing networks to reduce emissions and impacts on air quality…*".

2.5.21 The 'Local Plan: Part 2; Development Management Policies' document (LBH, 2020) was adopted by LBH in January 2020, and includes the following five relevant polices:

- Policy DMEI 1 'Living Walls and Roofs and on-site Vegetation' states that "*All development proposals are required to comply with the following:…Major development in Air Quality Management Areas must provide onsite provision of living roofs and / or walls. A suitable offsite contribution may be required where onsite provision is not appropriate*";

- Policy DMEI 3 'Decentralised Energy' states that "*…The Council will support the developments of DENs* [Decentralised Energy Networks] *and energy centres in principle, subject to meeting the wider policy requirements of this plan and in particular o design and air quality*";

- Policy DMEI 14 'Air Quality' states that:

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

  B. *Development proposals should, as a minimum:*

     i. *Be at least 'air quality neutral';*

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

     iii. *Actively contribute towards the improvement of air quality, especially within the Air Quality Management Area*";

- Policy DMT 1 'Managing Transport Impacts' states that "*Development proposals will be required to meet the transport needs of the development and address it transport impacts in a sustainable manner. In order for developments to be acceptable they are required to:…have no significant transport of associated air quality…impacts on the local and wider environment, particularly on the strategic road network…*"; and

- Policy DMT 2 'Highways Impacts' states that "*Development proposals must ensure that:…they do not contribute to the deterioration of air quality…of all road users and residents…*".

2.6 Assessment Guidance

2.6.1 The primary guidance documents used in undertaking this assessment are detailed in the section below.

Relevant Local Guidance

LBH has developed an AQAP in response to the declaration of an AQMA within LBH as a result of exceedances of the annual mean NO_2 NAQO. The LBH AQAP (LBH, 2019a) was adopted by LBH in May 2019, identifies road traffic (in particular the M4, A40 and the Hayes Bypass) and Heathrow Airport as sources of pollution and sets out a number of actions which aim to reduce emissions and prevent public exposure to pollution. Identified actions include actions that LBH can take and actions on other parties (in particular those linked to Heathrow Airport and the strategic road network).

DEFRA 'Local Air Quality Management Technical Guidance (LAQM.TG(16))'

2.6.2 DEFRA LAQM.TG(16) was published for use by local authorities in their LAQM review and assessment work (DEFRA, 2016). The document provides key guidance in aspects of air quality assessment, including screening, use of monitoring data, and use of background data that are applicable to all air quality assessments.

EPUK / IAQM 'Land-Use Planning & Development Control: Planning for Air Quality

2.6.3 Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have together published guidance to help ensure that air quality is properly accounted for in the development control process (EPUK / IAQM, 2017). It clarifies when an air quality assessment should be undertaken, what it should contain, and how impacts should be described and assessed including guidelines for assessing the significance of impacts.

IAQM 'Guidance on the Assessment of Dust from Demolition and Construction'

2.6.4 Guidance on the assessment of dust from demolition and construction has been published by the IAQM (IAQM, 2014). The guidance provides a series of matrices to determine the risk magnitude of potential dust sources associated with construction activities in order to identify appropriate mitigation measures that are defined within further IAQM guidance.

Sustainable Design and Construction Supplementary Planning Guidance

2.6.5 Supplementary Planning Guidance (SPG) on 'Sustainable Design and Construction' adopted in April 2014 forms part of the Implementation Framework for the London Plan (Greater London Authority, 2014). For air pollution, the Mayor's Priorities are stated as:

- *"Developers are to design their schemes so that they are at least 'air quality neutral';*
- *Developments should be designed to minimise the generation of air pollution;*
- *Developments should be designed to minimise and mitigate against increased exposure to poor air quality;*
- *Developers should select plant that meets the standards for emissions from combined heat and power and biomass plants set out in Appendix 7 (of the document); and*
- *Developers and contractors should follow the guidance set out in the SPG on 'The control of dust and emissions during construction and demolition' when constructing their development (Greater London Authority, 2014b)."*

2.6.6 The SPG on 'Sustainable Design and Construction' requires that air quality assessments are prepared for major developments where the development:

- *is located within an AQMA;*
- *is likely to result in a new air pollution exceedance;*
- *is located within 150 m of a sensitive receptor (schools, hospitals, care homes, nurseries, residential development);*
- *will bring sensitive receptors into an area of poor air quality;*
- *includes biomass boilers and/or combined heat and power; and*
- *involves waste management/treatment activities, mineral extraction or any other general industrial combustion process.*

2.6.7 For major developments that meet the above criteria, an air quality assessment is required to be submitted with the planning application and include:

- *a review of air quality around the development site using existing air quality monitoring and/or modelling data;*
- *air quality dispersion modelling data carried out in accordance with the London Councils Air Quality and Planning Guidance;*
- *an indication of the number of people (receptors) which will be exposed to poor air quality as a result of the development, and show their location on a map;*
- *an assessment of the impact on air quality during the construction phase and detailed mitigation methods for controlling dust and pollution emissions in line with the adopted SPG on 'The control of dust and emissions from construction and demolition';*
- *an outline and justification of mitigation measures associated with the design, location and operation of the development in order to reduce air pollution and exposure to poor air quality; and*
- *a maintenance regime for any combustion equipment or mitigation measures.*

2.6.8 The SPG on 'Sustainable Design and Construction' provides guidance on:

- Minimising air quality emissions from location, transport, construction and demolition, and design and occupation;
- Protecting internal air quality;
- What is meant by 'air quality neutral';
- Emissions standards for combustion plant; and
- Offsetting provisions.

2.6.9 'Air quality neutral' applies across London as a whole and emission benchmarks have been proposed in terms of buildings' operation and transport emissions in order to meet these criteria. It is understood that the benchmark should be capable of being met without the need for significant additional mitigation. The emission benchmarks are summarised in **Appendix C**.

2.6.10 Where individual and/or communal gas fired boilers are installed in commercial and domestic buildings they should achieve a NO_x rating of less than 40mgNO_x/kWh. If the particular combustion equipment is not known at the time of the planning application, developers are required to provide a written statement of their commitment and ability to meet the emissions standards within their Air Quality Assessments. Emissions standards are provided for solid biomass boilers and CHP plants (see **Appendix D**).

2.6.11 Where developments do not meet the air quality neutral benchmarks, it is suggested that appropriate on-site mitigation measures will be required to off-set any excess in emissions. Measures could include:

- Green planting/walls and screens;
- Upgrade or abatement work to combustion plant;
- Retro-fitting abatement technology for vehicles and flues; and
- Exposure reduction.

Control of Dust and Emissions During Construction and Demolition Supplementary Planning Guidance

2.6.12 In addition, as part of the Implementation Framework for the London Plan, an SPG on 'The control of dust and emissions during construction and demolition' was published in July 2014 (Greater London Authority, 2014).

2.6.13 This SPG requires an 'Air Quality and Dust Risk Assessment' to be submitted at the time of a planning application; with an Air Quality and Dust Management Plan submitted prior to the commencement of works.

2.6.14 It also provides guidance for the preparation of an 'Air Quality and Dust Risk Assessment' for construction and demolition activities, including air quality (dust) risk assessments. The approach outlined within the SPG is based on the process set out in the IAQM 'Guidance on the Assessment of Dust from Demolition and Construction' (IAQM, 2014) (see Paragraph 2.6.4) and the SPG recommends that "*the latest version of the IAQM guidance should be used*".

3 Methodology

3.1.1 The assessment methodology detailed in the following sections has been applied to ascertain the potential impacts of emissions to air in order to identify the overall significance of their effects and whether or not additional mitigation is required.

3.1.2 The assessment first defines the 'Study Area' and outlines the baseline air quality within the Study Area for both the 'current' year (2018; the most recent year for which local monitoring data is available) and the future year (2025; the earliest year that the Proposed Development is anticipated to be operational). The assessment then determines the impacts associated with the construction and operational phases of the Proposed Development and recommends mitigation as necessary. An assessment of the 'air quality neutrality' of the Proposed Development has also been undertaken, as well as consideration of ways in which the Proposed Development has taken an 'air quality positive' approach.

3.2 Baseline Air Quality

3.2.1 Information on baseline air quality in the Study Area has been obtained by collating the results of monitoring carried out by LBH and the identification of any AQMAs and / or AQFAs within the Study Area. Background concentrations within the Study Area have been defined using the national pollution maps published by DEFRA which cover the whole country on a 1x1 km grid (DEFRA, 2019b). Any exceedances of the EU Limit Values along roads within the study area have been identified using the 2019 NO_2 Projections Data published by DEFRA (DEFRA, 2019c).

3.3 Demolition and Construction Dust Impacts

3.3.1 During demolition and construction, dust emissions associated with on-site activities and as a result of off-site trackout by demolition and construction vehicles has the potential to impact on sensitive human receptors within the Study Area. The main potential effects are loss of amenity (as a result of with dust soiling) and deterioration of human health (as a result of concentrations of PM_{10}).

3.3.2 The suspension of particles in the air is dependent on surface characteristics, weather conditions and demolition and construction activities associated with the Proposed Development. Impacts have a greater potential to occur when dust generating activities coincide with dry, windy conditions, and where sensitive receptors are located downwind of the dust source(s).

3.3.3 Separation distance is also an important factor. Large dust particles (greater than 30 µm), can be potentially responsible for most dust annoyance, will largely deposit within 100 m of sources and intermediate particles (10-30 µm) can travel 200-500 m; consequently, significant dust annoyance is usually limited to within a few hundred metres of its source. Smaller particles (less than 10 µm), which are the predominant fraction responsible for human health impacts largely remain airborne. However, the impact on the short-term concentrations of PM_{10} occurs over a shorter distance due to the rapid decrease in concentrations with distance from the source due to dispersion.

3.3.4 The assessment of the risk of potential construction dust impacts has been undertaken with reference to relevant Greater London Authority (GLA) (GLA, 2014) and IAQM (IAQM, 2014) guidance.

Screening Assessment

3.3.5 The first stage of the assessment involved screening to determine if there are sensitive receptors within threshold distances of the activities associated with the demolition and

construction phase of the Proposed Development; defined as the Study Area. No further assessment is required if there are no receptors within the Study Area.

3.3.6 The IAQM guidance outlines that an assessment is only required in cases where:

- A 'human receptor' is located within:
  - 350 m of the boundary of the Site; OR
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the Site entrance(s);
- An 'ecological receptor' is located within:
  - 50 m of the boundary of the Site; OR
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the Site entrance(s);

Further Assessment

3.3.7 The risk of impacts associated with dust soiling and PM_{10} caused by the Proposed Development has been determined (following the IAQM guidance (IAQM, 2014)) based on the dust emission class (or magnitude) for each activity arising from four activities in the absence of mitigation (demolition, earthworks, construction and trackout), the sensitivity of nearby receptors and the overall sensitivity of the area. The dust emission class, receptor sensitivity and area sensitivity are determined using the criteria outlined in **Table B-1**, **Table B-2**, **Table B-3** and **Table B-4 Appendix** B (based on the IAQM guidance), indicative thresholds and professional judgement. The risk of dust impacts arising is a product of the relationship between the dust emission magnitude and the overall area sensitivity and is based on the criteria outlined in **Table** B-5 (based on the IAQM guidance). The risk of impact is then used to determine the mitigation requirements.

3.3.8 The IAQM guidance recommends that no assessment of the significance of effects is made without mitigation in place, as mitigation is assumed to be secured by planning conditions, legal requirements or required by regulations.

3.3.9 With appropriate mitigation in place, the IAQM guidance indicates that the residual effect dust emissions associated with the demolition and construction can be classified as being 'not significant'.

3.4 Demolition and Construction Road Traffic Impacts

3.4.1 The potential for a significant overall effect on existing sensitive receptors within the Study Area as a result of emissions from demolition and construction traffic generated by the Proposed Development has been determined qualitatively, taking into consideration the screening criteria outlined in the EPUK / IAQM guidance (EPUK / IAQM, 2017) (see **Appendix C**), the anticipated routing of the generated traffic and the anticipated duration of impacts associated with the generated traffic.

3.5 Petrol Station Impacts

Screening Assessment

3.5.1 The potential for significant impacts on air quality at sensitive locations within the Proposed Development as a result of emissions of C_6H_6 associated with the petrol station located to the

south of the Site has been assessed based on the screening criteria outlined in Table 7.3 of DEFRA's (LAQM.TG(16) guidance (DEFRA, 2016).

3.5.2 The screening criteria outlines that there is only a potential issue in cases where:

- The petrol station has a throughput of >2,000 m^3 or 2 million litres per year; AND
- The petrol station is located close to a busy road (>30,000 Annual Average Daily Traffic (AADT)); AND
- The introduced sensitive locations are located within 10 m of the pumps.

3.6 Operational Road Traffic Emission Impacts

Screening Assessment

3.6.1 Traffic generated by the development has been compared to the screening criteria outlined by the EPUK / IAQM (EPUK / IAQM, 2017) to determine whether there is the potential for significant air quality impacts. The screening criteria is outlined in **Appendix C** , and includes consideration of the volume and composition of operational traffic generated by the Proposed Development and existing local air quality conditions (i.e. the presence of any declared AQMAs).

3.6.2 If it is not possible to screen out the potential for significant impacts, then it may be necessary to undertake a detailed assessment.

3.7 Site Suitability

Screening Assessment

3.7.1 A qualitative assessment to determine whether there is a potential for exceedances of the relevant NAQOs at sensitive locations within the Proposed Development has been undertaken, taking into account baseline air quality conditions within the Site and the proximity of sensitive locations within the development to nearby sources of emissions.

Detailed Assessment

3.7.2 Concentrations of pollutants (NO_2, PM_{10} and $PM_{2.5}$) have been predicted for a range of worst-case locations of relevant human health exposure within the Proposed Development to allow comparison with the NAQOs.

3.7.3 Emissions from road vehicles and their resultant impact at receptor locations have been predicted using the ADMS-Roads dispersion model (v4.1). The model requires the user to provide various input data, including traffic flows (in AADT format), vehicle composition (i.e. the proportion of Heavy Duty Vehicles (HDVs)), road characteristics (including road width, gradient and street canyon dimensions, where applicable) and average vehicle speed. AADT flows and the proportions of HDVs for roads within the Study Area have been provided by the Project's transport consultants (Stantec) for some roads and taken from the London Atmospheric Emissions Inventory (LAEI) (GLA, 2013)[1] and the Department for Transport (DfT) (DfT, 2018) for others. LAEI and DfT data have been factored to the modelled assessment years (2018 and

[1] The latest version of the LAEI (GLA, 2016) does not include data for years beyond 2016. As it is necessary for the purposes of this assessment to scenarios beyond 2016 (i.e. 2018 and 2025) the previous version of the LAEI (GLA, 2013) has thus been used.

2025) using the Trip End Model Presentation Program (TEMPro) V7.2b (DfT, 2019)[2]. Traffic data used in this assessment are summarised in **Appendix D.**

3.7.4 The model also requires meteorological data and has been run using 2018 meteorological data from the Heathrow meteorological station, which are considered suitable for this area. **Appendix D** provides further details on the model inputs.

3.7.5 Traffic emissions have been calculated using the Emission Factor Toolkit (EFT) v9.0 (DEFRA, 2019d), which utilises NO_x emission factors taken from the European Environment Agency (EEA) COPERT 5 emission tool. The traffic data were entered into the EFT to provide emission rates for each of the road links entered into the model. Road vehicular emissions are primarily associated with the exhaust emissions but also include particles generated from abrasion (of tyres, brakes and road). The EFT allows users to calculate road vehicle pollutant emission rates for NO_x, PM_{10}, (exhaust and brake, tyre and road wear) and $PM_{2.5}$ (exhaust and brake, tyre and road wear) for a specified year, road type, vehicle speed and vehicle fleet composition.

3.7.6 The EFT provides pollutant emission rates for 2017 through to 2030 and takes into consideration the following information available from the National Atmospheric Emissions Inventory (NAEI):

- fleet composition data for motorways, urban and rural roads in London and rest of the UK;
- fleet composition based on European emission standards from pre-Euro I to Euro 6(a-d)/VI;
- scaling factors reflecting improvements in the quality of fuel and some degree of retrofitting; and
- technology conversions in the national fleet.

3.7.7 As a result of this the road vehicle exhaust emissions are projected to decrease year-on-year due to technological advances and improvements to the fleet mix i.e. penetration of Euro VI HDVs, which recent research suggests are performing well. Whilst there has been uncertainty over NO_x emissions from vehicle exhausts (particularly from Euro 5 and 6 Light Duty Vehicles (LDVs) it is important to note the EFT is not based on the Euro emission standards. Specifically, the latest version of the EFT (v9.0) includes updated NO_x and PM speed emission coefficient equations for Euro 5 and 6 vehicles taken from the EEA COPERT 5 emission calculation tool, reflecting emerging evidence on the real-world emission performance of these vehicles.

3.7.8 Generally, concentrations of air pollutants in the UK are anticipated to decrease in the coming years; as such, in most cases, the earlier the year that is assessed, the more worst-case the assessment is. The earliest year that the Proposed Development could potentially be occupied by is 2025. Therefore, in order to take account of uncertainties relating to future year vehicle emissions and background pollutant concentrations to provide a conservative assessment, the assessment has been carried out utilising 2023 emission factors and background concentrations combined with traffic data from 2025 (which includes full development flows). This is considered a conservative assumption of emissions in the future. **Appendix F** provides further explanation of the selection of future year vehicle emission factors.

[2] It has not been possible to factor 2009 DfT data to the required assessment years using TEMPro v7.2b, as this tool provides factor for data from an earliest year of 2011. As such, it has been assumed that there was no growth between 2009 and 2011; this assumption is not considered to be unreasonable taking into account the predicted low growth rates in the Study Area between 2011 and 2025.

3.8 Air Quality Neutral

3.8.1 The Air Quality Neutral calculations has been undertaken following the methodology described on the 'Air Quality Neutral Planning Support Update: GLA80371' guidance (Air Quality Consultants Ltd., 2014).

3.9 Assumptions and Limitations

3.9.1 There are many components that contribute to the uncertainty in predicted concentrations. The model used in this assessment is dependent upon the traffic data that have been input which will have inherent uncertainties associated with them. There is then additional uncertainty as the model is required to simplify real-world conditions into a series of algorithms.

3.9.2 There has been an acknowledged disparity between national road transport emissions projections and measured annual mean concentrations of nitrogen oxides (NO_x) and NO_2 for many years. Recent monitoring has shown that reductions in concentrations are now being measured in many parts of the country (Air Quality Consultants Ltd., 2019), however, there is still some uncertainty regarding the rate at which emissions will reduce in the future and therefore some consideration must be given the accuracy of any projection and to appropriately respond to this. Further discussion relating to emissions factors is included in **Appendix F**

3.9.3 The complete development modelling has been based on 2023 emission factors and background concentrations, whilst utilising traffic flows for 2025. The model has been verified against 2018 monitoring data. This is considered to provide an appropriately conservative assessment taking into account the uncertainties regarding future vehicle emission factors.

3.10 Air Quality Impacts Significance Criteria

3.10.1 The relevant NAQOs are set out in **Table 2-1** and **Table 2-2**. The predicted pollutant concentrations in the future year (2025) at each identified sensitive receptors have been compared to the relevant NAQOs and any exceedances identified.

3.10.2 Analysis of long-term monitoring data 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. Therefore, in this assessment this concentration has been used to screen whether the one-hour mean objective is likely to be achieved (DEFRA, 2016).

3.10.3 There is no official guidance in the UK on how to assess the significance of the air quality impacts of existing air quality on a new development. The assessment of proposed receptors within the Site has therefore been limited to predicting pollutant concentrations at worst-case receptors within the Site and comparing these predicted concentrations to the relevant NAQOs, with the overall significance being based on whether the NAQOs for each pollutant are exceeded or not.

4 Baseline Environment

4.1 Site Context

4.1.1 The Site is bounded by High Road (A408) to the northeast, by an existing petrol station to the southeast, by an existing commercial property and a supermarket to the south, by a canal to the west and by existing vegetation, the River Pinn and existing commercial properties to the north. The Site is currently occupied by an existing commercial property (b&m home store and garden centre) and associated parking. The surrounding area is predominantly comprised of a mixture of existing commercial, residential and educational properties.

4.2 Study Area

4.2.1 The Study Area adopted for this assessment is as follows:

- for the construction dust risk assessment the Study Area (based on IAQM guidance (IAQM, 2014)) is defined as compromising the area up to 350 m from the Site boundary and 50 m from the route used by construction vehicles (up to 500 m from the Site entrance(s));
- for the construction phase road traffic emission assessment the Study Area includes all roads along which demolition and construction traffic are anticipated to travel, and adjacent properties; and
- for the operational phase road traffic emissions assessment the Study Area (based on EPUK / IAQM guidance (EPUK / IAQM, 2017)) includes the Site and all roads within 250 m of the Site boundary.

4.3 Sensitive Receptor Locations

4.3.1 Relevant sensitive human receptor locations are places where members of the public might be expected to be regularly present over the averaging period of the NAQOs. The 1-hour mean NO_2 NAQO applies to the proposed residences and the proposed health facility. The annual mean NO_2 NAQO, the annual mean and 24-hour mean PM_{10} NAQOs and the annual mean $PM_{2.5}$ NAQO apply to the proposed residences only. When identifying worst-case sensitive receptor within the Proposed Development, particular attention has been paid to assessing impacts close to the main nearby source of emissions (i.e. High Road (A408)).

4.3.2 Based on the above criteria, nine locations within the Proposed Development have been identified as worst-case receptors for the assessment. The locations of these receptors have been chosen to represent locations where impacts from local sources of emissions are likely to be the greatest i.e. close to High Street (A408). The receptor locations are described in **Appendix D** and are shown in **Figure H-1** and **Figure H-2**, **Appendix H** .

4.3.3 Concentrations have also been predicted at two NO_2 diffusion tube monitoring sites located adjacent to Fairfield Road and at the junction between Horton Road and Colham Avenue in order to verify the modelled results. **Appendix D** provides further details on the model.

4.4 Ambient Air Quality

EU Limit Values

4.4.1 The study area does not contain any predicted exceedances of the EU Limit Values for NO_2, PM_{10} or $PM_{2.5}$ either in the current year (2017[3]) or in the future year (2025). There are no Automatic Urban and Rural Network (AURN) monitoring sites located within 1 km of the Site; as such, no exceedances of the EU Limit Values have been measured within this distance.

4.4.2 The Site is located within an area (Greater London) that is currently identified as having locations where the EU Limit Value for NO_2 is exceeded and, as such, is identified within DEFRA's UK Plan for Tackling Roadside NO_2 Concentrations (DEFRA, 2018) as requiring improvement measures. These improvement measures are currently being implemented in the form of the Low Emissions Zone (LEZ) and the Ultra Low Emissions Zone (ULEZ) (see Paragraphs 4.4.3 to 4.4.7).

The Low Emissions Zone and the Ultra Low Emissions Zone

4.4.3 The LEZ and ULEZ were introduced in 2008 and 2019 respectively with the aim of improving air quality by discouraging the most polluting vehicles from driving within certain areas within Greater London.

4.4.4 The LEZ incorporates the Site and currently requires compliance (or pay a daily access charge) with the Euro IV standard for particulate matter (PM) for Heavy Goods Vehicles (HGVs) and the Euro 3 for vans. The Euro IV emission standards for PM and NO_x are 0.02 g/kWh and 3.5 g/kWh respectively.

4.4.5 From October 2020, this will be toughened to require compliance (or pay a £100-£300 daily access charge) with the Euro VI standard for both NO_x and PM. The Euro VI emission standards for PM and NO_x are 0.01 g/kWh and 0.4 g/kWh respectively; this has the potential to lead to a significant decrease in NO_x emissions from HGV traffic in the Study Area.

4.4.6 The ULEZ covers central London and covers all vehicles driven within the its area. Vehicles must meet certain emissions standards to drive through the ULEZ or pay a charge. The Site is not located within, or in close proximity to, the ULEZ.

4.4.7 From October 2021 the ULEZ boundary around central London will be extended to create a larger zone bounded by the North and South Circular Roads (which themselves are excluded). The Site will still not be located within the ULEZ after its expansion.

LAQM

4.4.8 LBH has investigated air quality within its area as part of its responsibilities under the LAQM regime. To date, one AQMA (Hillingdon AQMA) has been declared as a result of exceedances of the annual mean NO_2 NAQO. The Site is located within the Hillingdon AQMA.

AQFA

4.4.9 The Site is located close to of one of the 187 AQFAs identifies by the GLA as being locations that both exceed the EU Limit Value for annual mean NO_2 and are also locations with high human exposure. The site is located approximately 180 m to the northwest of the 'West Drayton / Yiewsley' AQFA (AQFA ID 100) (see **Figure H-3** in **Appendix H**).

[3] EU Limit Value data is not available for NO_2, PM_{10} or $PM_{2.5}$ for 2018 and, therefore, 2017 data has been considered.

Local Monitoring Data

NO_2

4.4.10 LBH currently monitors NO_2 concentrations at ten automatic monitoring stations, however, none of these are located in close proximity to the Site. LBH also deploys NO_2 diffusion tubes at a number of locations, including three sites that are located within 1 km of the Site (see **Figure H-3** in **Appendix H**). The national adjustment factor of 0.91 was used to bias adjust concentrations. Measured concentrations from 2014 to 2018s for these monitoring sites are shown in **Table 4-1**.

4.4.11 Measured concentrations are below the annual mean NO_2 NAQO at all three sites in 2018. There is only one instance of measured concentrations exceeding the NAQO at these three sites between 2014 and 2018; at site HD204 in 2015. As measured concentrations are below 60 µg/m^3 it is unlikely that any exceedances if the 1-hour mean NO_2 NAQO will have occurred during this time period. Measured concentrations at all three sites show a weak trend of decreasing concentrations between 2014 and 2018.

Table 4-1 Measured Annual Mean NO_2 Concentrations (2014 – 2018)

Site ID	Site Type	Within AQMA	Annual Mean (µg/m^3)				
			2014	2015	2016	2017	2018
HD51* - Top of Colham Avenue, Yiewsley	Roadside	Y	36.7	33.3	29.3	32.9	30.6
HD67 – 31 Tavistock Road	Roadside	Y	30.7	28.7	25.8	26.9	29.5
HD204* - Side of 104 Yiewsley High Street	Roadside [a]	Y	39.7	**40.9**	32.0	37.0	35.0
NAQO			**40**				

Exceedances of the annual mean NO_2 NAQO are highlighted in bold.
Data taken from the LBH Air Quality Annual Status Report (ASR) for 2018 (LBH, 2019b).
NO_2 annual means in excess of 60 µg/m^3, indicating a potential exceedance of the NO_2 hourly mean NAQO are shown in bold and underlined.
* Used for model verification.
[a] The ASR described this site as being a 'background' site, however, taking into account that the site is located approximately 1.8 m from the kerb of Fairfield Road (which is anticipated to have an AADT of 2,339 in 2018[4]) a site type description of 'roadside' is considered to be more appropriate based on the site type classification definitions provide by LAQM.TG(16) (DEFRA, 2016).

PM_{10} and PM_2.

4.4.12 LBH currently monitoring PM_{10} concentrations at nine automatic monitoring stations and $PM_{2.5}$ concentrations at five automatic monitoring stations, however, none of these are located in close proximity to the Site.

4.5 Predicted Background Concentrations

4.5.1 Estimated background concentrations within the Site and at the two local monitoring sites used for verification have been obtained from the latest 2017-based national maps provided by DEFRA (DEFRA, 2019b). The predicted DEFRA background concentrations are provided in **Table 4-2**.

4.5.2 The background concentrations are all well below the relevant NAQOs both in the current and future years.

[4] Based on DfT data factored forwards with TEMPro.

Table 4-2 Estimated Annual Mean Background Concentrations

Year	Location	Annual Mean (µg/m^3)		
		NO_2	PM_{10}	$PM_{2.5}$
2018	Site	25.8	16.4	11.2
	HD51 & HD204	27.1	16.5	11.4
2025	Site	21.3	14.6	9.2
	HD51 & HD204	22.6	15.0	9.4
NAQOs		**40**	**40**	**20**

5 Predicted Impacts

5.1 Construction Dust Impacts

Screening Assessment

5.1.1 There are a number of existing sensitive human receptors (including residential properties, a school and a nursery) located within 350 m of the Site boundary and within 50 m of the routes that will be used by demolition and construction vehicles. As such, further assessment of the risk of dust soiling and PM_{10} emissions is required.

5.1.2 There are no sensitive ecological receptors located within either 250 m of the Site boundary or within 50 m of the routes used by demolition and construction vehicles on the public highway. The closest designated ecological site to the Site is located >4 km from the Site boundary. As such, the potential for ecological impacts as a result of dust soiling can be screened out as being 'not significant'.

Further Assessment

Dust Emission Magnitude

5.1.3 The dust emissions magnitude of demolition, earthworks and construction activities and as a result of trackout have been determined based the criteria shown in **Table B-1** in **Appendix B**

5.1.4 Proposed demolition activities comprise the demolition of three existing buildings located on the Site. The maximum height of these buildings is anticipated to be approximately 6 m and the total building volume is anticipated to be between 20,000 m^3 and 50,000 m^3. Based on this, the dust emission magnitude of demolition activities is judged to be 'medium'.

5.1.5 Proposed earthworks activities will include the breaking up of a paved area (the existing car park). The Site is >10,000 m^2 in area and soil at the Site is considered to be moderately to very dusty (being predominantly deep, argillaceous soil with a silty to silty loam texture and residual clay and loamy loess subsoil, with some areas of deep, arenaceous to rudaceous soil with a sand to sandy loam texture and river terrace sand / gravel subsoil) (British Geological Survey, 2020)). Based on this, the dust emission magnitude of earthworks activities is judged to be 'large'.

5.1.6 Construction activities comprise the construction of one five-storey and two six-storey buildings, with a combined building volume of between 25,000 m^3 and 100,000 m^3. Based on this, the dust emission magnitude of construction activities is judged to be 'medium'.

5.1.7 It is anticipated that approximately 30 – 40 HDVs will leave the Site on a daily basis. Based on this, the dust emission magnitude of trackout is judged to be 'medium'.

Area Sensitivity

5.1.8 The overall area sensitivity to dust soiling and human health impacts has been determined based on the criteria shown in **Table B-3** and **Table B-4** in **Appendix B** .

5.1.9 Residential properties, schools and long-term car parks are classed as being 'high sensitivity' receptors and commercial properties and libraries are classified as being 'medium' sensitive receptors to dust soiling, based on the IAQM guidance (IAQM, 2014) (see **Table B-2**, **Appendix B**). There are approximately three commercial properties located within 20 m of the Site boundary and approximately five commercial properties, approximately 40 residential properties and a school located within 50 m of the Site boundary. Based on this and the criteria outlined

in **Table B-3**, the sensitivity of the area surrounding the Site to dust soiling is judged to be 'medium'.

5.1.10 The Proposed Development is anticipated to have a 'large' dust emission magnitude for trackout (see Paragraph 5.1.7). The IAQM guidance states that trackout may occur for distance of up to 200 m from medium sites. As the outbound demolition and construction traffic routing is currently unknown, the worst-case assumption has been made that all main roads may potentially be used by HDVs leaving the Site entrance(s). There are approximately eight residential properties, a long-term car park (associated with a car dealership) and one commercial property located within 20 m of roads along which material could be tracked, and are approximately 67 residential properties, a school, a long-term car park and approximately seven commercial properties and a library located within 50 m of roads along which material could be tracked. Based on this and the criteria outlined in **Table B-3**, the sensitivity of the area surrounding the Site to dust soiling is judged to be 'medium'.

5.1.11 The IAQM defines residential properties and schools as being 'high sensitivity' receptors and commercial properties and as being 'medium sensitivity' receptors to human health effects from PM_{10} (see **Table B-2**, **Appendix B**). PM_{10} concentrations at existing residential properties within the Study Area are anticipated to be similar to the maximum of the predicted 2018 PM_{10} concentrations at the identified receptors within the Site (see **Table D-2**, **Appendix D**); (i.e. 18.9 µg/m^3). Based on the predicted existing PM_{10} concentrations, and the number of sensitive receptors within 20 m and 50 m of the Site boundary and the criteria outlined in **Table B-4**, the sensitivity of both the area surrounding the Site (see Paragraph 5.1.9) and roads along which material could be tracked (see Paragraph 5.1.10) to increased concentrations of PM_{10} is judged to be 'low'.

Risk of Impacts

5.1.12 The risk of construction dust impacts, without mitigation, have been defined based on the criterion shown in **Table B-5, Appendix B** and are presented in **Table 5-1**.

Table 5-1 Risk of Construction Dust Impacts without Mitigation

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

5.2 Demolition and Construction Traffic Impacts

Screening Assessment

5.2.1 Vehicle movements associated with access, demolition and construction will vary through the construction programme, with short periods of peak HDV 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 (AADT), these will be significantly lower than peak movements. Information regarding the average demolition and construction traffic flows anticipated to be generated by the Proposed Development is not currently finalised, however, it is currently anticipated that the Proposed Development will generate approximately 120 – 160 AADT demolition and construction traffic (half of which is anticipated to be HDV traffic and half of which is anticipated to be LDV traffic). Of this traffic, approximately 20% (24 – 32 AADT) is anticipated to flow northwards to the M40 motorway and approximately 80% (96 – 128 AADT) is anticipated to flow southwards towards the M4 / M25 via Falling Lane and Stockley Road; as such the demolition and construction traffic is anticipated to exceed the EPUK / IAQM screening criteria (see **Appendix C**) to the south of the Site and also has the potential to exceed the EPUK / IAQM screening criteria to the north of the Site.

5.2.2 However, it should be noted that the impacts of generated demolition and construction traffic on existing sensitive locations within the local area will be temporary, with the demolition and construction phase of the Proposed Development anticipated to only last approximately 2 – 3 years. Furthermore, the implementation of a Construction Environmental Management Plan (CEMP) will further reduce the potential for impacts.

5.3 Operational Petrol Station Impacts

Screening Assessment

5.3.1 The residential apartments within the Proposed Development are sensitive to the annual mean C_6H_5 NAQO. Of these sensitive locations, the closest ground-floor apartment is located approximately 41 m from the nearest pump and the closest first-floor apartment is located approximately 22 m from the nearest pump; i.e. further from the pump that the screening criteria outlined in Paragraph 3.5.2.

5.3.2 The traffic flow along the section of High Road (A408) directly adjacent to the petrol station in 2025 is predicted to be 25,647 AADT; i.e. below the screening criteria outlined in Paragraph 3.5.2.

5.3.3 The anticipated throughput of the petrol station in 2025 is unknown. However, taking into consideration that both the distance of the closest introduced sensitive receptors from the petrol station pumps and the anticipated traffic flow of the adjacent road are below their respective screening criteria, it is not possible for the overall combined screening criteria to be exceeded, regardless of the petrol station throughput.

5.3.4 Based on the above and the screening criteria outlined in Paragraph 3.5.2, the potential impact of emissions of C_6H_6 from the nearby petrol station on new residential of the Proposed development can be screened out as being ‘not significant’.

5.4 Operational Road Traffic Impacts

Screening Assessment

5.4.1 The Proposed Development will generate traffic during the operational phase. However, as compared to the extant use of the Site (a home store and garden centre store) the Proposed Development will result in a decrease in total traffic flows along several roads within the Study Area in 2025 (a decrease of 150 – 192 total AADT along various sections of High Street (A408) and a decrease of 46 AADT along Trout Road). The Proposed Development will result in an increase in total traffic flows in 2025, compared to the extant use, of 50 AADT along Falling Lane[5], however, this increase is below the EPUK / IAQM screening criteria (see **Appendix C**). The Proposed development will also lead to increases in HDV AADT along High Street (A408) and Falling Lane, however, these increases will also be below the EPUK / IAQM screening criteria (see **Appendix C**). As such, the impacts of operational traffic generated by the Proposed Development on existing sensitive receptors within the Study Area can be screened out as being 'not significant'.

[5] The increase in traffic along this road, despite an overall decrease in traffic as compared to the extant use of the Site, is a result of traffic generated by the Proposed Development and extant Site use having different distributions (as a result of the developments being comprised of different land use classes).

5.5 Site Suitability

Screening Assessment

5.5.1 The Proposed Development contains sensitive receptors, and the Site is located adjacent to an emissions source (a busy road) within an AQMA. As such, a more detailed assessment of site suitability for the proposed end-use has been undertaken.

Detailed Assessment

5.5.2 Predicted concentrations at modelled receptor locations are presented in **Table 5-2**. Details of the proposed receptors are provided in **Table D-2**, **Appendix D** and shown in **Figure H-1** and **Figure H-2**, **Appendix H** .

5.5.3 Predicted concentrations are below the relevant annual mean NAQOs at all of the worst-case receptor locations. Furthermore, as all predicted annual mean NO_2 concentrations are below 60 µg/m^3 and all predicted annual mean PM_{10} concentrations are below 32 µg/m^3, it is considered to be unlikely that either the 1-hour mean NO_2 NAQO or the 24-hour mean PM_{10} NAQO will be exceeded at any receptor. As such, air quality within the Proposed Development will be suitable for the proposed end-use, without the need for further mitigation.

Table 5-2 Predicted Concentrations within the Site

Receptor	Annual Mean (µg/m^3)		
	NO_2	**PM_{10}**	**$PM_{2.5}$**
D1[a]	30.8	17.5	10.8
D2[a]	32.0	17.6	10.9
D3	29.1	17.0	10.5
D4	28.6	16.8	10.4
D5	30.4	17.1	10.6
D6	22.8	15.0	9.4
D7	22.8	15.0	9.4
D8	22.9	15.1	9.4
D9	22.9	15.0	9.4
NAQOs	**40**	**40**	**20**

[a] These receptors are sensitive to the 1-hour mean NO_2 NAQO only.

5.6 Air Quality Neutral

Building Emissions

5.6.1 The proposed energy strategy will comprise air-source heat pumps, which will not have any associated on-site emissions of pollutants. As such, the Proposed Development will better than 'air quality neutral' in terms of building emissions, and it is not necessary to calculate the Building Emission Benchmark (BEB).

Transport Emissions

5.6.2 The standard approach to assessing the 'air quality neutrality' of a development in terms of transport emissions (as outlined by the 'Air Quality Neutral Planning Support Update' (Air Quality Consultants Ltd., 2014) is to determine the Transport Emissions Benchmark (TEB) of a development based on the number of trips associated with different land use classes, the area of each land use class proposed as part of the development and the trip length per land use

class. However, data on the average number of trips per annum is only provide by the guidance for land use classes A1, B1 and C3 and, therefore, this method cannot be applied to the D1 element of the Proposed Development.

5.6.3 An alternative approach (also outlined by the planning support update (Air Quality Consultants Ltd., 2014)) allows for the calculation of a LDV benchmark trip rate per annum for the development, which can then be compared to the development's proposed annual LDV trip rate to determine its 'air quality neutrality'. The benchmark trip rate for the Proposed Development has been determined based on the Gross Internal Area (GIA) of the D1 land use class, the number of residences and the location of the development (i.e. within Outer London), based on the criteria outlined in **Table G-1** and **Table G-2** (taken from the planning support update (Air Quality Consultants Ltd., 2014)). A comparison of the calculated benchmark trips rates per annum and the Proposed Development-generated trips per annum are presented in **Table B-1**. The Proposed Development-generated LDV trips (provided by Stantec) are based on weekday flows and do not take account of proposed measures to reduce vehicle trips (such as proposed electric vehicle parking provision, cycle parking provision and the development of a Travel Plan); as such the calculated number of LDV trips are likely to have been overestimated.

5.6.4 The total number of LDV trips anticipated to be generated by the Proposed Development during operation exceeds the calculated benchmark trip rate by 152,803 trips per annum (114.4%). As such, the Proposed Development is not 'air quality neutral' in terms of transport emissions.

Table 5-3 Comparison of Benchmark and Actual Development Trip Rates per Annum

Land Use Class	No. Residences / D1 GIA (m^2)	Benchmark Trip Rate per Annum [a]	Proposed Development Trip Rate per Annum	Exceedance of Benchmark (Trips per Annum)	Exceedance of Benchmark (%)
Residential (C3)	235	90,710	143,416	52,706	58.1
Health Facility (D1)	929	42,828	142,926	100,098	233.7
Total:	**-**	**133,538**	**286,342**	**152,803**	**114.4**

5.7 Air Quality Positive

5.7.1 The Proposed Development is anticipated to reduce overall flows of traffic along several roads in the local area, in particular along High Street (A408), thus reducing emissions of pollutants and thereby contributing to an overall reduction in pollutant concentrations in the vicinity of these roads. High Street (A408) has a number of sensitive existing properties located adjacent to it, including residences and a school, which would benefit from the anticipated reduction in emissions as a result of reduced vehicles flows along this road.

5.7.2 The current London Plan (GLA, 2016) requires that all developments in London must ensure that 20% of parking spaces must provide electric vehicle charging infrastructure, and that for residential developments 20% of all parking spaces should be for electric vehicles, with all remaining parking provided with passive provision for electric vehicles in the future. 20% of proposed residential car parking spaces within the Proposed Development will have provision for electric vehicles, and this number is likely to significantly increase over the next several years with greater update of electric vehicles. Two car club spaces are also being provided, which has the potential to reduce car ownership and encourage greener modes of transport, thus reducing emissions associated with the site and further improving air quality.

5.7.3 The Proposed Development will include measures to encourage active transport, through the provision of 470 cycle parking spaces (427 secure cycle parking spaces and 42 visitor spaces),

as well as several 'Sheffield stand' short-stay cycle parking facilities. The provision of the health facility can also be expected to indirectly support active transport in the local area, as increased population health is likely to increase the prevalence of active transport.

5.7.4 The Proposed Development's energy strategy (air-source heat pumps) will not result in any on-site emissions and will, therefore, not result in any detriment to air quality in the local area. The energy strategy of the extant use of the Site is unknown, however, if it were to include any form of plant which would generate on-site emissions, then the Proposed Development would result in a decrease in emissions associated with the Site in terms of energy plant.

5.8 Impact Significance

Ambient Air Quality

5.8.1 The overall air quality effects of the Proposed Development are judged to be 'not significant' on the basis that:

- the IAQM guidance recommends that no judgement of the significance of effects of construction dust without mitigation is made, as mitigation is assumed to be secured by planning conditions, legal requirements or required by regulations (IAQM, 2014). Following the implementation of appropriate mitigation measures (as described in **Section 6.1**) the residual effects will be 'not significant';

- the potential for significant impacts on-site as a result of emissions of C_6H_6 from the nearby petrol station has been screened out, and predicted concentration of NO_2, PM_{10} and $PM_{2.5}$ at worst-case sensitive locations within the Proposed Development will be well below the relevant NAQOs and, therefore, new residents and users of the development will experience acceptable air quality;

- the proposed energy strategy (air source heat pumps) will not generate on-site emissions and, as such, will not cause any adverse impacts on local sensitive properties. The energy strategy of the extant use of the Site is unknown, however, if it does include any plant that generates on-site emissions then the Proposed Development will result in a reduction in plant emissions at the Site;

- the Proposed Development will result in a reduction in traffic flows, as compared to the extant use of the Site, along several roads within the Study Area. In locations where the Proposed Development causes an increase in vehicle flows, this increase is below the relevant screening criteria. As such, the Proposed Development will not cause significant impacts at existing sensitive locations as a result of operational traffic, and may in some sensitive locations actually result in an air quality improvement; and

- demolition and construction traffic associated with the Proposed Development will be above the screening criteria and, therefore, has the potential to result in temporary adverse impacts at existing sensitive locations. However, taking into account the temporary nature of these potential impacts (an anticipated duration of 2-3 years), as compared to the overall permanent improvement anticipated to occur as a result of the anticipated decrease in operational traffic flows along several roads within the area (and potentially also as a result of decreased on-site emissions from energy plant), it is considered that the overall long-term effect of demolition and construction traffic will not be significant.

Air Quality Neutral

5.8.2 The Proposed Development's energy strategy (air-source heat pumps) will not generate any on-site emissions and, therefore, the Proposed Development is better than 'air quality neutral' in terms of building emissions.

5.8.3 The operational LDV generation of the Proposed Development is anticipated to exceed the calculated benchmark trip rate, therefore, the Proposed Development is not 'air quality neutral' in terms of transport emissions.

5.8.4 It should be taken into consideration that, whilst the Proposed Development is not 'air quality neutral' in terms of transport, this will, to some extent, be offset by the development's being better than 'air quality neutral' in terms of building emissions (though it is not possible to directly compare the two) as the building emissions of the proposed Development will be zero. Furthermore, the calculated development-generated trip rate is likely to be an overestimate (as it is based on weekday flows and does not take account of proposed measures to reduce vehicle trips (e.g. proposed electric vehicle parking provision, cycle parking provision, the Travel Plan) and, therefore, the degree by the Proposed Development exceeds the benchmark trip rate is likely to have been overestimated. It should further be considered that, whilst the Proposed Development's transport emissions are not considered to be 'neutral' in comparison to the calculated benchmark, it will result in a reduction in transport emissions as compared to the extant use of the Site along several roads within the Study Area and, as such, can be considered to have a positive comparative impacts in terms of transport in several parts of the Study Area.

6 Mitigation

6.1 Demolition and Construction Dust

6.1.1 The following standard mitigation measures from the IAQM guidance (IAQM, 2014) are recommended, taking into account the outcomes of the construction dust risk assessment (presented in **Table 5-1**).

Communication

- Develop and implement a stakeholder communications plan;
- Display the name and contact details of persons accountable on the Site boundary; and
- Display the head or regional office information on the Site boundary.

Management

- Develop and implement a Dust Management Plan (DMP);
- Record all dust and air quality complaints, identify causes and take measures to reduce emissions;
- Record exceptional incidents and action taken to resolve the situation;
- Carry out regular site inspections to monitor compliance with the DMP;
- Increase site inspection frequency during prolonged dry or windy conditions and when activities with high dust potential are being undertaken;
- Agree dust monitoring locations with the local authority and instigate monitoring three months in advance of works commencing in the area;
- Plan Site layout so that machinery and dust causing activities are located away from receptors, as far as possible;
- Erect solid screens or barriers around dusty activities or the Site boundary at least as high as any stockpile on-site;
- Fully enclose Site or specific operations where there is a high potential for dust production and the Site is active for an extensive period;
- Avoid site run off of water or mud;
- Keep site fencing, barriers and scaffolding clean using wet methods;
- Remove potentially dusty materials from site as soon as possible;
- Cover, seed or fence stockpiles to prevent wind whipping;
- Ensure all vehicles comply with the London LEZ and the NRMM standards, where applicable;
- Ensure all vehicles switch off engines when stationary;

- Avoid the use of diesel or petrol powered generators where possible;
- Produce a Construction Logistics Plan to manage the delivery of goods and materials;
- Only use cutting, grinding and sawing equipment with dust suppression equipment;
- Ensure an adequate supply of water on-site for dust suppressant;
- Use enclosed chutes and conveyors and covered skips;
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use water sprays on such equipment where appropriate;
- Ensure equipment is readily available on-site to clean up spillages of dry materials; and
- No on-site bonfires and burning of waste materials on-site.

Earthworks

- Re-vegetate earthworks and exposed areas / soil stockpiles to stabilise surfaces as soon as practicable; and
- Only remove the cover in small areas during work and not all at once.

Demolition

- Incorporate soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust);
- Ensure water suppression is used during demolition operation;
- Avoid explosive blasting, using appropriate manual and mechanical alternatives; and
- Bag and remove any biological debris or damp down such material before demolition.

Construction

- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless required for a particular process; and
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored silos with suitable emissions control systems.

Trackout

- Use water assisted dust sweepers on the Site access and local roads;
- Avoid dry sweeping of large areas;
- Ensure vehicles entering and leaving the Site are covered to prevent escape of materials;
- Record inspection of on-site haul routes and any subsequent action, repairing as soon as reasonably practicable;

- Install hard surfaced haul routes which are regularly damped down; and
- Install a wheel wash with a hard-surfaced road to the Site exit where site layout permits.

6.2 Demolition, Construction and Operational Traffic and the Proposed Energy Strategy

6.2.1 The overall effect of traffic generated by the Proposed Development (including demolition, construction and operational phase traffic) on sensitive existing properties within the Study Area has been judged to be 'not significant' (see Paragraph 5.8.1). As such, it is not considered to be necessary to recommend further mitigation.

6.3 Site Suitability

6.3.1 The potential for significant impacts at sensitive location within the Proposed Development as a result of C_6H_6 emissions from the nearby petrol station has been screened out, and predicted concentrations of NO_2, PM_{10} and $PM_{2.5}$ within the Proposed Development are predicted to be below the relevant NAQOs within the Site and, as such, new residents and users of the Proposed Development will experience acceptable air quality (see Paragraph 5.8.1). As such, it is not considered to be necessary to recommend further mitigation.

6.4 Air Quality Neutral

6.4.1 The Proposed Development will be better than 'air quality neutral' in terms of building emissions, and worse than 'air quality neutral' in terms of transport emissions. However, taking into consideration that greater than 'neutral' transport emissions will to some extent be offset by the substantially lower than 'neutral' building emissions, and that the Proposed Development is anticipated to result in an overall reduction in transport emissions (as compared with the extant use of the Site along several roads within the Study Area (see Paragraph 5.8.4)), it is not therefore considered necessary to recommend any further mitigation.

7 Summary and Conclusions

7.1.1 The air quality impacts associated with the proposed demolition of an existing commercial property and construction of a mixed-use (residential and health facility) development at 217 High Street, Yiewsley in the LBH have been assessed.

7.1.2 The demolition and construction works have the potential to create dust. During construction it is recommended that in accordance with the IAQM guidance a package of mitigation measures are put in place to minimise the risk of elevated PM_{10} concentrations and dust soiling in the surrounding area. With mitigation in place the construction impacts are judged as being 'not significant'.

7.1.3 The Proposed Development will generate road traffic during the demolition, construction and operational phases. During operation, the Proposed Development will result in an overall reduction in traffic flows, as compared to the extant use of the Site, along several roads within the Study Area. In locations where operational traffic flows increase as a result of the Proposed Development, this increase is below the relevant screening criteria. As such, the Proposed Development will not cause a 'significant' adverse effect on air quality as a result of operational traffic. Demolition and construction traffic generated by the Proposed Development will exceed the relevant screening criteria, however, any potential adverse impacts associated with this traffic will be temporary in nature and, as such, the overall effect of traffic generated by the Proposed Development throughout its lifetime is considered to be 'not significant'.

7.1.4 The energy strategy proposed as part of the Proposed Development (air-source heat pumps) will not generate any on-site emissions and, as such, will not have the potential to cause significant effects on local air quality. The proposed energy strategy has the potential to improve air quality if the energy strategy of the extant use of the Site does generate on-site emissions.

7.1.5 The potential for significant impacts at sensitive location within the Proposed Development as a result of emissions of C_6H_6 from the nearby petrol station has been screened out, and predicted concentrations of NO_2, PM_{10} and $PM_{2.5}$ within the Proposed Development are predicted to be below the relevant NAQOs. As such, new residents and users of the Proposed Development will experience acceptable air quality and the Site is considered to be suitable for the proposed end-use.

7.1.6 The Proposed Development is better than 'air quality neutral' in terms of building emissions, however, it is not 'air quality neutral' in terms of transport emissions. However, it is noted that the substantial over-performance in terms of building emissions will to some extent compensate for the under-performance in terms of transport emissions. It is also noted that, whilst the Proposed Development is not considered to be 'neutral' in terms of transport emissions by the 'air quality neutral' assessment methodology, compared to the extant use of the Site it is anticipated to result in a reduction in transport emissions within the Study Area.

7.1.7 The Proposed Development has demonstrated an 'air quality positive' approach in design, through the provision of electric vehicle and active travel infrastructure and support and an energy strategy that will not produce on-site emissions, as well as by resulting in a decrease in transport emissions within the Study Area as a result of reduced traffic flows compared to the extant use of the Site.

7.1.8 Overall, the demolition, construction and operational effects of the Proposed Development are judged to be 'not significant'.

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Appendix A Glossary

Abbreviations	Meaning
AADT	Annual Average Daily Traffic
AQAP	Air Quality Action Plan
AQFA	Air Quality Focus Area
AQMA	Air Quality Management Area
AQR	Air Quality Regulations
ASR	Annual Status Report
AURN	Automatic Urban and Rural Network
BEB	Building Emissions Benchmark
CAZ	Clean Air Zone
CEMP	Construction Environmental Management Plan
C_6H_6	Benzene
DEFRA	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
Diffusion Tube	A passive sampler used for collecting NO_2 in the air
DMP	Dust Management Plan
EEA	European Environment Agency
EFT	Emission Factor Toolkit
EPUK	Environmental Protection UK
EC	European Commission
EU	European Union
GIA	Gross Internal Area
GLA	Greater London Authority
HDV	Heavy Duty Vehicle; a vehicle with a gross vehicle weight greater than 3.5 tonnes. Includes HGVs and buses
HE	Highways England
HGV	Heavy Goods Vehicle
IAQM	Institute of Air Quality Management
LA	Local Authority
LAEI	London Atmospheric Emissions Inventory
LAQM	Local Air Quality Management
LBH	London Borough of Hillingdon
LDV	Light Duty Vehicle; a vehicle with a gross vehicle weight equal to or less than 3.5 tonnes. Includes Light Goods Vehicles, cars and motorbikes
LEZ	Low Emission Zone
NAEI	National Atmospheric Emission Inventory
NAQO	National Air Quality Objective as set out in the Air Quality Strategy and the Air Quality Regulations
NO	Nitric Oxide

NO_2	Nitrogen Dioxide
NO_x	Oxides of nitrogen generally considered to be nitric oxide and NO_2. Its main source is from combustion of fossil fuels, including petrol and diesel used in road vehicles
NPPF	National Planning Policy Framework
$PM_{10}/PM_{2.5}$	Small airborne particles less than 10/2.5 µm in diameter
PPG	Planning Practice Guidance
RDE	Real Driving Emissions
Receptor	A location where the effects of pollution may occur
RMSE	Root Mean Square Error
SPG	Supplementary Planning Guidance
TEB	Transport Emissions Benchmark
TEMPro	Trip End Model Presentation Program
ULEV	Ultra-low emission vehicle
ULEZ	Ultra-Low Emission Zone
WHO	World Health Organisation

Appendix B IAQM Dust Guidance (2014) Approach

Table B-1 Dust Emission Magnitude Classification

Activity	Dust Emission Magnitude		
	Large	Medium	Small
Demolition	Total building volume of >50,000 m^3, potentially dusty construction material, on-site crushing and screening, demolition activities >20 m above ground	Total building volume of 20,000 – 50,000 m^3, potentially dusty construction material, demolition activities 10 – 20 m above ground level	Total building volume of <20,000 m^3, construction material with low potential for dust release, demolition activities <10 m above ground, demolition during wetter months
Earthworks	Total site area of >10,000 m^2, potentially dusty soil type, >10 heavy earth moving vehicles active at any one time, formation of bunds >8 m in height, total material moved >100,000 tonnes	Total site area of 2,500 - 10,000 m^2, moderately dusty soil type, 5 - 10 heavy earth moving vehicles active at any one time, formation of bunds 4 - 8 m in height, total material moved 20,000 - 100,000 tonnes	Total site area of <2,500 m^2, soil type with large grain size, <5 heavy earth moving vehicles active at any one time, formation of bunds <4 m in height, total material moved <20,000 tonnes. Earthworks during wetter months
Construction	Total building volume >100,000 m^2, on-site concrete batching, sandblasting	Total building volume 25,000 - 100,000 m^2, potentially dusty construction material, on-site concrete batching	Total building volume <25,000 m^2, construction material with low potential for dust release
Trackout	>50 HDV outwards movements in any one day, potentially dusty surface material, unpaved road length >100 m	10 - 50 HDV outwards movements in any one day, moderately dusty surface material, unpaved road length 50 - 100 m	<10 HDV outwards movements in any one day, surface material with low potential for dust release, unpaved road length <50 m

Table B-2 Receptor Sensitivity

Receptor Sensitivity	Impact		
	Dust Soiling	**Human Health**	**Ecology**
High	An area where: • Users can reasonably expect enjoyment of a high level of amenity; • The appearance, aesthetics of value of their property would be diminished by soiling; • The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. Examples include dwellings, museums and other culturally important collections, medium and long-term car showrooms.	Locations where members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objective, a relevant location would be one where individuals may be exposed for eight hours or more per day. Examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.	Locations with an international or national designation *and* the designated features may be affected by dust soiling; OR Locations where there is a community of particularly dust sensitive species such as vascular species included in the Red Data List for Great Britain. Indicative examples include a SAC designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.
Medium	An area where: • Users would expect to enjoy of a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; • The appearance, aesthetics of value of their property could be diminished by soiling; • The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods, as part of the normal pattern of use of the land. Examples include parks and places of work.	Locations where people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objective, a relevant location would be one where individuals may be exposed for eight hours or more per day. Examples include office and shop workers, but will generally not include workers occupationally exposed to for PM_{10}, as protection is covered by Health and Safety at Work legislation.	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; OR Locations with a national designation where the features may be affected by dust deposition. Indicative example is a SSSI with dust sensitive features.

Low	An area where: • The enjoyment of amenity would not reasonably be expected; • Property would not reasonably be expected to be diminished I appearance, aesthetics or value by soiling; • There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. Examples include playing fields, farmland (unless commercially sensitive horticultural), footpaths, short-term car parks and roads.	Locations where human exposure is transient. Examples include public footpaths, playing fields, parks and shopping streets.	Locations with a local designation where the features may be affected by dust deposition. Indicative example is a LNR with dust sensitive features.

Table B-3 Sensitivity of an Area to Dust Soiling Effects

Receptor Sensitivity	Number of Receptors	Distance from Source (m)			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10 – 100	High	Medium	Low	Low
	1 – 10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table B-4 Sensitivity of an Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32 µg/m^3	>100	High	High	High	Medium	Low
		10 – 100	High	High	Medium	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	28 - 32 µg/m^3	>100	High	High	Medium	Low	Low
		10 – 100	High	Medium	Low	Low	Low
		1 - 10	High	Medium	Low	Low	Low
	24 - 28 µg/m^3	>100	High	Medium	Low	Low	Low
		10 – 100	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low
	<24 µg/m^3	>100	Medium	Low	Low	Low	Low
		10 – 100	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Medium	>32 µg/m^3	>10	High	Medium	Low	Low	Low
		1 - 10	Medium	Low	Low	Low	Low
	28 - 32 µg/m^3	>10	Medium	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	24 - 28 µg/m^3	>10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
	<24 µg/m^3	>10	Low	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low	Low

Table B-5 Risk of Dust Impacts Calculation Matrix

Sensitivity of Area		Dust Emission Magnitude		
		Large	**Medium**	**Small**
Demolition	High	High Risk	Medium Risk	Medium Risk
	Medium	High Risk	Medium Risk	Low Risk
	Low	Medium Risk	Low Risk	Negligible Risk
Earthworks	High	High Risk	Medium Risk	Low Risk
	Medium	Medium Risk	Medium Risk	Low Risk
	Low	Low Risk	Low Risk	Negligible Risk
Construction	High	High Risk	Medium Risk	Low Risk
	Medium	Medium Risk	Medium Risk	Low Risk
	Low	Low Risk	Low Risk	Negligible Risk
Trackout	High	High Risk	Medium Risk	Low Risk
	Medium	Medium Risk	Low Risk	Negligible Risk
	Low	Low Risk	Low Risk	Negligible Risk

Appendix C EPUK / IAQM Guidance (2017) Screening Criteria

Table C-1 EPUK / IAQM Screening Criteria (EPUK / IAQM , 2017)

The Development Will:	Indicative Criteria to Proceed to an Air Quality Assessment
Cause a significant change in LDV traffic flows on local roads with relevant receptors.	A change of LDV flow of: • >100 AADT within or adjacent to an AQMA; and • >500 AADT elsewhere.
Cause a significant change in HDV flows on local roads with relevant receptors.	A change of HDV flow of: • >25 AADT within or adjacent to an AQMA; and • >100 AADT elsewhere.
Realign roads i.e. changing the proximity of receptors to traffic lanes.	Where the change is 5 m or more and the road is within an AQMA.
Introduce a new junction or remove an existing junction near to relevant receptors.	Applies to junctions that cause traffic to significantly change vehicle acceleration / deceleration, e.g. traffic lights, or roundabouts.
Introduce or change a bus station.	A change of bus flows of: • >25 AADT within or adjacent to an AQMA; and • >100 AADT elsewhere.
Have an underground car park with extraction system.	The ventilation extract for the car park will be located within 20 m of a relevant receptor; and The car park will have >100 movements per day (total in and out).

The screening criteria presented is amended from Table 6.2 of the EPUK / IAQM guidance (EPUK / IAQM, 2017). Only the screening criteria relevant to changes in transport (including both traffic and the transport network) are outlined.

Appendix D Model Inputs and Results Processing

Table D-1 Summary of Model Inputs

Meteorological Data	2018 hourly meteorological data from Heathrow station has been used in the model. The windrose is shown in **Figure D-1**.
ADMS	Version 4.1.1
Time Varying Emission Factors	Based on Department for Transport statistics. Table TRA0307. Motor vehicle traffic distribution by time of day and day of the week on all roads, Great Britain: 2018.
Latitude	51.5°
Minimum Monin-Obukhov length	A value of 30 for 'Cities and Large Towns' was used to represent the Study Area. A value of 30 for 'Cities and Large Towns' was used to represent the meteorological station site.
Surface Roughness	A value of 1 for 'Cities and Woodlands' was used to represent the Study Area. A value of 1 for 'Cities and Woodlands' was used to represent the meteorological station site.
Street Canyon	ADMS Advanced Street Canyon module was used to represent the effect of trapping and recirculating pollutants. The modelled canyons are shown in **Figure H-4**, **Appendix H** .
Emission Factor Toolkit (EFT)	V9.0, April 2019.
NOx to NO_2 Conversion	NOx to NO_2 calculator version 7.1, (DEFRA, 2019e)
Background Maps	2017 reference year background maps

Table D-2 Receptor Locations

Receptor	Description	X Coordinate	Y Coordinate	Height (m) [a]	No. Properties Represented
D1	Proposed Ground floor health facility space set back from High Street (A408).	505772	180901	1.5	1 (the health facility)
D2	Proposed Ground floor health facility space set back from High Street (A408).	505789	180867	1.5	
D3	Proposed 1st floor residential apartment set back from High Street (A408).	505770	180900	5.7	4
D4	Proposed 1st floor residential apartment set back from High Street (A408).	505776	180881	5.7	2
D5	Proposed 1st floor residential apartment set back from High Street (A408).	595787	180866	5.7	4
D6	Proposed Ground floor residential apartment set back from the River Finn.	505723	180886	1.5	1
D7	Proposed Ground floor residential apartment set back from the access to the CCE commercial property.	505750	180829	1.5	1
D8	Proposed 1st floor residential apartment set back from the River Finn.	505733	180891	4.87	3
D9	Proposed 1st floor residential apartment set back from the access to the CCE commercial property.	505761	180834	4.87	3

Table D-3 Summary of Traffic Data used in Model

Road Link	2018 Baseline		2025 with Proposed Development	
	Total AADT	% HDV	Total AADT	% HDV
High Street (A408) north of Site	23,808	3.0	25,430	2.9
High Street (A408) between Site and Falling Lane	23,980	3.0	25,647	2.9
High Street (A408) south of Falling Lane	15,617	4.9	16,631	4.7
Falling Lane	16,530	1.9	17,843	1.8
Trout Road	3,593	1.0	3,822	1.0
Fairfield Road	2,339	4.0	2,496	4.0
Horton Road	977	19.7	1,012	19.1

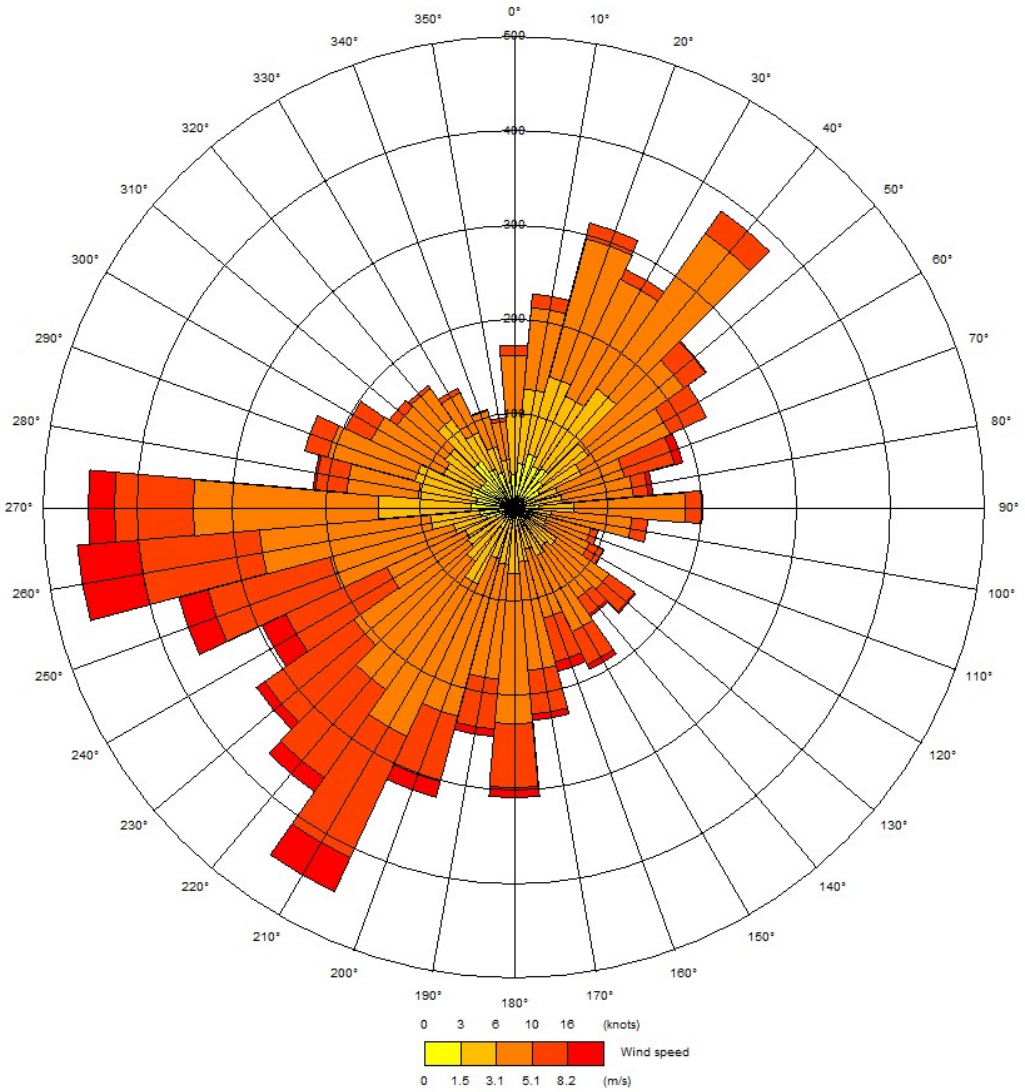


Figure D-1: 2018 Windrose for Heathrow

Appendix E Model Verification

NO_2

Most NO_2 is produced in the atmosphere by the reaction of nitric oxide (NO) with ozone. It is therefore most appropriate to verify the model in terms of primary pollutant emission of nitrogen oxides (NO_x = NO + NO_2). The model has been run to predict the 2018 annual mean road-NO_x contribution at the two NO_2 diffusion tube monitoring sites; HD51 (located adjacent to the junction between Colham Avenue and Horton Road) and HD204 (located adjacent to Fairfield Road) (identified in **Table 4-1**). Concentrations have been modelled at the heights of the monitors; 2 m for both sites.

A primary adjustment factor of **4.1075** has been determined as the slope of the best fit line between the modelled road NO_x contribution and the 'measured' road-NO_x (which is calculated from the measured and background NO_2 concentrations within DEFRA's NO_x from NO_2 calculator (DEFRA, 2019e)), forced through zero (**Figure E-1**). This factor has then been applied to the raw modelled road-NO_x concentration to provide adjusted modelled road-NO_x concentrations.

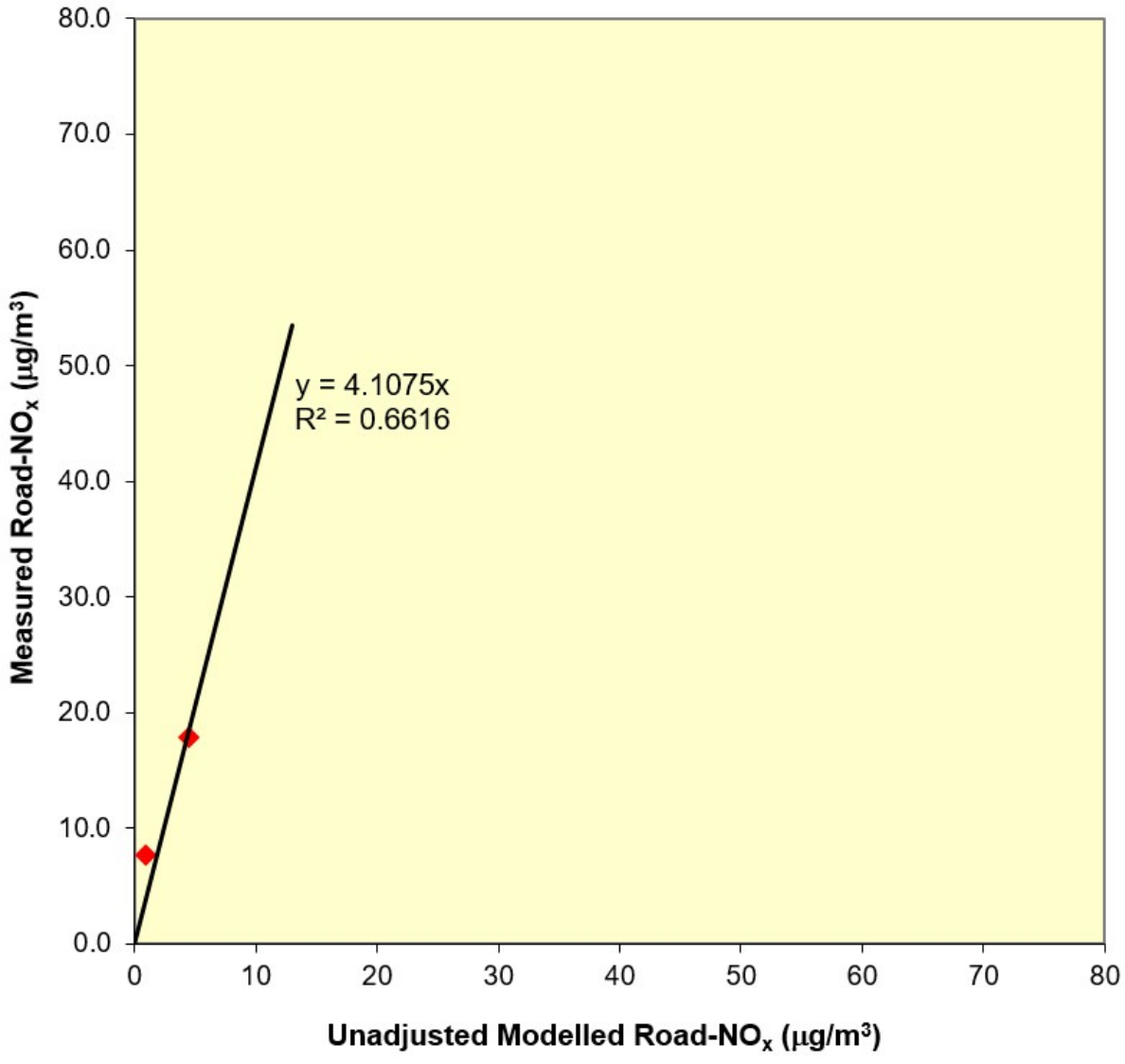


Figure E-1 Measured and Unadjusted Road-NO_x Comparison

The total NO_2 concentrations have then been determined by combining the adjusted modelled road-NO_x concentrations with the background NO_2 concentration within DEFRA's NO_x from NO_2 calculator (DEFRA, 2019e). A secondary adjustment factor of **1.0198** has then been calculated as the slope of the best fit line applied to the adjusted data and forced through zero (**Figure E-2**).

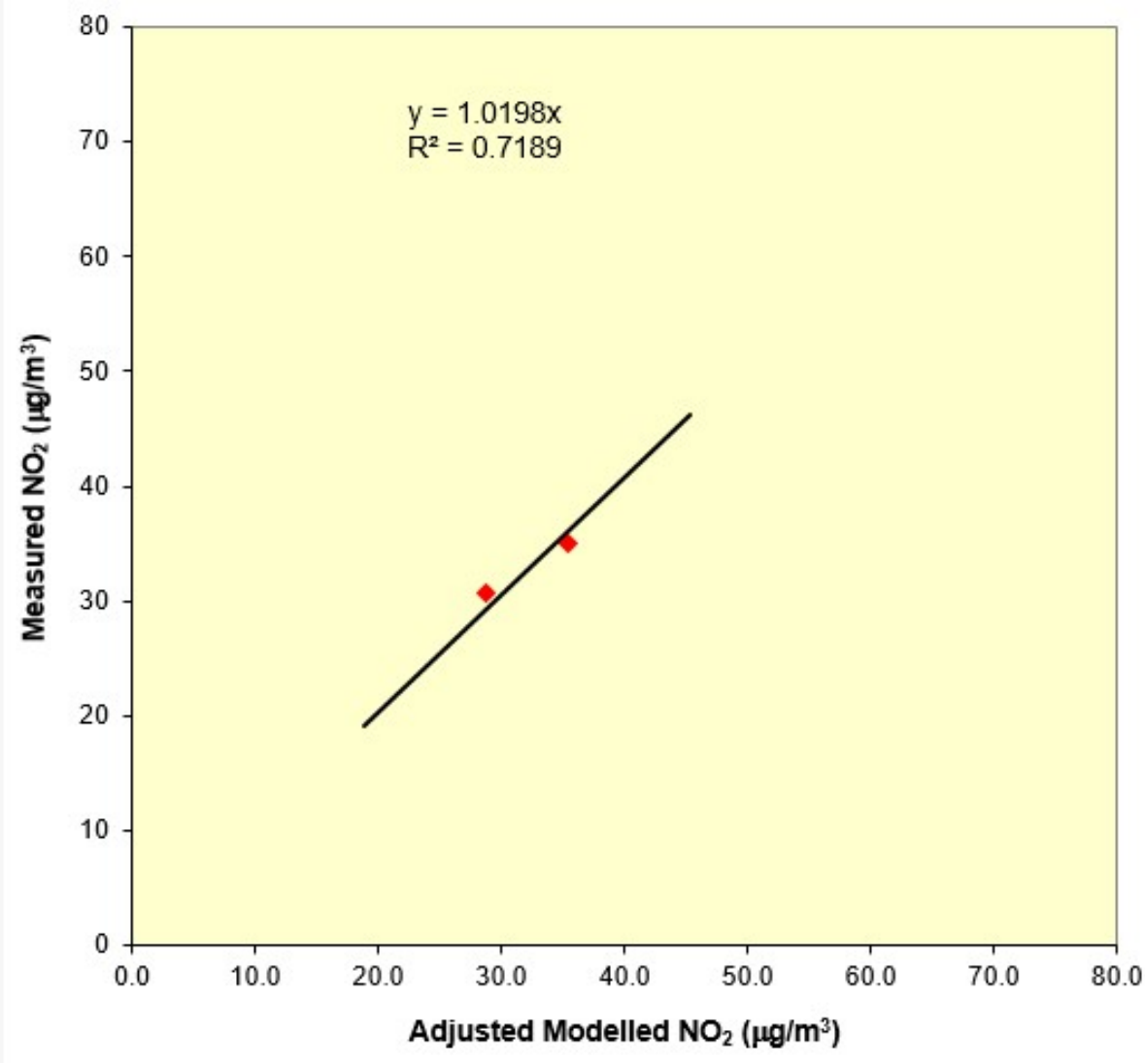


Figure E-2 Measured and Primary Adjusted Modelled NO_2 Comparison

Figure E-3 compares final adjusted modelled total NO_2 at each of the monitoring sites, to measured total NO_x and shows the 1:1 relationship, as well as ±10% and ±25% of the 1:1 line.

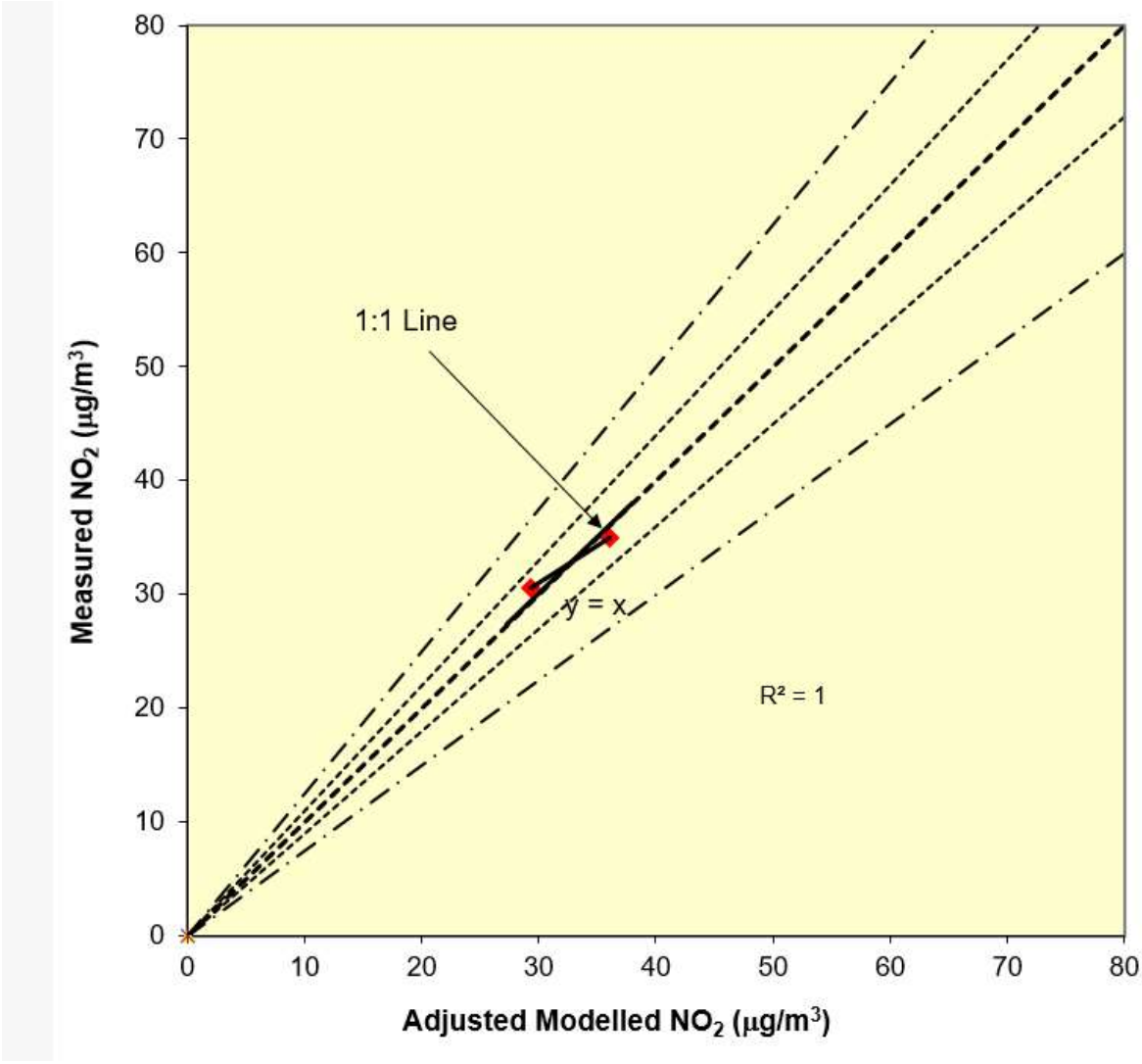


Figure E-3 Measured and Final Adjusted Modelled NO_2 Comparison

The calculated adjustment factors imply that overall, the model has under-predicted the road-NO_x contribution. This is a common experience with this and most other models. The calculated Root Mean Square Error (RMSE) for this verification (1.2 µg/m^3) lies within the range considered to be good by DEFRA (DEFRA, 2016) (0-4).

PM_{10} and $PM_{2.5}$

There are no monitors located within the Study Area that measure concentrations of either PM_{10} or $PM_{2.5}$. As such, it has not been possible to calculate a specific adjustment factor for PM_{10} and $PM_{2.5}$ and, therefore, the primary adjustment factor calculated for NO_x has been applied to the modelled road-PM_{10} and road-$PM_{2.5}$ concentrations.

Appendix F Future Year Modelling – Road Transport Emissions

Atmospheric dispersion modelling is used to determine the effect of future development traffic on local air quality. The modelling utilises predictions of the composition and emissions profile of the vehicle fleet which are produced by Defra in the EFT with the fleet composition and emissions profiles provided on a year by year basis; the most recent update is V9.0 and includes data from 2017 to 2030.

The EFT contains estimates of the future composition of the vehicle fleet in terms of the age and type of vehicles and emissions are primarily related to the age of the vehicles (in terms of their emissions class) and the fuel that they use (i.e. petrol, diesel or electric). In general terms, as new vehicles replace older vehicles, and as the emissions performance of vehicles is generally taken to improve over time.

The modelling of future traffic impacts therefore requires consideration of uncertainty as to the accuracy of the emission factors, as well as uncertainty introduced by the modelling process and the traffic data on which the predictions are based. This has become more important in recent years as it has been realised that previous versions of the EFT were likely to have significantly underestimated the real-world NOx emissions of the vehicle fleet primarily resulting from diesel vehicles.

Emissions in the EFT

The EFT database was updated in May 2019 to v9.0. It now uses NO_x emissions factors for the vehicles taken from the European Environment Agency's COPERT 5 database and the 2019 update included changes to the fleet mix due largely to reflect the London Low Emissions Zone.

The emissions performance of the vehicles in the EFT is classified in terms of Euro type approval testing; Euro 1 to 6 (with Euro 6 vehicle split into 6a, 6b, 6c and 6d) concerning light duty vehicles and Euro I to VI heavy duty vehicles. Whilst the introduction of each Euro class has generally seen a tightening of emission standards, the standards up until 2017 were based on laboratory testing of vehicles. The emissions performance of the vehicles in real world driving conditions has been higher than the laboratory testing results, especially for diesel vehicles. This factor was not recognised in earlier versions of the EFT, and combined with the fact that diesel vehicles have much higher NO_x emissions than petrol vehicles and there has been a very large increase in the number of diesel vehicles on the road, has meant that the NO_x emissions and NO_2 concentrations did not reduce as was anticipated.

The EFT considers the real-world performance of Euro 6ab diesel cars, applying a high conformity factor to these vehicles. For Euro 6c and Euro 6d vehicles, it assumes that the RDE is effective in bringing down vehicle emissions but does not assume that vehicle emissions will be as low as the conformity factors in the RDE testing. The EFT therefore incorporates an assumption that diesel car NO_x emissions will be higher in real world driving conditions than the testing standards allow.

Given uncertainty as to the effectiveness of RDE testing, AQC reviewed their approach to vehicle emissions following publication of EFT v8.0. CURED v3A was formulated assuming that light duty vehicle emissions are as per EFT v8.0 up until Euro 6c. Euro 6d vehicles are assumed to have the same emissions as Euro 6c. Emissions from HDVs are assumed to be as per the EFT v8.0. Vehicle emissions using CURED v3A can be considered to be a worst-case sensitivity test post 2020. CURED v3A has not been revised following the publication of EFT v9.0.

Figure F-1 shows the relative decline in vehicle NO_x emissions predicted for an urban road (outside London) with 5% Heavy Duty Vehicle traffic, travelling at 36 kph.

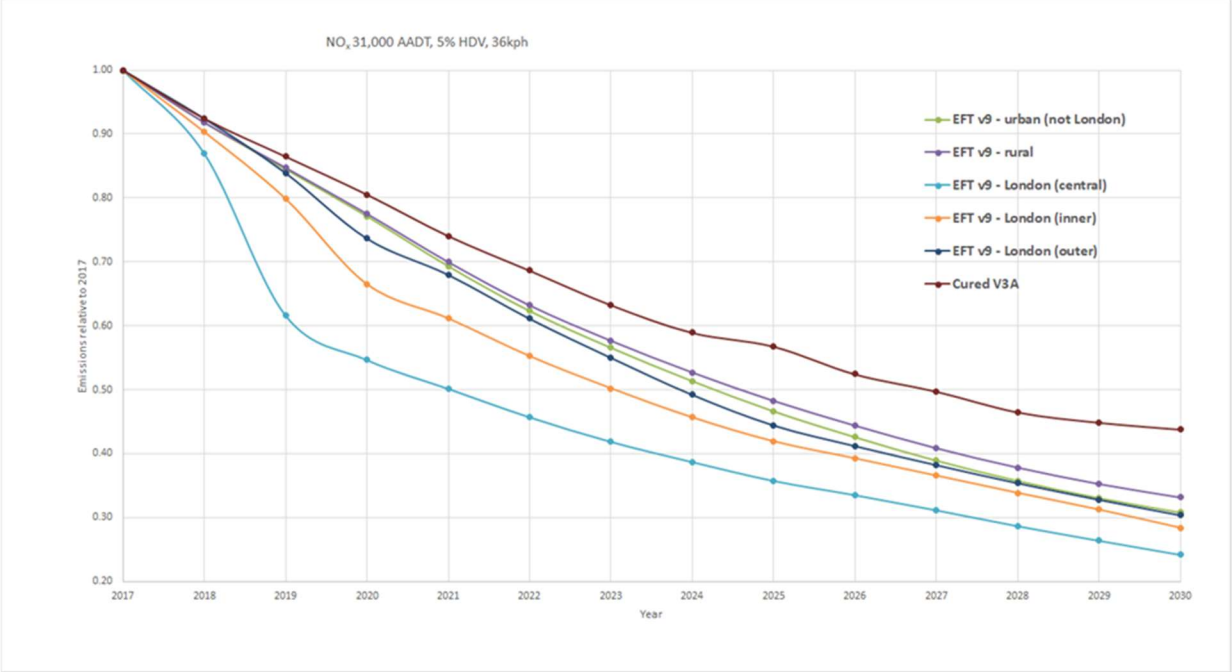


Figure F-1: AFT and CURED Predicted Emissions Reductions Over Time

For emission years prior to 2021, outside of London the CURED v3A methodology is likely to give similar results to using the EFT v9.0 data. Post 2020, when the introduction of Euro 6d begins to take effect, then CURED v3A and the EFT v9.0 begin to diverge particularly in central London as a result of the Ultra-Low Emission Zone (ULEZ).

Future Year Assessment Methodology

For developments outside of London up until 2021, the current EFT is considered to be appropriate and precautionary as to NO_x emissions from diesel vehicles has been recognised. As such, one is justified in using the emission factors for the year of the assessment as the uncertainty in the emission factors is taken account of by using the verification factor.

Developments from 2021 onwards will increasingly be influenced by the assumption that the Real Driving Emissions (RDE) testing of diesel vehicles is effective and in essence, the result is likely to lie between the EFT and CURED curves of the previous graph. If a conservative approach is warranted, one could follow the CURED curve, the effect of which is outlined in the **Table F-1**.

Table F-1 EFT V9 Data Years Comparable to CURED Data Years

Traffic Data Year	EFT v9 Year				
	Central London	Inner London	Outer London	Urban (not London)	Rural (not London)
2017	2017	2017	2017	2017	2017
2018	2018	2018	2018	2018	2018
2019	2018	2019	2019	2019	2019
2020	2018	2019	2019	2020	2020
2021	2018	2019	2020	2020	2020
2022	2018	2020	2021	2021	2021
2023	2018	2020	2022	2022	2022
2024	2019	2021	2022	2022	2022
2025	2020	2021	2023	2023	2023
2026	2021	2022	2024	2024	2024
2027	2021	2023	2024	2024	2024
2028	2022	2023	2025	2025	2025
2029	2022	2024	2025	2025	2025
2030	2022	2024	2026	2026	2026
Beyond 2030	2022	2024	2026	2026	2026

Appendix G Air Quality Neutral Planning Support Update: GLA 80371 Annual Trip Rates

The below tables are taken from the 'Air Quality Neutral Planning Support Update: GLA 80371' developed by Air Quality Consultants Ltd. (Air Quality Consultants Ltd., 2014).

Table G-1 Average Number of Trips per Annum for Different Development Categories (Relevant Land Use Class Data Taken from Table 7 of the 'Air Quality Neutral Planning Support Update: GLA 80371')

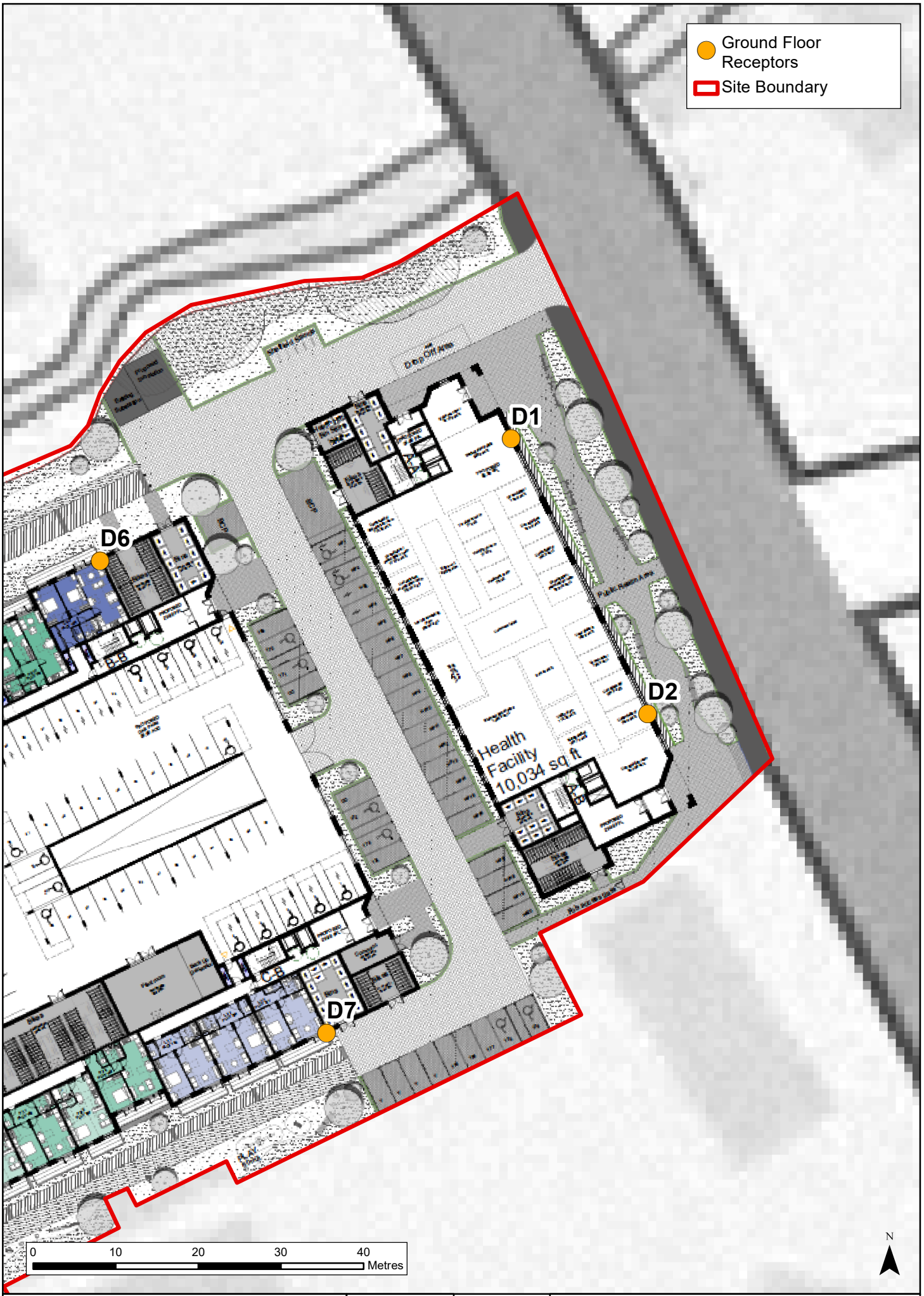
Land Use	Number of Trips (trips / dwelling / annum)		
	CAZ	Inner	Outer
Residential (C3)	129	407	386

Table G-2 Average Number of Trips per Annum for Different Development Categories (Relevant Land Use Class Data Taken from Table A1.1 of the 'Air Quality Neutral Planning Support Update: GLA 80371')

Land Use	Number of Trips (trips / m^2 / annum)		
	CAZ	Inner	Outer
D1	0.07	65.1	46.1

Appendix H Figures

Document Path: J:\46187 Yiewsley, Hillingdon\Air Quality\Plans and Figures\ArcGIS\46187_LBH_Ground Floor Receptors & Site Boundary.mxd



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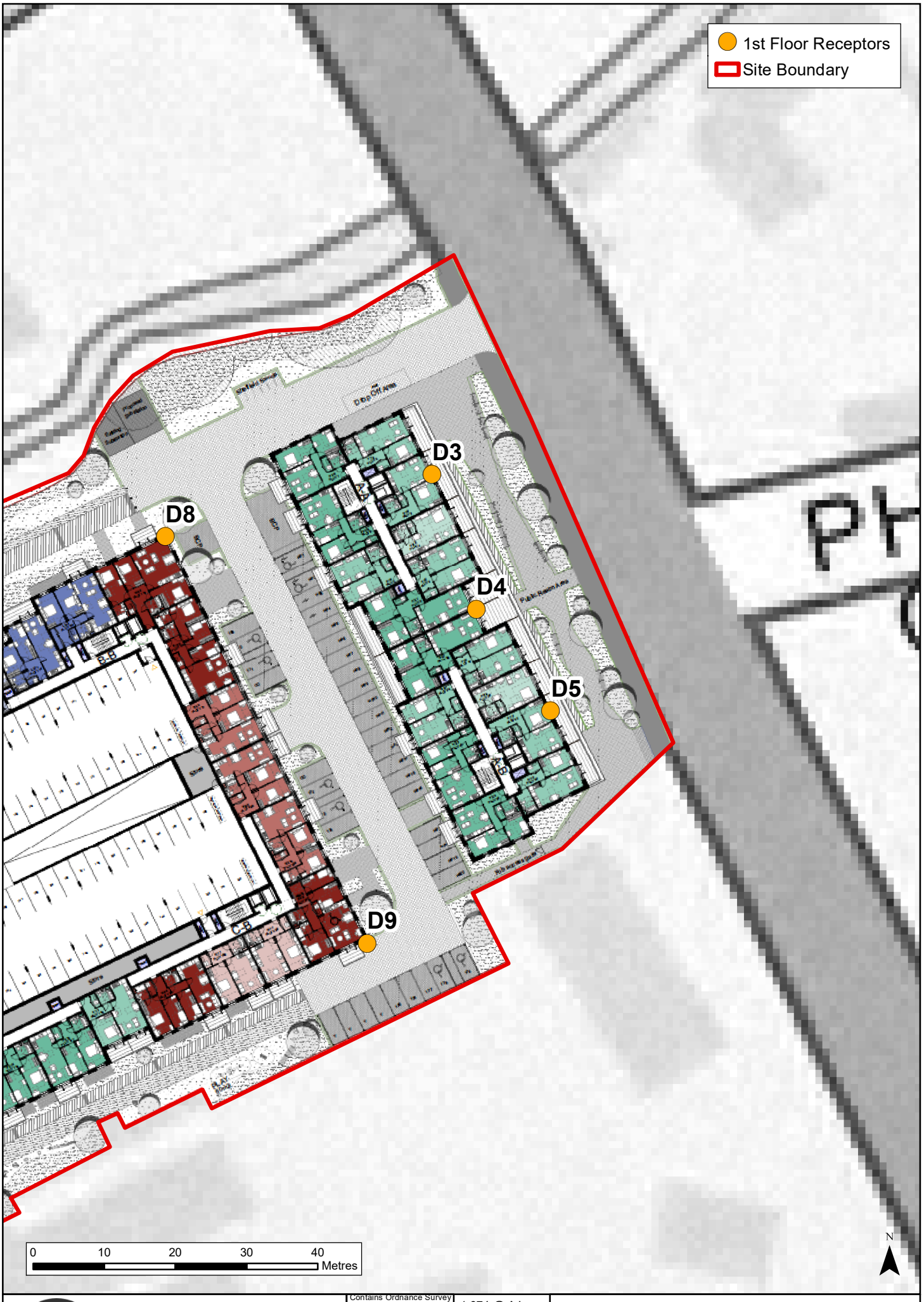
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217 High Street, Yiewsley

Proposed Development Ground Floor Receptor Locations

Figure H-1 | Rev A



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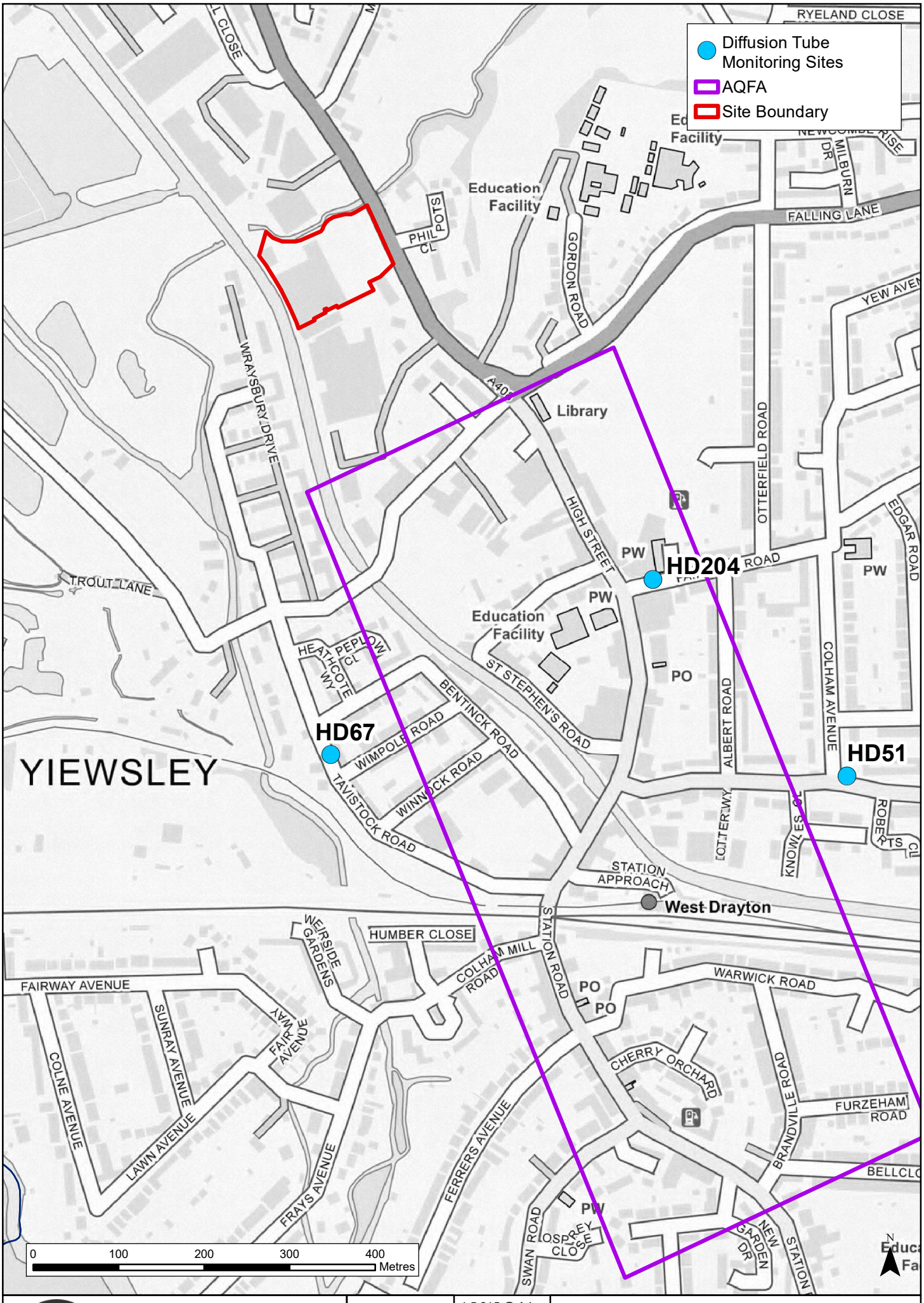
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Proposed Development First Floor Receptor Locations

Figure H-2 | Rev A



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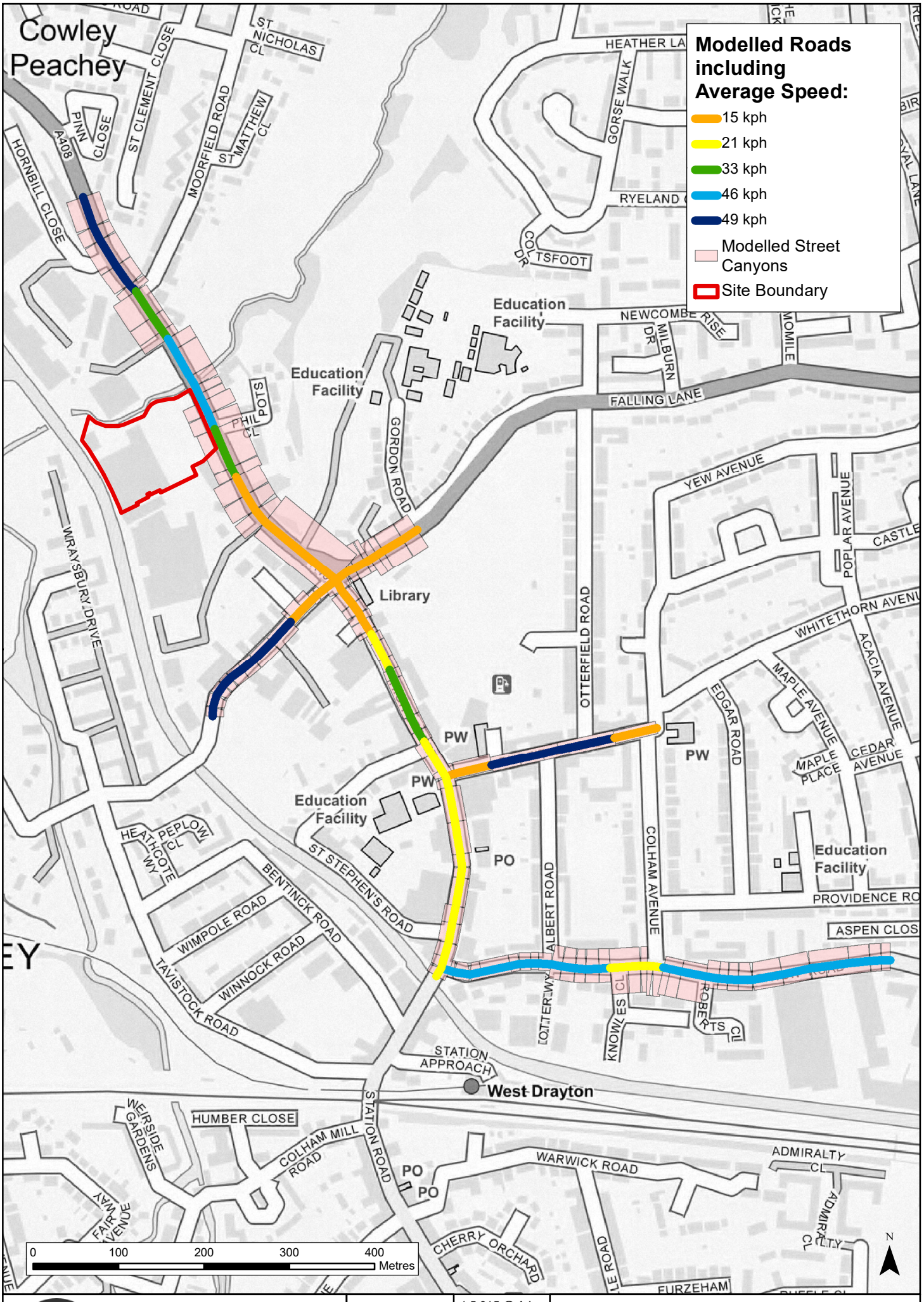
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217 High Street, Yiewsley

Local Monitoring Sites, Air Quality Focus Area 100 and the Site Boundary

Figure H-3 | Rev A



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217 High Street, Yiewsley

Modelled Roads (including Average Speeds) and Street Canyons

Figure H-3 | Rev A

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