

AIR QUALITY TECHNICAL NOTE

Job Name: Land at Rainbow Industrial Estate, West Drayton
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Prepared By: Philip Branchflower
Subject: Land at Rainbow Industrial Estate, Trout Road, West Drayton

1. Introduction

- 1.1. Stantec UK Limited are instructed by Troutbourne LLP to prepare an Air Quality Technical Note as an addendum to an Air Quality Assessment (AQA) previously prepared in June 2019 to support an appeal against the refusal of planning permission by LB Hillingdon (LBH) on 6th December 2018 for '*Continued use of land for car parking (sui generis use) and retention of two portacabin units for 24 months*' under LPA Ref: 38058/APP/2018/3554.
- 1.2. The conjoined planning appeal and enforcement notice appeals (PINS Ref: APP/R5510/C/19/3221239 & APP/R5510/W/19/3230443) were withdrawn in June 2020.
- 1.3. The airport parking use has now ceased and an alternative temporary use of the site is now sought by the Applicant for,

'Retention of two portacabins and entrance gates onto Trout Road and use of site for sui generis uses including container storage; open and closed storage of building, scaffolding and aggregate materials; vehicle storage and sales; and other commercial uses'
- 1.4. The proposed use is sought for a temporary period of three years as a meanwhile use of the site whilst a mixed use, residential-led scheme for the Rainbow and Kirby Industrial sites is discussed with the LPA during pre-application discussions and a formal planning application is then submitted and determined.
- 1.5. More details of the proposed use are set out in the Planning and Design and Access prepared by Stantec.
- 1.6. This Note reviews the previously submitted AQA to identify if its findings remain applicable to the current proposed temporary use of the site. The key issues that are considered in this Note includes changes to:
 - Any changes to relevant development plan policy or air quality guidance;
 - The potential development related emissions, primarily relating to traffic generation and/or distribution; and
 - The surrounding environment (receptor type, locations and baseline air quality).

2. AQA (June 2019) findings

- 2.1. The Air Quality Assessment¹ (AQA) (appended to this Note) was prepared in 2019 to support an appeal against the refusal of planning permission for the temporary use of the site for airport parking. It concluded:

¹ Land at Rainbow Industrial Estate. Air Quality Assessment. PBA/Stantec - June 2019.

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"The air quality impacts associated with the traffic movements resulting from the existing temporary use of the Site for car-parking have been assessed.

LBH has declared an AQMA across the southern extent (south of the A40) of the borough due to exceedances of the annual mean NO₂ NAQO and a number of AQFAs. The Site lies within the LBH AQMA and is accessed via the West Drayton / Yiewsley AQFA.

There are no predicted exceedances of the PM₁₀ or PM_{2.5} objectives or limit values at any of the receptor locations.

Whilst the baseline NO₂ concentration is considered likely to potentially exceed the annual average NAQO at some locations along the High Street (i.e. R8, R9 and R10), using the criteria set out in Table 3.2, the impact on annual mean NO₂ concentrations are classified as 'negligible' at all receptor locations.

Therefore overall, considering the limitations of the assessment, short-term duration of ongoing operations, and the criteria set out in Section 3.2.10, the air quality impacts of road traffic generated by the Site are not considered to represent an unacceptable risk of significantly contributing to concentrations of air pollutants in excess of the NAQO or preventing compliance with the NAQO.

3. Review of previous AQA and comparison with proposed development

Any changes to relevant development plan policy or air quality guidance

- 3.1. Since the 2019 AQA was prepared the London Plan (2021) and the Hillingdon Local Plan Part 2 - Development Management Policies (2020) have been published.

London Plan 2021

- 3.2. Relevant policies in the London 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".

- 3.3. Policy SI1 also states:

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

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

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:

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- 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. (underlined text - Panel recommendations October 2019).*
 - 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."*
- 3.4. Whilst the London Plan was not published at the time of the previous AQA, the draft London Plan was considered AQA and there has been no significant change to draft air quality policies as the London Plan went through Examination. It is therefore considered that the current proposals do not conflict with the new London Plan requirements.

Hillingdon Local Plan Part 2 - Development Management Policies (2020)

- 3.5. Policy DMEI 14: Air Quality advises:

"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".

- 3.6. Policy DMEI 14 requirements are reiterated in the new London Plan and as stated above, the current proposals do not conflict with this approach to air quality.

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Development Related Emissions to Air

- 3.7. The proposed temporary use will have restricted operating hours with 7am-7pm - weekdays and 7am - 1pm - Saturdays sought compared to the 24 hour, 365 days a year operating hours of the airport parking use.
- 3.8. The number of vehicles entering the site is also reduced compared to the airport parking use and the predicted traffic movements associated with the proposed use is as follows:
- Car - 40-50 per day
 - Vans - 20 per day
 - Lorries/ HGV - 10 per day
- 3.9. The potential emissions to the air associated with the previous airport parking use related to emissions from vehicles accessing and exiting the Site from the surrounding road network. Traffic data (presented in Appendix D of the 2019 AQA) indicated that total generated "...*site traffic*" was predicted to be 220 annual average daily traffic (AADT)."
- 3.10. It is noticeable that the current proposals are predicted to result in <100 AADT which is well below that assessed in the 2019 AQA. The previous AQA is therefore considered to represent a worst-case assessment of potential emissions from traffic accessing the Site and air quality impacts were deemed acceptable in this scenario.
- 3.11. The proposed storage of aggregates, whilst representing a small part of the wider temporary storage use, represents a source of potential dust emission. The storage area will be located to rear of the site by Grand Union canal to minimise impacts on residential amenities and given the limited quantity proposed (circa 50 tonnes of shingle and sharp sand), this is not considered to represent a significant risk of offsite impact.

Surrounding Environment

- 3.12. The baseline air quality environment is described in Section 4 of the 2019 AQA and identifies that the Site is located within the LBH AQMA.
- 3.13. LBH carries out monitoring of NO₂ concentrations at a number of locations across the borough. The closest and most representative locations are shown in Figure 1 of the previous AQA and the most recent available data presented in Table 1 below.

Table 1: LBH nearby NO₂ monitoring results

Site ID	Site Type	Within AQMA	Annual Mean (µg/m³)				
			2015	2016	2017	2018	2019
Diffusion Tubes							
HILL13 (HD67)	Roadside	Y	28.7	25.8	26.9	29.5	27.9
HILL19 (HD204)	Roadside	Y	40.9	32.0	37.0	35.0	34.6
HD51	Roadside	Y	33.3	29.3	32.9	30.6	26.4
Objective		40					

- 3.14. This monitoring confirms the elevated NO₂ concentrations in proximity to roads, and in recent years (pre-COVID restrictions) a general declining trend in NO₂ concentrations.
- 3.15. The sensitive receptors identified in Section 3.2 of the 2019 AQA (and shown in Appendix E) are considered to remain appropriate.

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3.16. Therefore, the characterisation of the baseline air quality environment within the previous AQA is considered applicable and is likely worst-case scenario as improvements in air quality have occurred in the intervening period.

4. Conclusions

4.1. It is considered that the 2019 AQA remains an appropriate (if worst-case) basis for assessing the potential air quality impacts of the current proposals and that the following conclusions continue to apply:

- There are no predicted exceedances of the PM₁₀ or PM_{2.5} objectives or limit values at any of the receptor locations.
- Whilst the baseline NO₂ concentration is considered likely to potentially exceed the annual average NAQO at some locations along the High Street (i.e. R8, R9 and R10), using the criteria set out in Table 3.2, the impact on annual mean NO₂ concentrations are classified as 'negligible' at all receptor locations.
- Short term duration of the proposed operations including reduced operating hours and reduced predicted traffic movements compared to the previous airport parking use of the site.
- The air quality impacts of road traffic generated by the Site are not considered to represent an unacceptable risk of significantly contributing to concentrations of air pollutants in excess of the NAQO or preventing compliance with the NAQO.

4.2. Overall it is concluded that the current proposals are not considered in conflict with the requirements of the Development Plan in relation to impacts on air quality.

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TECHNICAL NOTE

Appendix A – 2019 Air Quality Assessment for Previous Temporary Scheme



now part of



Land at Rainbow Industrial Estate, Trout Road, West Drayton, UB7 7XT

Air Quality Assessment

On behalf of **Troutbourne LLP**

Project Ref: 35321/4509 | Rev: 1t | Date: June 2019

Office Address: 10 Queen Square, Bristol, BS1 4NT
T: +44 (0)117 332 7840 E: bristol@peterbrett.com



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	Name	Position	Signature	Date
Prepared by:	Ana Gomes/Laura Smart	Air Quality Scientist	Ana Gomes Laura Smart	04/06/19
Reviewed by:	Philip Branchflower	Senior Associate	Philip Branchflower	05/06/19
Approved by:	Jill McGregor	Senior Associate	Jill McGregor	05/06/19
For and on behalf of Peter Brett Associates LLP				

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1 Introduction

1.1 Background

- 1.1.1 Peter Brett Associates LLP (PBA) is instructed by Troutbourne LLP to undertake an air quality assessment to support an appeal against the refusal of planning permission by London Borough of Hillingdon (LBH) on 6th December 2018 under application reference Local Planning Authority Ref 38058/APP/2018/3554 on land at Rainbow Industrial Estate, Trout Road, West Drayton, UB7 7XT ('The Site').

The Appeal Proposals were made for 'Continued use of land for car parking (*sui generis* use) and retention of two portacabin units for 24 months'

- 1.1.2 Reason 4 for refusal on air quality states:

"The proposed development will actively encourage non-sustainable forms of transport and undermine attempts to increase a modal shift away from the private car in areas already breaching minimum EU standards for air quality; the resulting impacts will add to the harmful impacts on air quality and contribute to the consequential health effects from poor air quality. Therefore by reason of its traffic generated air pollution within the London Borough of Hillingdon Air Quality Management Area is contrary to Policy OE1 of the Hillingdon Local Plan: Part Two - Saved UDP Policies (November 2012); the Council's Supplementary Planning Guidance on Air Quality; The Hillingdon Local Plan: Part 1- Strategic Policies T1 and T4 (2012); The London Plan Policy 6.13(a) (2016); and NPPF Chapter 9 (2018)."

- 1.1.3 This report should be read alongside the Statement of Case for Appeal and the Statement of Common Ground (SOCG) which describes the site and surroundings, the Appeal Proposals and relevant planning history including the 2014 Outline and 2018 Reserved Matters permissions for mixed use development on the wider Rainbow and Kirby Industrial Site and a 2017 Enforcement Notice Appeal which allowed a temporary car parking use on the site for a 12 month period .

- 1.1.4 Also relevant to this report is the findings of the Transport Assessment prepared by YES Engineering which concludes on reasons 2 and 3 for refusal on transport issues,

'Reasons 2 and 3 for refusal refer only to Hillingdon Local Plan: Part Two (2007) (2012) (2015) policies AM2 and AM7 and London Plan (2016) policies 6.1, 6.2, 6.4, 6.6 and 6.12 are referred to in the reasons for refusal. It has been clearly demonstrated in Section 3 that the car park would generate less traffic than the consented scheme in the 2014 Outline and the 2018 Reserved Matters, and the site is located in a sustainable location (confirmed by LBH highway department within Onslow Mills, Trout Road application) therefore fully compliant with policies AM2 & AM7. Given the significant reduction in traffic from the extant permission for the wider Rainbow and Kirby Industrial site, it can be concluded that the proposed application is consistent with London Plan (2016) policies 6.1, 6.2, 6.4, 6.6 and 6.12.'

1.2 Scope

- 1.2.1 This report describes existing air quality within the study area and assesses the impact of emissions to air from vehicles associated with the continued use of the Site for car parking on air quality in the surrounding area. The main air pollutants of concern related to road traffic are nitrogen dioxide (NO₂), PM₁₀ and PM_{2.5}.
- 1.2.2 As the Site is already in operation for car parking and permission is sought for a further temporary period of 24 months, it is not considered meaningful to assess the Site against 'Air Quality Neutral' benchmarks or identify mitigation requirements via a damage cost approach. Furthermore, the permitted permanent end-use as approved in the 2014 Outline and 2018 Reserved Matters would result in greater vehicle movements, emissions to air, and impact on air quality than this temporary use.
- 1.2.3 The assessment therefore solely considers the impact of vehicle emission from the Site on local concentrations of air pollutants to responds to Reason 4 for refusal and has been prepared taking into account relevant local and national guidance and regulations.

2 Legislation and Policy

2.1 The Air Quality Strategy

- 2.1.1 The Air Quality Strategy (2007) establishes the policy framework for ambient air quality management and assessment in the UK (Defra, 2007). The primary objective 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 Strategy sets out the National Air Quality Objectives (NAQOs) and Government policy on achieving these objectives.
- 2.1.2 Part IV of the Environment Act 1995 introduced a system of Local Air Quality Management (LAQM) (Environment Act, 1995). This requires local authorities to regularly and systematically review and assess air quality within their boundary, and appraise development and transport plans against these assessments. The relevant NAQOs for LAQM are prescribed in the Air Quality (England) Regulations 2000 (Statutory Instrument, 2000) and the Air Quality (Amendment) (England) Regulations 2002 (Statutory Instrument, 2002).
- 2.1.3 Where an objective 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 objectives within its AQMA.
- 2.1.4 The Local Air Quality Management Technical Guidance 2016, issued by the Department for Environment, Food and Rural Affairs (Defra) for Local Authorities provides advice as to where the NAQOs apply (LAQM.TG(16); Defra, 2016). 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). Thus, for example, annual mean objectives apply at the façades of residential properties, whilst the 24-hour objective (for PM₁₀) would also apply within the garden. They do not apply to occupational, indoor or in-vehicle exposure.

2.2 Clean Air Strategy 2019

- 2.2.1 The Clean Air Strategy aims to lower national emissions of pollutants, thereby reducing background pollution and minimising human exposure to harmful concentrations of pollution. It proposes *“tough new goals to cut public exposure to particulate matter pollution, as recommended by the World Health Organization”*. The Strategy will create a stronger and more coherent framework for action to tackle air pollution. It also aims to support the creation of Clean Air Zones in order to reduce emissions from all sources of air pollution, backed up with clear enforcement mechanisms (Defra, 2019).

2.3 EU Limit Values

- 2.3.1 The Air Quality Standards (Amendment) Regulations 2016 amended the Standard Regulations 2010, which implemented the European Union's Directive on ambient air quality and cleaner air for Europe (2008/50/EC), and includes limit values for NO₂ (Statutory Instrument, 2016). These limit values are numerically the same as the NAQO values but differ in terms of compliance dates, locations where they apply and the legal responsibility for ensuring that they are complied with. The compliance date for the NO₂ EU Limit Value was 1 January 2010, five years later than the date for the NAQO.
- 2.3.2 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.
- 2.3.3 The Directive limit values are applicable at all locations except:

- Where members of the public do not have access and there is no fixed habitation;
- On factory premises or at industrial installations to which all relevant provisions concerning health and safety at work apply; and
- On the carriageway of roads; and on the central reservations of roads except where there is normally pedestrian access.

Air Quality Objectives

Human Health

- 2.3.4 The NAQOs for NO₂ and PM₁₀ set out in the Air Quality Regulations (England) 2000 (Statutory Instrument, 2000) and the Air Quality (England) (Amendment) Regulations 2002 (Statutory Instrument, 2002), are shown in **Table 2.1**.

Table 2.1: NO₂ and PM₁₀ Objectives

Pollutant	Time Period	Objective
Nitrogen Dioxide (NO ₂)	1-hour mean	200 µg/m ³ not to be exceeded more than 18 times a year
	Annual mean	40 µg/m ³
Particulate Matter (PM ₁₀)	24-hour mean	50 µg/m ³ not to be exceeded more than 35 times a year
	Annual mean	40 µg/m ³

- 2.3.5 The objectives for NO₂ and PM₁₀ were to have been achieved by 2005 and 2004, respectively, but also continue to apply in all future years thereafter. Analysis of long-term monitoring data suggests that if the annual mean NO₂ concentration is less than 60 µg/m³ then the one-hour mean NO₂ 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). Similar to NO₂, a PM₁₀ annual mean below 32 µg/m³ is used to screen whether the 24-hour PM₁₀ mean objective is likely to be achieved (Defra, 2016).
- 2.3.6 The Air Quality Strategy 2007 (Defra, 2007) includes an exposure reduction target for smaller particles known as PM_{2.5}. These are an annual mean target of 25 µg/m³ by 2020 and an average urban background exposure reduction target of 15% between 2010 and 2020.
- 2.3.7 The Ambient Air Quality and Cleaner Air for Europe directive (2008/50/EC) was adopted in May 2008, and includes a national exposure reduction target, a target value and a limit value for PM_{2.5}, shown in **Table 2.2**. The UK Government transposed this new directive into national legislation in June 2010.

Table 2.2: PM_{2.5} Objectives

	Time Period	Objective	To be Achieved by
UK Objectives	Annual mean	25 µg/m ³	2020
	3 year running annual mean	15% reduction in concentrations measured at urban background sites	Between 2010 and 2020

	Time Period	Objective	To be Achieved by
European Obligations	Annual mean	Target value of 25 $\mu\text{g}/\text{m}^3$	2010
	Annual mean	Limit value of 25 $\mu\text{g}/\text{m}^3$	2015
	Annual mean	Stage 2 indicative Limit value of 20 $\mu\text{g}/\text{m}^3$	2020
	3 year Average Exposure Indicator (AEI) (a)	Exposure reduction target relative to the AEI depending on the 2010 value of the 3 year AEI (ranging from a 0% to a 20% reduction)	2020
	3 year Average Exposure Indicator (AEI)	Exposure concentration obligation of 20 $\mu\text{g}/\text{m}^3$	2015

(a) The 3 year annual or AEI is calculated from the $\text{PM}_{2.5}$ concentration averaged across all urban background monitoring locations in the UK e.g. the AEI for 2010 is the mean concentration measured over 2008, 2009 and 2010.

2.4 Planning Policy

National Policy

- 2.4.1 The revised 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). In relation to achieving sustainable development, paragraph 8 states that:

"Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives):

...

c) an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."

- 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 goes on 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, also 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”

Planning Practice Guidance

2.4.8 The Planning Practice Guidance (PPG) was first published in March 2014 to support the NPPF (Planning Practice Guidance, 2014). Paragraph 001, Reference 32-007-20140306 (revision date 06.03.2014) of the PPG provides a summary as to why air quality is a consideration for planning:

“... Defra carries out an annual national assessment of air quality using modelling and monitoring to determine compliance with EU Limit Values. It is important that the potential impact of new development on air quality is taken into account in planning where the national assessment indicates that relevant limits have been exceeded or are near the limit... The local air quality management (LAQM) regime requires every district and unitary authority to regularly review and assess air quality in their area. These reviews identify whether national objectives have been, or will be, achieved at relevant locations, by an applicable date... If national objectives are not met, or at risk of not being met, the local authority concerned must declare an air quality management area and prepare an air quality action plan... Air quality can also affect biodiversity and may therefore impact on our international obligations under the Habitats Directive... Odour and dust can also be a planning concern, for example, because of the effect on local amenity.”

2.4.9 Paragraph 002 of the PPG concerns the role of Local Plans with regard to air quality:

“... Drawing on the review of air quality carried out for the local air quality management regime, the Local Plan may need to consider:

- *the potential cumulative impact of a number of smaller developments on air quality as well as the effect of more substantial developments;*
- *the impact of point sources of air pollution ...; and*
- *ways in which new development would be appropriate in locations where air quality is or likely to be a concern and not give rise to unacceptable risks from pollution. This could be through, for example, identifying measures for offsetting the impact on air quality arising from new development including supporting measures in an air quality action plan or low emissions strategy where applicable.”*

2.4.10 Paragraph 005 of the PPG identifies when air quality could be relevant for a planning decision:

“... When deciding whether air quality is relevant to a planning application, considerations could include whether the development would:

- *Significantly affect traffic in the immediate vicinity of the proposed development site or further afield. This could be by generating or increasing traffic congestion; significantly changing traffic volumes, vehicle speed or both; or 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; adds to turnover in a large car park; or result in 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; or extraction systems (including chimneys) which require approval under pollution control legislation or biomass boilers or biomass-fuelled CHP plant; centralised boilers or CHP plant burning other fuels within or close to an air quality management area or introduce relevant combustion within a Smoke Control Area.*
- *Expose people to existing sources of air pollutants. This could be by building new homes, workplaces or other development in places with poor air quality.*
- *Give rise to potentially unacceptable impact (such as dust) during construction for nearby sensitive locations.*
- *Affect biodiversity. In particular, is it likely to result in deposition or concentration of pollutants that significantly affect a European-designated wildlife site, and is not directly connected with or necessary to the management of the site, or does it otherwise affect biodiversity, particularly designated wildlife sites.”*

2.4.11 Paragraph 007 of the PPG provides guidance on how detailed an assessment needs to be:

“Assessments should be proportionate to the nature and scale of development proposed and the level of concern about air quality, and because of this are likely to be locationally specific.”

2.4.12 Paragraph 008 of the PPG provides guidance on how an impact on air quality can be mitigated:

“Mitigation options where necessary will be locationally specific, will depend on the proposed development and should be proportionate to the likely impact... Examples of mitigation include:

- *the design and layout of development to increase separation distances from sources of air pollution;*
- *using green infrastructure, in particular trees, to absorb dust and other pollutants;*
- *means of ventilation;*
- *promoting infrastructure to promote modes of transport with low impact on air quality;*
- *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.”*

2.4.13 Paragraph 009 of the PPG provides guidance on how considerations about air quality fit into the development management process by means of a flowchart. The final two stages in the process deal with the results of the assessment:

“Will the proposed development (including mitigation) lead to an unacceptable risk from air pollution, prevent sustained compliance with EU limit values or national objectives for pollutants or fail to comply with the requirements of the Habitats Regulations.” If Yes:

“Consider how the proposal could be amended to make it acceptable or, where not practicable, consider whether planning permission should be refused.”

The London Plan

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

2.4.15 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 (AQMA's)) and where development is 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;*
- *Promote sustainable design and construction to reduce emissions from the demolition and construction of buildings following the best practice guidance in the Greater London Authority and London Councils 'The control of dust and emissions from construction and demolition';*
- *Be at least 'air quality neutral' and not lead to further deterioration of existing poor air quality (such as areas designated as AQMA's);*

- *Ensure that where provision needs to be made to reduce emissions from a development, this is usually made on-site. Where this provision is demonstrated to be impractical or inappropriate, and that is possible to put in place measures having clearly demonstrated equivalent air quality benefits, planning obligations or planning conditions should be used as appropriate to ensure this, whether on a scheme by scheme basis or through joint-area based approaches; and*
- *Where the development requires a detailed air quality assessment and biomass boilers are included, the assessment should forecast pollutant concentrations. Permission should only be granted if no adverse air quality impacts from the biomass boiler are identified”.*

2.4.16 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.”*

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

2.4.18 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.

Draft London Plan

2.4.19 The Draft New London Plan was published for public consultation in December 2017 and it sets out the Mayor of London’s overall strategic plan for London.

2.4.20 On 13 August 2018 the Mayor Minor Suggested Changes to the Draft New London Plan and the Plan was subject to Examination in late 2018 and early 2019.

2.4.21 Policy Planning for Good Growth 3 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...”

2.4.22 The draft Plan includes Policy Sustainable Infrastructure 1 (SI1) Improving Air Quality which aim is:

“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”.

2.4.23 Policy SI1 Improving Air Quality continues and states:

“London’s air quality should be significantly improved and exposure to poor air quality, especially for vulnerable people, should be reduced:

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) reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality*
 - d) create unacceptable risk of high levels of exposure to poor air quality.*
- 2) 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. Particular care should be taken with developments that are 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.*
- 3) Masterplans and development briefs for large-scale development proposals subject to an Environmental Impact Assessment should propose methods of achieving an Air Quality Positive approach through the new development.*
- 3A) major development proposals must be at least air quality neutral and be submitted with an Air Quality Assessment.*
- 4) 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.*

Point 5 removed

6) Development proposals should ensure that where emissions need to be reduced, this is done on-site. Where it can be demonstrated that on-site provision is impractical or inappropriate, off-site measures to improve local air quality may be acceptable, provided that equivalent air quality benefits can be demonstrated..."

London Environmental Strategy

2.4.24 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, integrating the following areas:

- air quality
- green infrastructure
- climate change mitigation and energy
- waste
- adapting to climate change
- ambient noise
- low carbon circular economy

2.4.25 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”.

2.4.26 Chapter 4 on Air Quality includes a series of objectives, policies and proposals to improve air quality. Several key issues have been highlighted to be addressed in 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 PM₁₀ and PM_{2.5}, particularly from transboundary pollution, tyre and brake wear, and wood burning.

Sustainable Design and Construction Supplementary Planning Guidance

2.4.27 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).”*

2.4.28 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.*

2.4.29 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.

Local Policy

London Borough of Hillingdon Local Plan

Hillingdon's Local Plan: Part 1 -Strategic Policies (previously known as the Core Strategy) (2012);

- 2.4.30 The LBH Local Plan Part 1 was adopted in November 2012 and comprises strategic policies that set out the overall and broad locations of growth up to 2026. The Plan includes the spatial vision, strategic objectives as well as core policies and an implementation framework. Throughout the plan there is emphasis on improving air quality within the borough.
- 2.4.31 The Plan includes a strategic objective to improve air quality. Objective SO11 aims to:
- "address the impacts of climate change, and minimise emissions of carbon and local air quality pollution from new development and transport."*
- 2.4.32 Several policies in the Local Plan Part 1 address air quality. Policy BE1: Built Environment states:
- "The Council will require all new development 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:*
- 10. Maximise the opportunities for all new homes to contribute to tackling and adapting climate change and reducing emissions of local air quality pollutants."*
- 2.4.33 Policy EM1: Climate Change and Mitigation states:
- "The Council will ensure that climate change mitigation is addressed at every stage of the development process by:*
- 6.Targeting areas with high carbon emissions for additional reductions through low carbon strategies. These strategies will also have an objective to minimise other pollutants that impact on local air quality. Targeting areas of poor air quality for additional emissions targets."*
- 2.4.34 Policy EM8: Land, Water, Air and Noise states:

"Air Quality

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

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

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

The Council has a network of Air Quality Monitoring stations but recognises that this can be widened to improve understanding of air quality impacts. The Council may therefore require new major development in an AQMA to fund additional air quality monitoring stations to assist in managing air quality improvements."

- 2.4.35 The plan also includes a framework for how these policies will be implemented.

Hillingdon Local Plan: Part Two - Saved 2007 UDP policies (2012)

- 2.4.36 The UDP was Hillingdon's long term development strategy. Since its adoption, in 1998, the strategic policies have been replaced by the Local Plan Part 1 - strategic policies 2012. The remaining UDP policies have been saved and are being replaced by the emerging Local Plan Part 2 documents.

- 2.4.37 Policy OE1 (Other Environmental Considerations) states that *'planning permission will not normally be granted for uses and associated structures which are, or are likely to become, detrimental to the character or amenities of surrounding properties or the area generally, because of:*

- (i) The siting or appearance;*
- (ii) The storage or display of vehicles, goods, equipment or other merchandise;*
- (iii) Traffic generation and congestion;*
- (iv) Noise and vibration or the emission of dust, smell or other pollutants, unless sufficient measures are taken to mitigate the environmental impact of the development and ensure that it remains acceptable.'*

Hillingdon Local Plan: Part 2 -Policies Map - Submission Version (2015)

- 2.4.38 The Local Plan Part 2 comprises Development Management Policies, Site Allocations and Designations and Policies Map. Once adopted it will deliver the detail of the strategic policies set out in the Local Plan Part 1: Strategic Policies (2012). Together they will form a comprehensive development strategy for the borough up to 2026.

- 2.4.39 Policy DME1 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 continued improvement of air quality, especially within the Air Quality Management Area*

London Borough of Hillingdon Supplementary Planning Guidance

2.4.40 The London Borough of Hillingdon Air Quality Supplementary Planning guidance was adopted in May 2002. The SPG aims to:

"i. To identify those circumstances when an air quality assessment will be required to accompany a development proposal.

ii. To provide technical guidance on the process of air quality assessment.

iii. To provide guidance on the circumstances when air quality conditions and S106 planning obligations will be sought in accordance with national guidance and Hillingdon's UDP policies for air quality. The guidance is aimed at ensuring that air quality has been considered in enough depth and to help minimise any potential impacts."

London Borough of Hillingdon Air Quality Action Plan

2.4.41 The Air Quality Action Plan for the LBH was adopted in 2004. The plan contains several packages of measures. The details of these are presented below:

- *Package to reduce emissions from road transport including switching to cleaner technologies, tackling through traffic and promotion of cleaner vehicle technology.*
- *Package to deal with emissions from specific sources within the Borough including measures specific to Heathrow Airport and measures concerning local industries and other businesses.*
- *Package to promote more effective use of resources in the Borough including improving eco-efficiency of current and future developments, including properties owned or run by the Council.*
- *Package of more general actions including the implementation of Mayors Air Quality Strategy in the Borough.*

3 Methodology

3.1 Existing Conditions

- 3.1.1 Information on existing air quality has been obtained by collating the results of monitoring carried out by the LBH. Background concentrations for the site have been defined using the national pollution maps published by Defra. These cover the whole country on a 1x1 km grid (Defra, 2019).
- 3.1.2 Given that the car parking use at the Site has been in operation for over 12 months, any contribution to local pollutant concentrations from vehicle movements associated with the Site will to some degree already be accounted for in the baseline environment.

3.2 Road Traffic Impacts

Human Health Sensitive Locations

- 3.2.1 Relevant sensitive locations are places where members of the public might be expected to be regularly present over the averaging period of the objectives. For the annual mean and daily mean objectives that are the focus of this assessment, sensitive receptors will generally be residential properties, schools, nursing homes, etc. When identifying these receptors, particular attention has been paid to assessing impacts close to junctions, where traffic may become congested, and where there is a combined effect of several road links.
- 3.2.2 Based on the above criteria, twelve existing properties have been identified as residential receptors for the assessment. The locations of existing residential receptors were chosen to represent locations where impacts from road traffic related to the proposed development are likely to be the greatest, i.e. as a result of development traffic at junctions. These locations are described in **Table 3.1** and shown in **Figure 1**. Receptors were modelled at a height of 0 m, 1.5 m and 4.5 m representing basement level, ground and first floor exposure. Exceptions to this are R4, R5, R7 and R12, where the receptors were modelled at first floor level height in relation to the road.
- 3.2.3 Concentrations have also been predicted at one diffusion tube monitor HD204, located on Fairfield Road, in order to verify the modelled results (see **Appendix B** for further details on the verification method).

Table 3.1 Proposed Receptors Description

Receptor	Location		Height (m)
R1	505723.9	180314.5	1.5
R2	505787.4	180538.8	1.5
R3	505806.7	180587.8	1.5
R4	505819.5	180576.0	2
R5	505846.5	180605.1	2
R6	505873.4	180653.9	0
R7	505937.3	180687.6	3
R8	506005.5	180626.1	4.5
R9	506035.1	180556.7	4.5
R10	506025.2	180539.6	4.5
R11	505881.2	180728.7	1.5
R12	505929.5	180686.4	3

Modelling Approach

- 3.2.4 Predictions have been carried out using the ADMS-Roads dispersion model (v4.1.1). The model requires the user to provide various input data, including the Annual Average Daily Traffic (AADT) flow, the proportion of Heavy Duty Vehicles (HDVs), road characteristics (including road width and street canyon height, where applicable), and the vehicle speed. It also requires meteorological data. The model has been run using 2017 meteorological data from the Heathrow meteorological station, which are considered suitable for this area (see [Appendix C](#) for further details on the model inputs).
- 3.2.5 AADT flows and the proportions of HDVs, for roads within the model domain have been determined following advice from the Transport consultants and have been obtained from publicly available information such as the London Atmospheric Emissions Inventory (LAEI), previous planning applications and Department for Transport (DfT) counts. Historic traffic count data (such as from 2011) has been factored to assessment years using TEMPRO growth factors. The traffic data used in this assessment and its source are summarised in [Appendix D](#). The modelled road links are shown in [Figure 2](#).
- 3.2.6 Traffic emissions were calculated using the Emission Factor Toolkit (EFT) v9.0, which utilises NO_x emission factors taken from the European Environment Agency COPERT 5 emission tool. The traffic data were entered into the EFT, along with speed data to provide combined emission rates for each of the road links entered into the model.
- 3.2.7 In order to take account of uncertainties relating to future year vehicle emissions, the assessment has been carried out utilising 2017 emission factors and background concentrations, thus assuming no improvement in vehicle emissions or concentrations.

Impact Predictions

- 3.2.8 The relevant objectives for human health are set out in [Table 2.1](#) and [Table 2.2](#). There is no official guidance in the UK on how to assess the significance of air quality impacts. The approach developed by the IAQM and Environmental Protection UK (EPUK), which considers the change in air quality as a result of a proposed development on existing receptors, has therefore been used (Moorcroft and Barrowcliffe *et al.*, 2017).
- 3.2.9 The guidance sets out three stages: determining the magnitude of change at each receptor, describing the impact, and assessing the overall significance. Impact magnitude relates to the change in pollutant concentration; the impact description relates this change to the air quality objective.

Table 3.2: Impact Descriptor for individual receptors

Long term average Concentration at receptor in assessment year	% Changes in Concentration with development in relation to Objective / Limit Value			
	1*	2-5	6-10	>10
> 110 % (a)	Moderate	Substantial	Substantial	Substantial
>102% - ≤110% (b)	Moderate	Moderate	Substantial	Substantial
>95% - ≤102% (c)	Slight	Moderate	Moderate	Substantial
>75% - ≤95% (d)	Negligible	Slight	Moderate	Moderate
≤75% (e)	Negligible	Negligible	Slight	Moderate

Where concentrations increase the impact is described as adverse, and where it decreases as beneficial.
% change rounded to nearest whole number. Where the % change is 0 (i.e. less than 0.5%) the impact will be Negligible.

- (a) NO_2 or PM_{10} : $> 44\mu\text{g}/\text{m}^3$ annual mean; $\text{PM}_{2.5} > 27.5\mu\text{g}/\text{m}^3$ annual mean; $\text{PM}_{10} > 35.2\mu\text{g}/\text{m}^3$ annual mean (days).
- (b) NO_2 or PM_{10} : $> 40.8 - \leq 44\mu\text{g}/\text{m}^3$ annual mean; $\text{PM}_{2.5} > 25.5 - \leq 27.5\mu\text{g}/\text{m}^3$ annual mean; $\text{PM}_{10} > 32.64 - \leq 35.2\mu\text{g}/\text{m}^3$ annual mean (days).
- (c) NO_2 or PM_{10} : $> 38 - \leq 40.8\mu\text{g}/\text{m}^3$ annual mean; $\text{PM}_{2.5} > 23.75 - \leq 25.5\mu\text{g}/\text{m}^3$ of annual mean; $\text{PM}_{10} > 30.4 - \leq 32.64\mu\text{g}/\text{m}^3$ annual mean (days).
- (d) NO_2 or PM_{10} : $> 30 - \leq 38\mu\text{g}/\text{m}^3$ annual mean; $\text{PM}_{2.5} > 18.75 - \leq 23.75\mu\text{g}/\text{m}^3$ annual mean; or $< 24 - \leq 30.4\mu\text{g}/\text{m}^3$ annual mean (days).
- (e) NO_2 or PM_{10} : $\leq 30\mu\text{g}/\text{m}^3$ annual mean; $\text{PM}_{2.5} \leq 18.75\mu\text{g}/\text{m}^3$ annual mean; $\text{PM}_{10} \leq 24\mu\text{g}/\text{m}^3$ annual mean (days).

3.2.10 The guidance states that the assessment of significance should be based on professional judgement, taking into account factors including:

- the number of properties affected by slight, moderate or substantial air quality impacts and a judgement on the overall balance;
- the magnitude of the changes and the descriptions of the impacts at the receptors i.e. **Tables 3.2** findings;
- whether or not an exceedance of an objective or limit value is predicted to arise in the operational study area (where there are significant changes in traffic) where none existed before or an exceedance area is substantially increased;
- the uncertainty, comprising the extent to which worst-case assumptions have been made; and
- the extent to which an objective or limit value is exceeded.

3.2.11 Where impacts can be considered in isolation at an individual receptor, moderate or substantial impacts (i.e. per **Table 3.2**) may be considered to be a significant environmental effect, whereas negligible or slight impacts would not be considered significant. The overall effect however, needs to be considered in the round taking into account the changes at all of the modelled receptor locations, with a judgement made as to whether the overall air quality effect of the development is significant or not.

Assumptions and Limitations

3.2.12 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.

3.2.13 The baseline traffic data applied in this assessment has been sourced from a variety of historic traffic counts undertaken at differing times and in some cases have been factored forward a considerable number of years. Furthermore, in the absence of trip distribution data the total Site generated vehicle movements have been added to each modelled road link.

3.2.14 Therefore, there is considered to be a degree of uncertainty as regards the applicability of some this baseline traffic data which will to some extent be mitigated through the model verification process. Whilst the approach for assessing the impact of the Site traffic will result in some 'double-counting' as the Site is already operational, this is not considered to be a significant limitation given the low quantum of Site generated vehicle movements.

3.2.15 A disparity between national road transport emissions projections and measured annual mean concentrations of nitrogen oxides and NO_2 has been identified in recent years. Whilst projections suggest that both annual mean nitrogen oxides and NO_2 concentrations from road traffic emissions should have fallen significantly over the past 6 – 8 years, at many monitoring sites levels have remained relatively stable, or have shown a slight increase.

- 3.2.16 The modelling has been based on 2017 emission factors and background concentrations, whilst utilising traffic flows for 2019. The model has been verified against 2017 monitoring data. This is considered to provide an appropriately conservative assessment taking into account the uncertainties regarding future vehicle emission factors.

4 Baseline Conditions

4.1 LAQM

- 4.1.1 LBH has investigated air quality within its area as part of its responsibilities under the LAQM regime. An AQMA has been declared across the southern extent (south of the A40) of the borough due to exceedances of the annual mean NO₂ NAQO
- 4.1.2 LBH and GLA have also identified Air Quality Focus Areas (AQFAs) where improvement in air quality is considered a key priority given the potential exposure.
- 4.1.3 The Site lies within the LBH AQMA and is accessed via the West Drayton / Yiewsley AQFA.

4.2 Monitoring

NO₂

- 4.2.1 LBH carries out monitoring of NO₂ concentrations at a number of locations across the borough. The closest and most representative locations are described below and shown in **Figure 1**. Data for these sites are presented in **Table 4.1**,

Table 4.1: Measured NO₂ Concentrations

Site ID	Site Type	Within AQMA	Annual Mean (µg/m³)				
			2013	2014	2015	2016	2017
Diffusion Tubes							
HD67	Roadside	Y	29.8	30.7	28.7	25.8	26.9
HD204*	Roadside	Y	38.3	39.7	40.9	32.0	37.0
HD51	Roadside	Y	34.3	36.7	33.3	29.3	32.9
Objective			40				

Exceedances of the objective highlighted in bold.

2013 – 2017 data taken from the ASR 2018 LBH.

*Used for model verification

- 4.2.2 Measured annual mean NO₂ concentrations at all locations were below the NAQO in 2016 and 2017. Locations HD51 and HD204 are both approximately 200 m from the Site and indicate the influence of traffic on the High Street (HD204) where concentrations approach the NAQO, as opposed to the lower concentrations on Tavistock Road (HD67) which approach background concentrations (and therefore cannot be used for model verification).

PM₁₀ and PM_{2.5}

- 4.2.3 There is no PM₁₀ monitoring undertaken in close proximity to the Site.

4.3 Background Concentrations

- 4.3.1 In addition to these measured concentrations, estimated background concentrations for the Site location have been obtained from the national maps provided by Defra (**Table 4.2**; Defra, 2017b).

Table 4.2: Estimated Annual Mean Background Concentrations (for Site)

Year	Annual Mean (µg/m ³)		
	NO ₂	PM ₁₀	PM _{2.5}
2017	26.9	16.7	11.4
Objectives	40	40	25

- 4.4.4 The background concentrations at the Site are all below the relevant objectives.

5 Impact Assessment

5.1 Predicted Impacts

- 5.1.1 Predicted concentrations of NO₂, PM₁₀ and PM_{2.5} at the identified receptor locations both without and with Site related traffic are presented in **Table 5.1, 5.2 and 5.3** below.

Table 5.1: Predicted Concentrations of NO₂ (µg/m³), % Change and Impact at each Receptor.

Receptor	2019 Baseline	2019 With All Site Traffic	Change (%)	Impact
R1	29.0	29.1	0.4%	Negligible
R2	28.6	28.7	0.2%	Negligible
R3	32.0	32.3	0.7%	Negligible
R4	30.6	30.8	0.5%	Negligible
R5	32.0	32.2	0.6%	Negligible
R6	30.3	30.4	0.3%	Negligible
R7	38.3	38.4	0.3%	Negligible
R8	40.0	40.1	0.2%	Negligible
R9	50.0	50.1	0.4%	Negligible
R10	56.4	56.6	0.4%	Negligible
R11	33.9	33.9	0.1%	Negligible
R12	38.3	38.6	0.7%	Negligible
Objective	40		-	-

Exceedances highlighted in bold.

Table 5.2: Predicted Concentrations of PM₁₀ (µg/m³), % Change and Impact at each Receptor.

Receptor	2019 Baseline	2019 With All Site Traffic	Change (%)	Impact
R1	17.1	17.1	0.1%	Negligible
R2	17.0	17.0	<0.1%	Negligible
R3	17.6	17.7	0.1%	Negligible
R4	17.4	17.4	0.1%	Negligible
R5	17.6	17.7	0.1%	Negligible
R6	17.2	17.2	0.1%	Negligible
R7	18.2	18.2	0.1%	Negligible
R8	18.5	18.5	<0.1%	Negligible
R9	20.2	20.3	0.1%	Negligible
R10	21.5	21.5	0.1%	Negligible
R11	17.6	17.6	<0.1%	Negligible
R12	18.3	18.3	0.1%	Negligible
Objective	40		-	-

Table 5.3: Predicted Concentrations of PM_{2.5} (µg/m³), % Change and Impact at each Receptor.

Receptor	2019 Baseline	2019 With All Site Traffic	Change (%)	Impact
R1	11.7	11.7	0.1%	Negligible
R2	11.6	11.6	0.0%	Negligible
R3	12.0	12.0	0.1%	Negligible
R4	11.8	11.9	0.1%	Negligible
R5	12.0	12.0	0.1%	Negligible
R6	11.7	11.8	0.1%	Negligible
R7	12.4	12.4	0.1%	Negligible
R8	12.7	12.7	0.0%	Negligible
R9	13.8	13.8	0.1%	Negligible
R10	14.6	14.6	0.1%	Negligible
R11	12.0	12.0	0.0%	Negligible
R12	12.4	12.5	0.1%	Negligible
Objective	40		-	-

- 5.1.2 The annual mean NO₂ objective is predicted to be exceeded at R8, R9 and R10 along the High Street as would be expected given the traffic flows, canyon like nature, likely congestion and AQMA/AQFA designation.
- 5.1.3 There are no predicted exceedances of the PM₁₀ or PM_{2.5} objectives or limit values at any of the receptor locations.
- 5.1.4 None of the predicted annual mean NO₂ concentrations exceed 60 µg/m³ and therefore exceedance of the 1-hour mean NO₂ objective is unlikely.
- 5.1.5 None of the predicted annual mean PM₁₀ concentrations exceed 32 µg/m³ and therefore the 24-hour mean PM₁₀ objective is not predicted to be exceeded.

5.2 Impact Significance

- 5.2.1 The changes in annual mean NO₂ concentrations are all less than 1% of the NAQO. Changes of less than 0.5% (0% when rounded to the nearest whole number) occur at the majority of receptor locations, except for R3, R5 and R12 where the change is 1% (rounded to the nearest whole number). The changes in PM₁₀ and PM_{2.5} concentrations are all 0% of the relevant NAQOs, when rounded to the nearest whole number.
- 5.2.2 Whilst the baseline NO₂ concentration is considered likely to potentially exceed the annual average NAQO at some locations along the High Street (i.e. R8, R9 and R10), using the criteria set out in **Table 3.2**, the impact on annual mean NO₂ concentrations are classified as 'negligible' at all receptor locations.
- 5.2.3 The impact on PM₁₀ and PM_{2.5} concentrations are also classified as 'negligible' at all receptors, and the annual mean of 32µg/m³ equating to 35 days above 50µg/m³ for PM₁₀ is described as negligible at all receptor locations.
- 5.2.4 Therefore overall, considering the limitations of the assessment, short-term duration of ongoing operations, and the criteria set out in **Section 3.2.10**, the air quality impacts of road traffic generated by the Site are not considered to represent a unacceptable risk of significantly contributing to concentrations of air pollutants in excess of the NAQO or preventing compliance with the NAQO.

6 Conclusions

- 6.1.1 The air quality impacts associated with the traffic movements resulting from the existing temporary use of the Site for car-parking have been assessed.
- 6.1.2 LBH has declared an AQMA across the southern extent (south of the A40) of the borough due to exceedances of the annual mean NO₂ NAQO and a number of AQFAs. The Site lies within the LBH AQMA and is accessed via the West Drayton / Yiewsley AQFA.
- 6.1.3 There are no predicted exceedances of the PM₁₀ or PM_{2.5} objectives or limit values at any of the receptor locations.
- 6.1.4 Whilst the baseline NO₂ concentration is considered likely to potentially exceed the annual average NAQO at some locations along the High Street (i.e. R8, R9 and R10), using the criteria set out in **Table 3.2**, the impact on annual mean NO₂ concentrations are classified as 'negligible' at all receptor locations.
- 6.1.5 Therefore overall, considering the limitations of the assessment, short-term duration of ongoing operations, and the criteria set out in **Section 3.2.10**, the air quality impacts of road traffic generated by the Site are not considered to represent a unacceptable risk of significantly contributing to concentrations of air pollutants in excess of the NAQO or preventing compliance with the NAQO.

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Appendix A Glossary

Abbreviations	Meaning
AADT	Annual Average Daily Traffic
ADMS	Air Dispersion Modelling System
AQAP	Air Quality Action Plan
AQA	Air Quality Assessment
AQFA	Air Quality Focus Area
AQMA	Air Quality Management Area
DEFRA	Department for Environment, Food and Rural Affairs
Diffusion Tube	A passive sampler used for collecting NO ₂ in the air
EC	European Commission
EFT	Emission Factor Toolkit
EPUK	Environmental Protection UK
GLA	Greater London Authority
HDV	Heavy Duty Vehicle; a vehicle with a gross vehicle weight greater than 3.5 tonnes, includes Heavy Goods Vehicles and buses
IAQM	Institute of Air Quality Management
LAEI	London Atmospheric Emissions Inventory
LAQM	Local Air Quality Management
LBH	London Borough Hillingdon
LGV	Light Good Vehicle
NAQO	National Air Quality Objective as set out in the Air Quality Strategy and the Air Quality Regulations
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen oxides, 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 _{2.5}	Airborne particles less than 2.5 µm in aerodynamic diameter

PM ₁₀	Airborne particles less than 10 µm in aerodynamic diameter
PBA	Peter Brett Associates LLP
PPG	Planning Practice Guidance
Receptor	A location where the effects of pollution may occur
SPG	Supplementary Planning Guidance
TEMPRO	Trip End Model Presentation Programme

Appendix B Model Verification

Nitrogen Dioxide

Most nitrogen dioxide 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 ($\text{NO}_x = \text{NO} + \text{NO}_2$). The model has been run to predict the 2017 annual mean road- NO_x contribution at the HD204 roadside diffusion tube (identified in [Table 4.1](#)).

The model output of road- NO_x has been compared with the 'measured' road- NO_x , which was determined from the measured NO_2 concentration using the NO_x from NO_2 calculator and the adjusted background NO_2 concentrations from the Defra background map.

An adjustment factor was determined as follows:

Measured NO_2 : $37.0\mu\text{g}/\text{m}^3$

Measured road- NO_x : $20.26\mu\text{g}/\text{m}^3$

Modelled road- NO_x : $8.68\mu\text{g}/\text{m}^3$

Road- NO_x adjustment factor: $20.26/8.68 = 2.3342^*$

*Based on unrounded numbers.

This factor implies that the model is under-predicting the road- NO_x contribution. This is a common experience with this and most other models.

PM₁₀

No monitoring of PM_{10} is carried out in proximity to the development site. The primary adjustment factor calculated for NO_2 concentrations has therefore been applied to the modelled road- PM_{10} concentrations.

PM_{2.5}

No monitoring of $\text{PM}_{2.5}$ is carried out in proximity to the development site. The primary adjustment factor calculated for PM_{10} concentrations has therefore been applied to the modelled road- $\text{PM}_{2.5}$ concentrations.

Appendix C Model Inputs and Results Processing Tools

Meteorological Data	2017 Hourly meteorological data from Heathrow Airport Meteorological Station has been used in the model. The wind rose is shown in Figure C1.
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: 2017.
Latitude	51°
Surface Roughness	A value of 1 for 'cities and woodlands' was used to represent the modelled area. A value of 0.3 for 'agricultural areas' was used to represent the meteorological station site.
Minimum Monin-Obukhov length	A value of 30 for 'cities and large towns' was used to represent the modelled area and meteorological station site.
Street Canyon	ADMS Advanced Street Canyon module was used to represent the effect of trapping and recirculating pollutants. The canyons included are shown in Figure 2. Building heights were assumed to be 3 m per floor.
Emission Factor Toolkit (EFT)	V9.0, May 2019.
NO _x to NO ₂ Conversion	NO _x to NO ₂ calculator version 7.1, May 2019
Background Maps	2017 reference year background maps

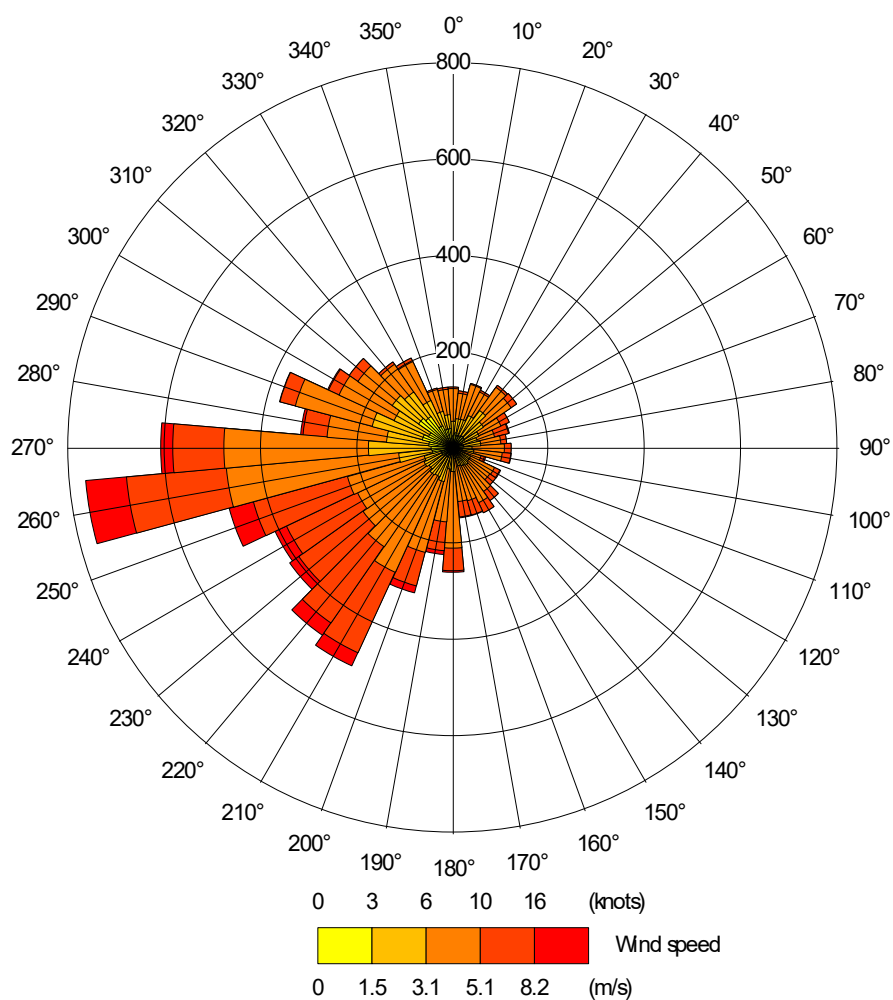


Figure C.1: Heathrow 2017 Wind Rose

Appendix D Traffic Data

Table D.1: Traffic Data

Location	2017 Baseline		2019 Baseline		2019 + All Site Traffic		Data Source
	AADT	HDV (%)	AADT	HDV (%)	AADT	HDV (%)	
Trout Road (E of Site)	3,121	1.0	3,203	1.0	3,423	0.9	AQA by Entran for previous planning application for site. 2011 data factored to 2017 using a TEMPRO growth factor of 1.0556. 2017 data factored to 2019 using a TEMPRO growth factor provided by the project transport consultant of 1.0261.
Trout Road (W of Site)	3,121	1.0	3,203	1.0	3,423	0.9	
Tavistock Road	2,235	3.0	2,293	3.0	2,513	2.7	
High Street (N of Horton Road)	17,533	8.4	17,991	8.4	18,211	8.3	2016 LAEI data
Falling Lane A408 East	17,924	6.0	18,392	6.0	18,612	5.9	2016 LAEI data
High Street (N of Trout Road)	17,706	4.8	20,490	5.0	20,710	4.9	AQA by Entran for previous planning application for site. 2011 data factored to 2017 using a TEMPRO growth factor of 1.0556. 2017 data factored to 2019 using a TEMPRO growth factor provided by the project transport consultant of 1.0261.
Fairfield Road	2,310	4.0	2,370	4.0	2,370	4	DfT count data (site 990328) 2009 data factored to 2017 using a TEMPRO growth factor of 1.0556. 2017 data factored to 2019 using a TEMPRO growth factor provided by the project transport consultant of 1.0261.

Appendix E Figures

