A41 Pioneer Road Roundabout, Graven Hill, Bicester

Air Quality Assessment

On behalf of

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Waterman Infrastructure & Environment Ltd
Halifax House, Halifax Place, Nottingham, NG1 1QN
www.watermangroup.com

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This document has been prepared and checked in accordance with
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Issue	Date	Prepared by	Checked by	Approved by
First	July 2020	Chris Brownlie Principal Consultant	Andrew Fowler Principal Consultant	Nick Jones-Hill Senior Associate Director

Comments

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Executive Summary

Planning permission is sought for the junction improvements at the Pioneer Road junction on the A41 (also known as Aylesbury Road) at Graven Hill, Bicester. The proposals comprise a 4-arm roundabout.

The main likely effects on local air quality during construction relates to dust. A range of measures to minimise or prevent dust generated from construction activities would be implemented throughout the works. Therefore, it is considered that likely residual effects due to dust emissions would be not significant.

Emissions from construction vehicles and plant would be small in comparison to the emissions from the volume of vehicles travelling on roads in the surrounding area of the Site and would not significantly affect air quality. Therefore, it is anticipated that the effect of construction plant and construction vehicles entering and egressing the Site during the construction period would be not significant.

The Development does not exceed the EPUK/IAQM critieria, so in accordance with the guidance, the Development is not expected to give rise to air quality impacts. As such the likely effect of traffic emissions associated with the operational Development on local air quality is not significant.

1. Introduction

1.1. Waterman Infrastructure & Environment Ltd (hereafter referred to as 'Waterman') was instructed by Graven Hill Village Development Company Limited (hereafter referred to as the 'Applicant') to undertake an air quality assessment for the junction improvements at the Pioneer Road junction on the A41 (also known as Aylesbury Road) at Graven Hill, Bicester (hereafter referred to as the 'Site').

1.2. The proposals comprise a 4-arm roundabout at the Pioneer Road junction on the A41 at Graven Hill, Bicester (hereafter 'The Development'). The roundabout would connect the Graven Hill development (currently under construction), via the proposed Employment Access Road (EAR), to the wider highway network. The proposals would also allow for future access to a proposed development (Wretchwick Green) on land to the north of the A41. The roundabout is primarily aimed to help improve access (for all users) to the Graven Hill development.

1.3. The Development includes two new vehicular accesses onto the adjacent A4421 and one access onto the A41. The vehicular access onto the A41 takes the form of a new roundabout approximately 700m east of the existing A41/A4421 roundabout (Rodney House Roundabout). The vehicular access would be constructed broadly in the location of the existing A41 Pioneer Road junction and would be circa 60 metres in diameter. The roundabout would include four arms; the eastern and western arms of the A41, the northern arm would form the access into the Wretchwick Green development and the southern arm would tie into Pioneer Road which runs southwards into the Graven Hill site.

1.4. Cherwell District Council (CDC) has declared four Air Quality Management Areas (AQMA) within its administrative boundary, due to exceedances of the annual mean nitrogen dioxide (NO_2) Air Quality Strategy (AQS) objective. The Site is not located within any of these AQMAs. The nearest AQMA is in Bicester approximately 2.4km northwest of the Site - declared for sections of Kings End, Queens Avenue, Field Street, and St Johns Street.

1.5. This Air Quality Assessment provides a review of the existing air quality at and surrounding the Site and assesses the potential effect of the Development on local air quality during construction and on completion.

1.6. The most significant pollutant during construction relates to the creation of nuisance dust and emissions from construction vehicles and construction plant. A qualitative assessment has been undertaken based on relevant air quality guidance.

1.7. With regards to the operational phase, the most significant pollutants for human health are NO_2 and particulate matter (PM_{10} and $PM_{2.5}$) associated with road traffic emissions. The assessment focuses on these pollutants.

1.8. The Environmental Protection UK and Institute of Air Quality Management (EPUK/IAQM) guidance document[1] sets out criteria for when an air quality assessment is required. The Development does not meet any of the criteria, so in accordance with the EPUK/IAQM guidance, the Development is not expected to give rise to air quality impacts. As such the likely effect of traffic emissions associated with the operational Development on local air quality is **not significant**.

1.9. Section 2 of this air quality assessment gives a summary of legislation, planning policy and guidance relevant to air quality. Section 3 provides details of the assessment methodology and Section 4 sets out the baseline conditions at and around the Site. The results of the assessments

1 Environmental Protection UK & Institute of Air Quality Management (2017), 'Land-Use Planning & Development Control: Planning for Air Quality', EPUK & IAQM, London

are presented in Section 5 and Section 6. Section 7 describes any required mitigation measures. A summary of the findings and conclusions of the assessment is given in Section 8.

2. Air Quality Legislation, Planning Policy and Guidance

2.1. The following legislation, planning policy and guidance are considered relevant to this air quality assessment. A summary of these documents is provided in **Appendix A**.

Legislation

- EU Framework Directive 2008/50/EC, 2008[2];
- Air Quality Standards Regulations, 2010[3];
- The UK Air Quality Strategy, 2007[4];
- The Environment Act 1995[5];

Planning Policy

- National Planning Policy Framework, 2019[6];
- Cherwell Local Plan (incorporating Policy Bicester 13 re-adopted on 19 December 2016) [7];

Guidance

- Department for Environment, Food and Rural Affairs, Clean Air Strategy,2019[8];
- Improving Air Quality in the UK: Tackling Nitrogen Dioxide in our Towns and Cities. UK Air Quality Plan for Tackling Nitrogen Dioxide,2017[9];
- Environmental Protection UK & Institute of Air Quality Management Guidance; Land-Use Planning & Development Control: Planning for Air Quality, 2017[10]
- Planning Practice Guidance[11];
- Institute of Air Quality Management: Guidance on the Assessment of Dust from Demolition and Construction, 2014[12]; and
- Cherwell District Council Air Quality Action Plan, 2017[13].

2 Council Directive 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe.
3 Defra, (2010) The Air Quality Standards (England) Regulations.
4 Department of the Environment, Food and Rural Affairs (Defra), (2007). 'The Air Quality Strategy for England, Scotland, Wales & Northern Ireland'.
5 Office of the Deputy Prime Minister (ODPM), 1995, 'The Environment Act' 1995.
6 Department for Communities and Local Government, 2019, 'National Planning Policy Framework'. DCLG, London.
7 Cherwell District Council (2016): Cherwell Local Plan (incorporating Policy Bicester 13 re-adopted on 19 December 2016).
8 Defra (2019) Clean Air Strategy, 2019
9 Defra (2017) Improving Air Quality in the UK: Tackling nitrogen dioxide in our towns and cities. Draft UK Air Quality Plan for Tackling Nitrogen Dioxide (Consultation Document)
10 Environmental Protection UK & Institute of Air Quality Management (2017), 'Land-Use Planning & Development Control: Planning for Air Quality', EPUK & IAQM, London.
11 DCLG (2014), 'Planning Practice Guidance: Air Quality (ID 32)' (06 March 2014).
12 Institute of Air Quality Management, 2014, 'Guidance on the Assessment of dust from demolition and construction.
13 Cherwell District Council (2017) Air Quality Action Plan, March 2017

3. Assessment Methodology and Significance

Assessment Methodology Overview

3.1. This air quality assessment was undertaken using a variety of information and procedures as follows:

- Review of CDC's Air Quality Review and Assessment statutory reports published as part of the LAQM regime to determine baseline conditions around the Site;
- Review of the local area, to identify potentially sensitive receptor locations that could be affected by changes in air quality arising from the construction works and the operation of the Development;
- Determination of the likely significant effects of construction works and activities, and consideration of the environmental management controls likely to be employed during the works;
- Determination of the likely significant effects of the operational phase of the Development on air quality, based on the application of the EPUK/ IAQM Guidance significance criteria; and
- Identification of mitigation measures, where appropriate.

3.2. As discussed, the most significant pollutants associated with road traffic emissions, in relation to human health, are NO_2 and PM_{10}. CDC has declared four areas as AQMAs due to exceedances of the annual mean NO_2 attributable to road traffic emissions (referred to later in this Report).

Construction Phase Assessment Methodology

Dust Emissions

3.3. The assessment of the construction activities in relation to dust has been based on the IAQM's Guidance on the Assessment of Dust from Demolition and Construction, 2014 and the following:

- Consideration of planned construction activities and their phasing; and
- A review of the sensitive uses in the area immediately surrounding the Site.

3.4. The IAQM guidance identifies receptors within 350m of the Site boundary, and within 50m of construction routes would be sensitive to emissions and nuisance dust from construction activities.

3.5. Following the IAQM guidance, construction activities can be divided into the following four distinct activities:

- Demolition – any activity involved in the removal of an existing building;
- Earthworks – the excavation, haulage, tipping and stockpiling of material, but may also involve levelling the site and landscaping;
- Construction – any activity involved with the provision of a new structure; and
- Trackout – the movement of vehicles from unpaved ground on a site, where they can accumulate mud and dirt, onto the public road network where dust might be deposited.

3.6. The IAQM guidance considers three separate dust effects, with the proximity of sensitive receptors being taken into consideration for:

- annoyance due to dust soiling;
- potential effects on human health due to significant increase in exposure to PM10; and
- harm to ecological receptors.

3.7. A summary of the four-step process which has been undertaken for the dust assessment of construction activities as set out in the IAQM guidance is presented in Table 1.

Table 1: Summary of the Guidance for Undertaking a Construction Dust Assessment

Step		Description
1	Screen the Need for a Detailed Assessment	Simple distance-based criteria are used to determine the requirement for a detailed dust assessment. An assessment will normally be required where there are 'human receptors' within 350m of the boundary of the site and / or within 50m of the route(s) used by construction vehicles on public highway, up to 500m from the site entrance or 'ecological receptors' within 50m of the boundary of the site and/or within 50m of the route(s) used by construction vehicles on public highway, up to 500m from the site entrance.
2	Assess the Risk of Dust Effects	The risk of dust arising in sufficient quantities to cause annoyance and/or health or ecological effects should be determined using three risk categories: low, medium and high based on the following factors: • the scale and nature of the works, which determines the risk of dust arising (i.e. the magnitude of potential dust emissions) classed as small, medium or large; and • the sensitivity of the area to dust effects, considered separately for ecological and human receptors (i.e. the potential for effects) defined as low, medium or high.
3	Site Specific Mitigation	Determine the site-specific measures to be adopted at the site based on the risk categories determined in Step 2 for the four activities. For the cases where the risk is 'insignificant' no mitigation measures beyond those required by legislation are required. Where a local authority has issued guidance on measures to be adopted these should be taken into account.
4	Determine Significant Effects	Following Steps 2 and 3, the significance of the potential dust effects should be determined, using professional judgement, taking into account the factors that define the sensitivity of the surrounding area and the overall pattern of potential risks.

Construction Vehicle Exhaust and Plant Emissions

3.8. The IAQM guidance on assessing construction effects states that:

"*Experience of assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) and site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed. For site plant and on-site traffic, consideration should be given to the number of plant/vehicles and their operating hours and locations to assess whether a significant effect is likely to occur.*"

3.9. Given the area of the Site, the duration of the construction phase, and the Sites location in proximity to main roads where construction traffic will avoid residential roads and quickly disperse, in accordance with the IAQM guidance, it is considered that a quantitative assessment of the exhaust emissions from construction traffic and plant is not required, and a qualitative assessment is appropriate.

Operational Phase Assessment Methodology

3.10. A qualitative review of the operational Development has been undertaken against relevant air quality guidance to determine the impacts of the Development. The significance is based on professional judgement.

Determining Significant of Effects

Construction

Dust Emissions

3.11. The potential effects of construction activities on local air quality were based on professional judgement and with reference to the criteria set out in IAQM's construction dust guidance. Appropriate mitigation that would be implemented to minimise any adverse effects on air quality were also considered. Details of the assessor's experience and competence to undertake the dust assessment is provided in **Appendix B**.

3.12. The assessment of the risk of dust effects arising from the likely construction activities, as identified by the IAQM's construction dust guidance, is based on the magnitude of potential dust emissions and the sensitivity of the area. The risk category matrix for construction activity types, taken from the IAQM guidance, is presented in Table 2 to Table 5.

Table 2: Risk Category from Demolition Activities

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table 3: Risk Category from Earthworks Activities

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 4: Risk Category from Construction Activities

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 5: Risk Category from Trackout Activities

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

3.13. The risk category determined for each construction activity type was used to define the appropriate mitigation measures that should be applied. The IAQM's construction dust guidance recommends that significance is only assigned to the effect after considering mitigation and assumes that all actions to avoid or reduce the effects are inherent within the design of the development. In the case of construction mitigation, this would be secured through planning conditions, legal requirements or required by regulations. Therefore, in this assessment no significance is identified for the pre-mitigation effects of the construction activities.

Construction Vehicle and Plant Exhaust Emissions

3.14. The significance of the effects of construction vehicle exhaust emissions and construction plant emissions on air quality were based on professional judgement.

4. Baseline Conditions

Cherwell District Council's Review and Assessment Process

4.1. As part of their Review and Assessment of Air Quality, CDC has declared four AQMAs within their administrative boundary due to exceedances of the annual mean NO_2 AQS objective due to road traffic emissions these are:

- **AQMA 1**: The designated area incorporates Hennef Way between the junctions with Ermont Way and Concorde Avenue.
- **AQMA 2**: The designated area incorporates sections of Oxford Road, Bloxham Road, South Bar, High Street, Horsefair, North Bar, Warwick Road and Southam Road, Banbury.
- **AQMA 3**: The designated area incorporates a section of Bicester Road, Kidlington to the north of its junction with Water Eaton Lane.
- **AQMA 4**: The designated area incorporates sections of Kings End, Queens Avenue, Field Street, St Johns Street, Bicester.

4.2. The Site is not located within any of these AQMAs, the nearest AQMA to the Site is AQMA 4 located approximately 2.4km northwest.

Cherwell District Council's Local Monitoring

4.3. CDC do not currently undertake monitoring using automatic monitors, NO_2 is measured at 42 locations using diffusion tubes. The results for the seven diffusion tubes closest to the centre of the Site, are presented in **Table 6**.

Table 6: Measured NO_2 Concentrations at the CDC Diffusion Tubes closest to the centre of Site

Site	Classification	Distance to centre of Site (km)	NO_2 Concentration ($\mu g/m^3$)				
			2015	2016	2017	2018	2019
Aylesbury Road 2014	Roadside	0.7	30.5	30.0	28.8	29.5	26.7
London Road 2016	Roadside	1.7	-	29.1	26.3	25.7	23.6
Market Square 2014	Roadside	2.0	23.7	25.4	24.7	23.1	22.2
A41, Oxford Road (Premier Inn)	Kerbside	2.0	-	-	-	-	25.5
Kings End South	Roadside	2.4	**46**	**46**	**41.7**	**41.9**	**41.5**
Queens Avenue	Kerbside	2.4	**40.6**	**40.5**	39.5	35	35.6
St Johns 2014	Kerbside	2.4	38.3	36.2	37.8	38.6	31.7

Note: Data taken from Cherwell District Council's Air Quality Annual Status Report for 2020, June 2020
Exceedances of the AQS Objective highlighted in **BOLD**

4.4. The results in **Table 6** show the annual mean NO_2 AQS objective of $40\mu g/m^3$ is met at five of the seven diffusion tubes closest to the Site from 2015 to 2019. NO_2 objectives were exceeded at the Kings End South diffusion tube in all years from 2015 to 2019 and at the Queens Avenue diffusion

tube in 2015 and 2016. Overall, there is a trend in reductions in monitored concentrations between 2015 and 2019 at all monitoring locations.

Defra Air Quality Background Maps

4.5. In addition to the urban background monitoring undertaken by CDC, background concentrations of NO_x, NO_2, PM_{10} and $PM_{2.5}$ are available from the Defra Air Quality Archive for 1 x 1km grid squares for assessment years between 2017 and 2030. **Table 7** presents the Defra background concentrations for the year 2019 for the grid square the Site is located within (459500,220500).

Table 7: Defra Background Map in 2019 for the Grid Square at the Location of the Site

Pollutant	Annual Mean Concentration (µg/m^3)	AQS Objective
NO_x	14.0	-
NO_2	10.3	40µg/m^3
PM_{10}	14.6	40µg/m^3
$PM_{2.5}$	9.3	25µg/m^3

4.6. The data in **Table 7** shows that all pollutants are below the respective AQS objectives.

4.7. The 2019 Defra background map annual mean NO_2 concentration is lower than the 2019 monitored concentrations at the closest diffusion tubes to the Site.

5. Construction Phase Effects

5.1. Construction activities in relation to the Development have the potential to affect local air quality through Demolition, Earthworks, Construction and Trackout activities. A description of these activities is presented in Section 3: Assessment Methodology and Significance.

5.2. The Site is located within an area dominated by farmland. There are sensitive receptors within 350m of the boundary of the Site and within 50m of the routes that would be used by construction vehicles on the public highway, a detailed assessment is therefore required to determine the likely dust effects, as recommended by the IAQM guidance on construction dust. There are no sensitive ecological receptors within 50m of the Site, therefore ecological effects have not been considered further. There are no buildings to be demolished as a result of this development therefore the effects of demolition have not been considered further. Results of this assessment are provided for each main activity (Earthworks, Construction, and Trackout) below.

Dust Emissions

Earthworks

5.3. Based on the size of the Site and considering the criteria in the IAQM guidance, the potential dust emissions during earthworks activities were considered in the worst case to be of large magnitude.

Construction

5.4. Considering the criteria in the IAQM guidance, the potential dust emissions during construction activities would be of medium magnitude.

Trackout

5.5. It is estimated that the number of outward HDV trips would be between 10 and 50 per day (Monday to Saturday). Based on this and considering the criteria in the IAQM guidance, the potential for dust emissions due to trackout activities would be of medium magnitude.

Sensitivity of the Area

5.6. The sensitivity of the area to each main activity has been assessed based on the number and distance of the nearest sensitive receptors to the activity, and the sensitivity of these receptors to dust soiling and human health.

Sensitivities of People to Dust Soiling Effects

5.7. There are estimated to be onehigh sensitive receptor within 150m of the Site. On this basis (as set out in Table 2 of the IAQM guidance) the sensitivity of the area to dust soiling is low.

Sensitivities of People to the Health Effects of PM_{10}

5.8. The Defra background PM_{10} concentration for the Site is 14.6µg/m^3 in 2019. On this basis (as set out in Table 3 of the IAQM guidance) the sensitivity of the area to human health is low.

Dust Risk Summary

5.9. The dust risk categories, based on the potential magnitude of dust emissions and the sensitivity of the area to dust, are presented in Table 8.

Table 8: Summary of Risk

Potential Effect	Risk		
	Earthworks	Construction	Trackout
Dust Soiling	Low	Low	Low
Human Health	Low	Low	Low

5.10. The Site is considered low risk to dust soiling impacts. Consequently, mitigation would be required to ensure that adverse impacts be minimised, reduced and, where possible, eliminated.

Construction Vehicle and Plant Emissions

5.11. Construction vehicles and plant operating on the Site would have the potential to increase local air pollutant concentrations, particularly in respect of NO_2 and particulate matter (both PM_{10} and $PM_{2.5}$).

5.12. As above, the number of HDV construction vehicle movements is predicted to be less than 100. As such, based on the IAQM guidance it is considered that the likely impact of construction vehicles entering and egressing the Site on air quality would be insignificant during the demolition and construction period.

5.13. Emissions from plant operating on the Site would be very small in comparison to the emissions from traffic movements on the roads adjacent to the Site. It is therefore considered that even in the absence of mitigation, the likely impact on local air quality would be **not significant**.

6. Operational Phase Effects

Traffic

6.1. The EPUK/IAQM guidance sets out a number of criteria where an air quality assessment is required, set out in Table 9 below.

Table 9: EPUK/IAQM Indicative criteria for requiring an air quality assessment

The Development will:	Indicative Criteria to Proceed to an Air Quality Assessment
1. Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors.	A change of LDV flows of: – More than 100 AADT within or adjacent to an AQMA – More than 500 AADT elsewhere.
2. Cause a significant change in Heavy Duty Vehicle (HDV) traffic flows on local roads with relevant receptors.	A change of HDV flows of: – More than 25 AADT within or adjacent to an AQMA – More than 100 AADT elsewhere.
3. Realign roads, i.e. changing the proximity of receptors to traffic lanes.	Where the change is 5m or more and the road is within an AQMA.
4. Introduce a new junction or remove an existing junction near to relevant receptors.	Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic lights, or roundabouts.

6.2. Based on the above, according to the EPUK/IAQM guidance, the Development is not expected to give rise to air quality impacts (a change less than 100 LDV's or change in road realignment within an AQMA). As such the likely effect of the operational Development on local air quality would be **not significant**.

7. Mitigation Measures and Residual Effects

Construction

Dust Emissions

7.1. The Site is a low-risk site in relation to nuisance dust emissions (referred to earlier in this Report), and therefore a range of environmental management controls would be developed with reference to the IAQM guidance for low-risk sites. The management controls would prevent the release of dust entering the atmosphere and / or being deposited on nearby receptors and would be included within a Construction Environmental Management Plan. The management controls would include:

Table 10: Construction Phase Mitigation Measures

Communications
Display the name and contact details of person(s) accountable for air quality pollutant emissions and dust issues on the site boundary
Display the head or regional office contact information.
Site Management
Record and respond to all dust and air quality pollutant emissions complaints.
Make a complaints log available to the local authority when asked.
Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
Monitoring
Carry out regular site inspections to monitor compliance with air quality and dust control procedures, record inspection results, and make an inspection log available to the local authority when asked.
Increase the frequency of site inspections by those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust and emissions and dust are being carried out, and during prolonged dry or windy conditions.
Preparing and Maintaining the Site
Plan site layout: machinery and dust causing activities should be located away from receptors.
Erect solid screens or barriers around dust activities or the site boundary that are, at least, as high as any stockpiles on site.
Avoid site runoff of water or mud.
Operating vehicle/machinery and sustainable travel
Ensure all vehicles switch off engines when stationary – no idling vehicles.
Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where possible.
Operations
Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.

Ensure an adequate water supply on the site for effective dust/particulate matter mitigation (using recycled water where possible).
Use enclosed chutes, conveyors and covered skips
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate
Waste Management
Avoid bonfires and burning of waste materials.

7.2. Such measures are routinely and successfully applied to construction projects throughout the UK and are proven to significantly reduce the potential for adverse nuisance dust effects associated with the various stages of the construction work. Therefore, it is considered that residual effects due to fugitive emissions would be **not significant**.

Construction Vehicle Exhaust and Plant Emissions

7.3. All construction traffic logistics would be agreed with CDC. Consideration would also be given to the avoidance, or limited use, of traffic routes in proximity to sensitive uses (i.e. residential roads etc.) and the avoidance, or limited use, of roads during peak hours, where practicable. The likely residual effect of construction vehicles entering and egressing the Site to air quality would remain as per the likely effect, **not significant**.

7.4. Even in the absence of mitigation, the likely effect of any emissions from plant operation on the Site would be **not significant.** This would therefore remain the likely residual effect.

Operational Development

7.5. As identified earlier in this report, the Development is predicted to have a **not significant** effect on local air quality. Accordingly, mitigation measures would not be required so residual effects would be **not significant**.

8. Summary and Conclusions

8.1. The main likely effects on local air quality during construction relate to dust. A range of measures to minimise or prevent dust would be implemented and it is considered that following mitigation, the effects from nuisance dust emissions would be not significant.

8.2. Emissions from construction vehicles would be small in comparison to the emissions from the volume of vehicles travelling on roads in the surrounding area of the Site and would not significantly affect air quality. Therefore, it is anticipated that the effect of construction vehicles entering and egressing the Site during the construction period would be not significant. The likely effect of construction plant on local air quality would also be not significant.

8.3. The Development would not exceed the EPUK/IAQM criteria, so in accordance with the guidance, the Development is not expected to give rise to air quality impacts. As such the likely effect of traffic emissions associated with the operational Development on local air quality is not significant.

APPENDICES

Appendix A Summary of Relevant Legislation, Planning Policy and Guidance

Legislation

EU Framework Directive 2008/50/EC, 2008

Air pollutants at high concentrations can have adverse effects on the health of humans and ecosystems. European Union (EU) legislation on air quality forms the basis for UK legislation and policy on air quality.

The EU Framework Directive 2008/50/EC on ambient air quality assessment and management came into force in May 2008 and was implemented by Member States, including the UK, by June 2010. The Directive aims to protect human health and the environment by avoiding, reducing or preventing harmful concentrations of air pollutants.

Air Quality Standards Regulations, 2010

The Air Quality Standards Regulations implement Limit Values prescribed by the EU Framework Directive 2008/50/EC. The Limit Values are legally binding and the Secretary of State, on behalf of the UK Government, is responsible for their implementation.

The UK Air Quality Strategy, 2007

The current UK Air Quality Strategy (UK AQS) was published in July 2007 sets out the objectives for Local Planning Authorities (LPA) in undertaking their Local Air Quality Management (LAQM) duties. The 2007 UK AQS introduced a national level policy framework for exposure reduction for fine particulate matter. Objectives in the UK AQS are in some cases more onerous than the Limit Values set out within the relevant EU Directives and the Air Quality Standards Regulations 2010. In addition, objectives have been established for a wider range of pollutants.

The UK AQS objectives of air pollutants relevant to this assessment are summarised in Table A1.

Table A1: Summary of Relevant UK AQS Objectives

Pollutant	Objective		Date by which Objective to be Met
	Concentration	Measured as	
Nitrogen Dioxide (NO_2)	200µg/m^3	1 hour mean not to be exceeded more than 18 times per year	31/12/2005
	40µg/m^3	Annual Mean	31/12/2005
Particulate Matter (PM_{10}) [(a)]	50µg/m^3	24 hour mean not to be exceeded more than 35 times per year	31/12/2004

Pollutant	Objective		Date by which Objective to be Met
	Concentration	Measured as	
	40µg/m^3	Annual Mean	31/12/2004
Particulate Matter ($PM_{2.5}$) (b)	Target of 15% reduction in concentrations at urban background locations	Annual Mean	Between 2010 and 2020
	25µg/m^3	Annual Mean	01/01/2020

Note: (a) Particulate matter with a mean aerodynamic diameter less than 10 microns (or micrometres – µm)
(b) Particulate matter with a mean aerodynamic diameter less than 2.5 microns

The Environment Act, 1995

In a parallel process, the Environment Act 1995 required the preparation of a national air quality strategy setting health-based air quality objectives for specified pollutants and outlining measures to be taken by LPAs in relation to meeting these objectives (the LAQM system).

Part IV of the Environment Act 1995 provides a system of LAQM under which LPAs are required to review and assess the future quality of the air in their area by way of a staged process. Should this process suggest that any of the AQS objectives will not be met by the target dates, the LPA must consider the declaration of an Air Quality Management Area (AQMA) and the subsequent preparation of an Air Quality Action Plan (AQAP) to improve the air quality in that area in pursuit of the AQS objectives.

LBS has designated an Air Quality Management Area (AQMA) for the entire northern part of the Borough for both annual mean NO_2 and the daily mean PM_{10}, extending from Rotherhithe to Walworth and Camberwell, and up to the boundary on the River Thames. The Site is located within this AQMA.

Planning Policy

National Planning Policy

National Planning Policy Framework, 2019

The National Planning Policy Framework (NPPF), sets out the Government's planning policies for England and how these should be applied.

Paragraph 103 states "*The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, 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. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making*"

Paragraph 170 states: *"Planning policies and decisions should contribute to and enhance the natural and local environment by: … 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 instability. 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…"

Paragraph 180 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*."

Furthermore, Paragraph 181 states "*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"*.

Local Planning Policy

Cherwell Local Plan (incorporating Policy Bicester 13 re-adopted on 19 December 2016)

There are no policies in the Local Plan that relate directly to air quality.

Guidance

Department for Environment, Food and Rural Affairs, Clean Air Strategy,2019

Published in January 2019 the Clean Air Strategy sets out a coherent framework and national action to improve air quality throughout the UK.

The Strategy is underpinned by new national powers to control major sources of air pollution, in line with the risk they pose to public health and the environment, plus new local powers to act in areas with an air pollution problem. The Strategy also supports the creation of Clean Air Zones to lower emissions from all sources of air pollution, backed up with clear enforcement mechanisms.

Improving Air Quality in the UK: Tackling Nitrogen Dioxide in our Towns and Cities. UK Air Quality Plan for Tackling Nitrogen Dioxide,2017

The UK Government was required by the High Court to release an Air Quality Plan to meet the NO_2 Limit Value in the shortest timescale as possible. This document was adopted on 26th July 2017.

The plan focuses on reducing concentrations of NO_x and NO_2 around road vehicle emissions within the shortest possible time. With the principal aims to:

a. reduce emissions of NOx from the current road vehicle fleet in problem locations now; and

b. accelerate road vehicle fleet turnover to cleaner vehicles to ensure that the problem remains addressed and does not move to other locations.

The other aims include reducing background concentrations of NO_x from:

- Other forms of transport such as rail, aviation and shipping;
- Industry and non-road mobile machinery; and
- Buildings, both commercial and domestic, and other stationary sources.

The Plan provides measures to reduce NO_x and NO_2 concentrations in the UK, such measures include:

- Mandate local authorities to implement Clean Air Zones within the shortest possible time;
- Consultation on proposal for a Clean Air Zone Framework for Wales;
- Consultation on a draft National Low Emission Framework for Scotland;
- Commitment to establishing a Low Emission Zone for Scotland by 2018;
- Tackling air pollution on the English Road network;
- New real driving emissions requirement to address real world NO_x emissions;
- Additional funding to accelerate uptake of hydrogen vehicles and infrastructure;
- Additional funding to accelerate the uptake of electric taxis;
- Further investment in retrofitting alongside additional support of low emission buses and taxis;
- Regulatory changes to support the take up of alternatively fuelled light commercial vehicles;
- Exploring the appropriate tax treatment for diesel vehicles;
- Call for evidence on updating the existing HGV Road User Levy;
- Call for evidence on use of red diesel;
- Ensure wider environmental performance is apparent to consumers when purchasing cars;
- Updating Government procurement policy;
- New emissions standards for non-road mobile machinery;
- New measures to tackle NO_x emissions from Medium Combustion Plants; and
- New measures to tackle NO_x emissions from generators.

The above measures do not provide any actions which are relevant to the operation or design of the Development.

A High Court ruling[14] on 21st February 2018, stated the UK Governments air quality improvement plan adopted on 31st July 2017 was unlawful as '*it does not contain measures sufficient to ensure substantive compliance with the 2008 Directive and the English Regulations*'. The UK Government '*must ensure steps are taken to achieve compliance as soon as possible, by the quickest route possible and by a means that makes that outcome likely*'.

The judgement stated that the UK Government must produce a supplementary plan, setting out requirements for feasibility studies to be undertaken in the 33 Local Authority Areas. Greater London including LBS is not considered within this judgement.

In May 2018, it was announced the European Union (EU) was going to take the UK to the European Commission over failure to meet the Limit Values for NO_2.

[14] https://www.judiciary.gov.uk/judgments/the-queen-on-the-application-of-clientearth-no-3-claimant-v-secretary-of-state-for-environment-food-and-rural-affairs-and-othrs/

Environmental Protection UK & Institute of Air Quality Management Guidance; Land-Use Planning & Development Control: Planning for Air Quality, 2017

Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) provide guidance for air quality considerations within the local development control processes, promoting a consistent approach to the treatment of air quality issues.

The EPUK and IAQM guidance explains how development proposals can adopt good design principles to reduce emissions and contribute to better air quality. The guidance also provides a method for screening the need for an air quality assessment and a consistent approach for describing the impacts at individual receptors. The EPUK and IAQM Guidance, advises that:

"In arriving at a decision about a specific proposed development the local planning authority is required to achieve a balance between economic, social and environmental considerations. For this reason, appropriate consideration of issues such as air quality, noise and visual amenity is necessary. In terms of air quality, particular attention should be paid to:

- *Compliance with national air quality objectives and of EU Limit Values;*
- *Whether the development will materially affect any air quality action plan or strategy;*
- *The overall degradation (or improvement) in local air quality; or*
- *Whether the development will introduce new public exposure into an area of existing poor air quality".*

Planning Practice Guidance

The Government's online Planning Practice Guidance (PPG) states that air quality concerns are more likely to arise where development is proposed within an area of existing poor air quality, or where it would adversely impact upon the implementation of air quality strategies and / or action plans. The PPG notes that when deciding whether air quality is relevant to a planning application, considerations would include whether the development would lead to:

- Significant effects on traffic, such as volume, congestion, vehicle speed, or composition;
- The introduction of new point sources of air pollution, such as furnaces, centralised boilers and Combined Heat and Power (CHP) plant; and
- Exposing occupants of any new developments to existing sources of air pollutants and areas with poor air quality.

Institute of Air Quality Management: Guidance on the Assessment of Dust from Demolition and Construction, 2014

The IAQM Construction Dust Guidance provides guidance to consultants and Environmental Health Officers (EHOs) on how to assess air quality impacts from construction related activities. The guidance provides a risk based approach based on the potential dust emission magnitude of the site (small, medium or large) and the sensitivity of the area to dust impacts. The importance of professional judgement is noted throughout the guidance. The guidance recommends that once the risk class of the site has been identified, the appropriate level of mitigation measures are implemented to ensure that the construction activities have no significant impacts.

Cherwell District Council Air Quality Action Plan, 2017

The CDC Air Quality Action Plan 2017 sets out the actions the Council will take to improve air quality between 2017 and 2020. The priorities of the Air Quality Action Plan (AQAP) are as follows:

- Strengthening local policy to improve air quality and its role in protecting health;
- Reducing NOx emissions from cars in all AQMAs;
- Ensuring new developments encourage and facilitate low emission and alternative transport;
- Ensuring transport infrastructure delivery takes account of air quality improvement potential within AQMAs; and
- Raising awareness of poor air quality and encouraging improvement actions by vehicle users and fleet managers.

Appendix B Assessor Experience

Name: Christopher Brownlie

Years of Experience: 13

Qualifications:

- BSc (Hons)
- MSc
- MIAQM (Member of the Institute of Air Quality Management)

Chris has over thirteen years of experience in the assessment of air quality and odour for a variety of environmental impact assessment projects. Chris has knowledge and extensive experience of designing and undertaking ambient air quality monitoring programmes using real time equipment and passive diffusion tubes. This includes devising monitoring programs for dust deposition, typically to monitor levels of dust generated during construction activities in populated areas where there is the potential for nuisance to be caused.

Chris has been responsible for the technical delivery of a wide range of air quality projects for a variety of clients in both the public and private sector. These projects include consideration of emissions from both transportation and industrial sources, through both monitoring and modelling, and therefore he has an in depth understanding of the regulatory requirements for these sources and the published technical guidance for their assessment.

UK and Ireland Office Locations