

7. AIR QUALITY

Introduction

- 7.1 This chapter of the ES assesses the likely significant effects of the Development on the environment in respect of Air Quality.
- 7.2 This chapter has been prepared by Tetra Tech (see Appendix 1.2 Statement of Expertise).
- 7.3 This chapter should be read in conjunction with Appendix 7.1: Air Quality Technical Report and Figure 7.1: Air Quality Assessment Area.

Policy Context

National Planning Policy

National Planning Policy Framework

- 7.4 The revised National Planning Policy Framework (NPPF) published in February 2019 recognises air quality within Section 15: Conserving and enhancing the natural environment. The NPPF highlights that proposed developments should help improve the local environment, in terms of air quality wherever possible, taking into account the relevant information.
- 7.5 To prevent unacceptable risks from air pollution, the NPPF states that:

“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 quality.”

and

“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.”

- 7.6 More specifically, on air quality, the NPPF states within paragraph 181 that:

“Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts on air quality 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.”

Planning Practice Guidanceⁱⁱ

7.7 National Planning Practice Guidance (PPG) has been developed in order to support the NPPF. The guidance provides a concise outline as to how air quality should be considered in order to comply with the NPPF and states when air quality is considered relevant to a planning application, which includes when the proposals:

- *“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;*
- *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 Combined Heat and Power (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; and*
- *Give rise to potentially unacceptable impact (such as dust) during construction for nearby sensitive locations.”*

Local Planning Policy

Cherwell District Council Local Plan 2011 – 2031ⁱⁱⁱ

7.8 Cherwell District Council (CDC) adopted the Cherwell District Council Local Plan 2011 – 2031 in July 2015, which outlines CDC’s broad planning strategy. Following a review of policies within the adopted Local Plan, the following policy was identified as being directly relevant to the Development from an air quality perspective.

“Policy ESD 10: Protection and Enhancement of Biodiversity and the Natural Environment

- *Air quality assessments will also be required for development proposals that would be likely to have a significantly adverse impact on biodiversity by generating an increase in air pollution.”*

7.9 Cherwell District Council (CDC) adopted the North West Bicester Supplementary Planning Document^v (SPD) in February 2016. Following a review of policies within the adopted Local Plan, Development Principle 7 – Healthy Lifestyles identifies that *“Development proposals should be designed and planned to support healthy and sustainable environments and enable residents to make healthy choices easily”,* which includes *“Replacing car journeys with walking and cycling trips can have many benefits in terms of health from reducing air pollution, encouraging exercise through active travel and increased interaction with friends and neighbours.”*

European Legislation

7.10 The European Union (EU) directive on ambient air quality and cleaner air for Europe (2008/50/EC)^v sets legally binding limits for pollutant concentrations. This directive was made law in England through the Air Quality Standards Regulations 2010^{vi}.

7.11 European air quality legislation is consolidated under Directive 2008/50/EC^v, which came into force on 11th June 2008. This Directive consolidates previous legislation which was designed to deal with specific pollutants in a consistent manner and provides new air quality objectives for fine particulates. The consolidated Directive includes:

- Directive 1999/30/EC: The First Air Quality "Daughter" Directive – sets ambient air limit values for nitrogen dioxide (NO₂) and oxides of nitrogen (NOX), sulphur dioxide (SO₂), lead (Pb) and particulate matter (PM);
- Directive 2000/69/EC: The Second Air Quality "Daughter" Directive – sets ambient air limit values for benzene (C₆H₆) and carbon monoxide (CO); and,
- Directive 2002/3/EC: The Third Air Quality "Daughter" Directive – seeks to establish long-term objectives, target values, an alert threshold and an information threshold for concentrations of ozone (O₃) in ambient air.

7.12 The Fourth Air Quality "Daughter" Directive was not included within the consolidation and is described as:

- Directive 2004/107/EC^{vii} – sets health-based limits on polycyclic aromatic hydrocarbons (PAHs), cadmium (Cd), arsenic (As), nickel (Ni) and mercury (Hg), for which there is a requirement to reduce exposure to as low as reasonably achievable.

National Legislation

- 7.13 Part IV of the Environment Act 1995^{viii} places a duty on the Secretary of State for the Environment to develop, implement and maintain an Air Quality Strategy with the aim of reducing atmospheric emissions and improving air quality. The latest Air Quality Strategy for England, Scotland, Wales and Northern Ireland was published in 2007^{ix}, and provides the framework for ensuring the air quality limit values are complied with based on a combination of international, national and local measures to reduce emissions and improve air quality. The Air Quality Strategy includes a statutory duty, also under Part IV of the Environment Act 1995, for local authorities to undergo a process of Local Air Quality Management (LAQM). This requires local authorities to regularly and systematically review and assess air quality within their boundaries against a series of objectives and appraise development and transport plans against these assessments.
- 7.14 The Air Quality Standards Regulations 2010^x and the Air Quality Standards (Amendment) Regulations 2016^{xi} seek to simplify air quality regulation and provide a new transposition of the Air Quality Framework Directive, First, Second and Third Daughter Directives and also transpose the Fourth Daughter Directive within the United Kingdom (UK). The Air Quality Limit Values are transposed into the updated Regulations as Air Quality Standards, with attainment dates in line with the European Directives. SI 2010 No. 1001, Part 7 Regulation 31 extends powers, under Section 85(5) of the Environment Act (1995), for the Secretary of State to give directions to Local Authorities (LAs) for the implementation of these Directives.

Air Quality Strategy^{xii}

- 7.15 The Air Quality Strategy published by the Department for Environment, Food and Rural Affairs (Defra) and Devolved Administrations, provides the policy framework for air quality management and assessment in the UK. It provides air quality standards and objectives for key air pollutants, which are designed to protect human health and the environment. It also sets out how the different sectors: industry, transport and local government, can contribute to achieving the air quality objectives. Local authorities are seen to play a particularly important role. The strategy describes the LAQM regime that has been established, whereby every authority has to carry out regular reviews and assessments of air quality in its area to identify whether the objectives have been, or will be, achieved at relevant locations, by the applicable date. If this is not the case, the authority must declare an Air Quality Management Area (AQMA) and prepare an action plan which identifies appropriate measures that will be introduced in pursuit of the objectives.

Air Quality Objectives

- 7.16 The Air Quality Objectives (AQOs) for pollutants included within the Air Quality Strategy and assessed as part of the scope of this ES chapter are presented in Table 7.1 and Table 7.2 along with European Commission (EC) Directive Limits and World Health Organisation (WHO) Guidelines^{xiii}. Any ecological levels are based on WHO and Convention on Long Range Transboundary Air Pollution (CLRTAP) guidance^{xiv}.

Table 7.1: Air Quality Standards, Objectives, Limit, and Target Values

Pollutant	Applies	Objective	Concentration Measured as ¹⁰	Date to be achieved and maintained thereafter	European Obligations	Date to be achieved and maintained thereafter	New or existing
PM ₁₀	UK	50µg/m ³ by end of 2004 (max 35 exceedances a year)	24-hour Mean	1 st January 2005	50µg/m ³ by end of 2004 (max 35 exceedances a year)	1 st January 2005	Retain Existing
	UK	40µg/m ³ by end of 2004	Annual Mean	1 st January 2005	40µg/m ³	1 st January 2005	
PM _{2.5}	UK	25µg/m ³	Annual Mean	31 st December 2010	25µg/m ³	1 st January 2010	Retain Existing
NO ₂	UK	200µg/m ³ not to be exceeded more than 18 times a year	1-Hour Mean	31 st December 2005	200µg/m ³ not to be exceeded more than 18 times a year	1 st January 2010	Retain Existing
	UK	40µg/m ³	Annual Mean	31 st December 2005	40µg/m ³	1 st January 2010	

Table 7.2: Ecological Air Quality Standards, Objectives, Limit and Target Values

Pollutant	Applies	Objective	Concentration Measured as
NO _x	UK	30µg/m ³	Annual Mean

Assessment Methodology

Consultation

- 7.17 Following the Scoping opinion from CDC, see Chapter 2 EIA Methodology of the ES, Air Quality is to be scoped into the environmental statement, however no comments with regard to the suggested approach for the Air Quality Assessment have been raised.

Study Area and Scope

- 7.18 This chapter has been prepared in accordance with the requirements of the "EIA Regulations"^{xv}, as discussed in Chapter 2 EIA Methodology of the ES.

7.19 The study area for this assessment has been defined reflecting the Development and the surrounding environment over which significant effects will potentially occur, both from the Development and in combination with other committed developments set out in Chapter 2 EIA Methodology. The detailed study area is presented in Figure 7.1.

Construction Phase Assessment

7.20 The construction phase assessment utilises the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction (January 2014)^{xvi} and Part 1 LA105 Air Quality of the Volume 11 Section 3 of the Design Manual for Roads and Bridges^{xvii}.

7.21 Guidance from the IAQM 'Guidance on the Assessment of Dust from Demolition and Construction' Document^{xviii} published in February 2014 has been used and adapted for the purposes of this assessment. In total, the four stages of development are considered, namely demolition, earthworks, construction and trackout. For each of these phases, the significance of the potential significant dust impacts is derived following the determination of a dust emission class and the distance of activities to the nearest sensitive receptor. Therefore, the worst-case impacts have been assessed.

7.22 It should be noted that, in accordance with IAQM Guidance, the methodology outlined above determines a Risk Factor, rather than an Impact Description, prior to the implementation of mitigation measures. The effects of dust associated with the Construction Phase of the Development can only be determined with the appropriate mitigation in place.

Sensitivity of Receptor

Construction Phase

7.23 The construction phase assessment utilises the IAQM Guidance on the Assessment of Dust from Demolition and Construction document published in 2014^{xvi}.

Sensitivities of People to Dust Soiling Effects

7.24 High:

- Users can reasonably expect an enjoyment of a high level of amenity;
- The appearance, aesthetics or value of their property would be diminished by soiling; and

the people or property would reasonably expect to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land; and

- Indicative examples include dwellings, museums and other culturally important collections, medium- and long-term car parks and car showrooms.

7.25 Medium:

- Users can reasonably expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home;
- The appearance, aesthetics or value of their property could be diminished by soiling;
- The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land; and
- Indicative examples include parks and places of work.

7.26 Low:

- The enjoyment of amenity would not reasonably be expected;
- Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling;
- There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land; and
- Indicative examples include playing fields, farmland (unless commercially sensitive horticultural), footpaths, short term car parks and roads.

7.27 The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout, using the methodology in Table 7.3.

Table 7.3: Sensitivity of the Area to Dust Soiling Effects on People and Property

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

Note - The likely routes the construction traffic will use should also be included to enable the presence of trackout receptors to be included in the assessment. As a general guidance, without site-specific mitigation, trackout may occur along the public highway up to 500 m from large sites, 200 m from medium sites and 50 m from small sites, as measured from the site exit.

Sensitivities of People to the Health Effects of PM₁₀

7.28 High:

- Locations where members of the public are exposed over a time period relevant to the air quality objective for PM₁₀ (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day); and
- Indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.

7.29 Medium:

- Locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM₁₀ (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day); and,
- Indicative examples include office and shop workers but will generally not include workers occupationally exposed to PM₁₀, as protection is covered by Health and Safety at Work legislation.

7.30 Low:

- Locations where human exposure is transient;
- Indicative examples include public footpaths, playing fields, parks and shopping streets; and
- The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout, using Table 7.4.

Table 7.4: Sensitivity of the Area to Human Health Impacts

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

Receptor Sensitivity	Annual Mean PM ₁₀ Concentration	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
	<24 µg/m ³	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	-	>10	High	Medium	Low	Low	Low
	-	1-10	Medium	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

Note - The likely routes the construction traffic will use should also be included to enable the presence of trackout receptors to be included in the assessment. As a general guidance, without site-specific mitigation, trackout may occur along the public highway up to 500 m from large, 200 m from medium sites and 50 m from small sites, as measured from the site exit.

Sensitivities of Receptors to Ecological Effects

7.31 High:

- Locations with an international or national designation and the designated features may be affected by dust soiling;
- Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List for Great Britain; and
- Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.

7.32 Medium:

- Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown;
- Locations with a national designation where the features may be affected by dust deposition; and
- Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.

7.33 Low:

- Locations with a local designation where the features may be affected by dust deposition; and
- Indicative example is a Local Nature Reserve with dust sensitive features.

7.34 The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout, using the following table:

Table 7.5: Sensitivity of the Area to Ecological Impacts

Receptor Sensitivity	Distance from Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Note - The likely routes the construction traffic will use should also be included to enable the presence of trackout receptors to be included in the assessment. As a general guidance, without site-specific mitigation, trackout may occur along the public highway up to 500 m from large sites, 200 m from medium sites and 50 m from small sites, as measured from the site exit.

Risk of Impact

- 7.35 The risk of impact of the demolition and construction with no mitigation is determined by combining the dust emission magnitude and the sensitivity of the area.
- 7.36 For each of these processes, the significance of the potential dust impacts is derived following the determination of a dust emission magnitude and the distance of the construction processes to the nearest sensitive receptor, in order to assess the worst-case impacts.
- 7.37 The dust emission magnitude has been combined with the sensitivity of the area, to determine the risk of impacts prior to the implementation of appropriate mitigation measures. The potential impact significance of dust emissions associated with the construction phase, without mitigation, is presented below.

Table 7.6: Impact Significance of Construction Activities without Mitigation

Source	Summary Risk of Impacts Prior to Mitigation		
	Dust Soiling	Health Effects of PM ₁₀	Ecological
Demolition	N/A		
Earthworks	Medium	Low	N/A
Construction	Medium	Low	N/A
Trackout	Medium	Low	N/A

- 7.38 The potentially significant effects during the construction phase are predicted with regard to the potential for dust nuisance complaints and surface soiling events due to deposition, as opposed to the risk of exceeding any AQOs. It should be noted that, in accordance with IAQM Guidance, the methodology outlined above determines a Risk Factor, rather than an Impact Description, prior to the implementation of mitigation measures. The effects of dust associated with the Construction Phase of the Development can only be determined with the appropriate mitigation in place.
- 7.39 All dust impacts are considered to be direct, temporary, short-term and reversible in nature. The impacts are determined to be direct as they occur as a result of activities associated with the Development, temporary as they will only potentially occur during the construction phase,

short-term because these will only arise at particular times when certain activities and meteorological conditions for creating the level of magnitude predicted combine, and reversible as conditions will return to baseline upon cessation of construction phase activities.

Traffic Data

7.40 The assessment is based on:

- 2019 Baseline = Existing Baseline conditions;
- 2031 "Do Minimum" = 2031 Baseline + Cumulative Developments; and
- 2031 "Do Something" = 2031 Baseline + Cumulative Developments + Development Traffic Flows.

7.41 The traffic data has been based on completion of the Development and the detailed results of the assessment of effects relating to traffic is set out within Chapter 6 Transport and Access. Provided 2016 traffic data has been factored up to the Baseline year of 2019 for Air Quality model verification, corresponding with the most recent available air quality monitoring data from Cherwell District Council.

7.42 The Emission Factor Toolkit 10.1 (2020) for road traffic emission factors was utilised to predict emission rates for the operational phase assessment.

Operational Phase Assessment

7.43 The operational phase assessment consists of the quantified predictions of the change in NO₂, PM₁₀ and PM_{2.5} due to changes in traffic movements resulting from the Development. Predictions of air quality at the Site have been undertaken for the operational phase of the Development using Atmospheric Dispersion Modelling Software (ADMS) 4.0. ADMS software is used to model NO₂, PM₁₀ and PM_{2.5} emitted from traffic emissions, which predicts the changes in levels of both pollutants experienced due to the changes in traffic levels and distribution in traffic as a result of the Development and the cumulative developments (which are identified in Chapter 2 EIA Methodology).

7.44 The significance of the effects during the operational phase of the Development is based on the latest guidance produced by EPUK and IAQM in January 2017 'Land-Use Planning & Development Control: Planning for Air Quality'^{xix} and in June 2019, 'A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites'^{xx}. This guidance provides a basis for a consistent approach that could be used by all parties associated with the planning

process to professionally judge the overall significance of the air quality effects based on severity of air quality impacts.

- 7.45 Receptors can demonstrate different sensitivities to changes in their environment. For the purpose of this assessment, sensitivity was determined as Very High, High, Medium, Low and Negligible, as detailed in Table 7.7.

Table 7.7: Receptor Sensitivity Descriptors

Value (Sensitivity)	Descriptor
Very High	'Do Minimum' pollutant concentration at $\geq 110\%$ of the AQO (traffic emissions).
High	'Do Minimum' pollutant concentration already 103-109% of the AQO (traffic emissions).
Medium	'Do Minimum' pollutant concentration between 95 - 102% of the relevant AQO (traffic emissions).
Low	'Do Minimum' pollutant concentration between 75-90% of the relevant AQO (traffic emissions)
Negligible	'Do Minimum' pollutant concentration less than 75% of the relevant AQO (traffic emissions)

Determining the Impact Magnitude of the Air Quality Effects During the Operational Phase

- 7.46 The impact magnitude of the effects during the operational phase of the Development is also based on the latest guidance produced by EPUK and IAQM in January 2017, produced by EPUK and IAQM in in January 2017 'Land-Use Planning & Development Control: Planning for Air Quality'^{xxi} and June 2019 'A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites'^{xxii}. The guidance provides a basis for a consistent approach that could be used by all parties associated with the planning process to professionally judge the overall significance of the air quality effects based on severity of air quality impacts.
- 7.47 The following rationale is used in determining the severity of the air quality effects at individual receptors:
1. The change in concentration of air pollutants, air quality effects, are quantified and evaluated in the context of AQOs. The impacts are provided as a percentage of the Air Quality Assessment Level (AQAL), which may be an AQO, EU limit or target value;
 2. The absolute concentrations are also considered in terms of the AQAL and are divided into categories for long term concentration. The categories are based on the sensitivity of the individual receptor in terms of harm potential. The degree of harm potential to change increases as absolute concentrations are close to or above the AQAL;
 3. Magnitude of impact is described as qualitative descriptors; negligible, minor, moderate or major, by taking into account in combination the harm potential and air quality effect. This means that a small increase at a receptor which is already close to or above the

AQAL will have higher severity compared to a relatively large change at a receptor which is significantly below the AQAL;

4. The impacts can be adverse when pollutant concentrations increase or beneficial when concentrations decrease as a result of development;
5. The judgement of overall significance of the effects is then based on magnitude of impact on all the individual receptors considered; and,
6. Where a proposed development is not resulting in any change in emissions itself, the significance of effect is based on the effect of surrounding sources on new residents or users of the proposed development, i.e., will they be exposed to levels above the AQAL.

Table 7.8: Impact Descriptors for Individual Receptors

Long term average concentration at receptor in assessment year	% Change in concentration relative to AQAL			
	1	2-5	6-10	>10
≤75% of AQAL	Negligible	Negligible	Minor	Moderate
76-94% of AQAL	Negligible	Minor	Moderate	Moderate
95-102% of AQAL	Minor	Moderate	Moderate	Major
103-109 of AQAL	Moderate	Moderate	Major	Major
≥110 of AQAL	Moderate	Major	Major	Major

Note: In accordance with explanation note 2 of Table 6.3 of the EPUK & IAQM guidance, the Table is intended to be used by rounding the change in percentage pollutant concentration to whole numbers, which then makes it clearer which cell the impact falls within. The user is encouraged to treat the numbers with recognition of their likely accuracy and not assume a false level of precision. Changes of 0%, i.e. less than 0.5%, will be described as Negligible. Impacts of 'moderate' or 'major' are considered significant effects.

Odour

- 7.48 As stated in paragraph 7.19, odour effects on the nearby sensitive receptors during the construction and operational phase of the Development are considered to be not significant and have been scoped out of further assessment, as any remediation works on-site will be undertaken following best practice guidance and over a short period of time and the impact of odour generated by vehicle movements on nearby sensitive receptors is also negligible.

Limitations and Assumptions

- 7.49 A number of assumptions have been made during the assessment. The assumptions are:
- The assessment has assumed that background air quality for the year of completion of the Development will remain the same as 2019 background to produce a worst-case assessment. This worst-case nature of the assessment is due to the phasing out of petrol/diesel vehicles and increased use of electric vehicles expected to improve air quality.

conditions;

- It is assumed that the approved development will take place in conjunction with neighbouring developments, these have been considered for likely significant cumulative effects with the Development. Developments which are predicted to have a cumulative effect have been outlined in Chapter 6: Traffic and Transport; and
- Information provided by third parties, including publicly available information and database is correct at the time of the preparation of this assessment.

7.50 The assessment has been subject to the following limitations:

- Baseline conditions are accurate at the time of undertaking this assessment but, due to the dynamic nature of the environment, conditions may change during the Site preparation, construction and operational phases;
- Baseline monitoring conditions monitored by the Local Authority only provide monitored concentrations in the locations determined by CDC. However, any private monitoring undertaken during 2020 will have been affected by the global COVID-19 pandemic, and may be determined to not be representative. Therefore, the Air Quality monitoring undertaken by CDC in 2019 is determined to be the most recent, and representative monitoring data available; and,
- Model limitations: Since models approximate natural phenomena, the mathematical parameters used in models to represent real processes are often uncertain. However, models are very powerful tools to represent natural processes and potential uncertainties in model results have been minimised as far as practicable and worst-case inputs considered in order to provide a robust assessment.

Baseline Conditions

Baseline Environment

7.51 The baseline environment has been determined by reviewing the latest available existing monitoring undertaken by CDC and reviewing the Defra background maps for a baseline year of 2019, to correspond with the latest available CDC monitoring. Full details of the baseline environment are shown in Section 6 of Appendix 7.1.

7.52 The Site is located approximately 1.5 km north west of the Bicester No. 4 Air Quality Management Area (AQMA), which is designated due to unacceptable levels of the pollutant NO₂. As part of the air quality assessment receptors within the AQMA are assessed to determine any effects in air quality as a result of the Development.

- 7.53 Following a review of CDC monitoring within the study area, it was identified that diffusion tube 'King's End South' monitored an exceedance of the NO₂ AQO (40µg/m³ annual mean) in 2019. The remaining 13 diffusion tubes, within the study area, did not monitor exceedances of the NO₂ AQO (40µg/m³ annual mean) in 2019.

Air Quality Monitoring Review

- 7.54 Monitoring of air quality within CDC is undertaken through non-continuous monitoring methods. These have been reviewed in order to provide an indication of the existing air quality in the area surrounding the Site.

Defra Background Maps

- 7.55 Mapped background pollutant concentrations have been obtained from the DEFRA website^{xxiii}. The predicted background concentrations contained within the DEFRA Archive^{xxiii}, decrease year on year based on the predicted progressive positive influence of EU and UK air quality legislation.
- 7.56 The Defra Background Maps assume that background concentrations will improve (i.e. reduce) over time, in accordance with the predicted reduction in vehicle emissions and emissions from other sources. Measured concentrations have not reduced as would be anticipated from Defra background maps and, therefore, this assessment has assumed that there will be no improvement in background air quality. As such, 2019 background concentrations for NO_x, NO₂, PM₁₀ and PM_{2.5} have been utilised in this assessment, for the model verification, 2019 Baseline and 2031 'Do Minimum' and 'Do Something' scenarios.
- 7.57 This approach provides a robust assessment and is likely to overestimate pollutant concentrations during the operation of the Development. The methodology includes consideration of adjusting background concentrations, as described within the Defra LAQM Note on 'Projecting NO₂ concentrations'^{xxiv}.

Sensitive Receptors

- 7.58 Sensitive receptors within the study area are shown both in Figure 7.1 and Table 7.9 below. The AQOs only apply at locations where the public may be exposed to pollution for a sufficient period for there to be any measurable health impact. The averaging period and AQO involved will determine which locations are considered to be sensitive receptors. For annual mean NO₂ and particulate matter with mean hydraulic diameter of less than 10^o poll(10) AQOs, LAQM.TG

(16) considers typical locations for sensitive receptors to include:

- Residential properties;
- Hospitals;
- Schools; and
- Care homes.

7.59 Additionally, to assess the predicted exposure at the residential dwellings proposed as part of the Development, 3 residential receptors have been assessed as part of the Development considered most likely to be subject to potential air quality impacts have been identified and considered within the assessment. The locations of these receptor are illustrated within Figure 7.1.

Table 7.9 Published Background Air Quality Concentrations ($\mu\text{g}/\text{m}^3$) at Existing and Proposed Sensitive Receptors

Receptor		UK NGR (m)		2019 Published Defra Background ($\mu\text{g}/\text{m}^3$)			
		X	Y	NO _x	NO ₂	PM ₁₀	PM _{2.5}
R1	108 Charlotte Ave	457768	225113	11.34	8.73	14.78	9.30
R2	1 Orchard Way	458083	224701	13.12	10.00	15.19	10.24
R3	13 Braeburn Ave	457756	225430	11.34	8.73	14.78	9.30
R4	53 Juniper Gardens	458209	224459	13.12	10.00	15.19	10.24
R5	102 Mullein Road	458125	224429	13.12	10.00	15.19	10.24
R6	9 B4100	458110	224638	13.12	10.00	15.19	10.24
R7	40 Pine Close	458938	224316	13.12	10.00	15.19	10.24
R8	6 The Cook House, The Parade	458968	224424	13.12	10.00	15.19	10.24
R9	14 Montgomery Road	459294	225062	11.91	9.15	14.50	9.40
R10	Wanlan House, Launton Road	459932	223385	16.47	12.24	15.54	10.47
R11	58 Shearwater Drive	459974	221845	13.74	10.44	14.96	9.92
R12	24 Ravencroft	459439	221360	13.74	10.44	14.96	9.92
R13	13 Kestrel Way	459353	221307	13.74	10.44	14.96	9.92
R14	24 Kestrel Way	459190	221260	13.74	10.44	14.96	9.92
R15	7 Haydock Road	457545	221669	16.17	12.16	16.67	10.21
R16	8 Newton Close	457880	222232	13.12	10.00	15.41	10.20
R17	1 Kingston Drive	456594	222040	13.05	9.97	15.11	9.75
R18	15 Colwell Road	456459	222705	13.05	9.97	15.11	9.75
R19	92 Isis Avenue	456437	222804	13.05	9.97	15.11	9.75
R20	Lovelynych House	455422	223138	13.02	9.96	15.13	9.44
R21	36 Shannon Road	456908	222605	13.05	9.97	15.11	9.75
R22	6 Dryden Avenue	456936	223572	12.77	9.76	15.01	9.67
R23	58 Kings End	457920	222275	13.12	10.00	15.41	10.20
R24	Fane House	458215	222827	14.65	11.05	15.25	10.27
R25	2 Banbury Road	458286	222979	14.65	11.05	15.25	10.27
R26	19 Field Street	458273	222919	14.65	11.05	15.25	10.27

Receptor		UK NGR (m)		2019 Published Defra Background ($\mu\text{g}/\text{m}^3$)			
		X	Y	NO _x	NO ₂	PM ₁₀	PM _{2.5}
R27	6 Field Street	458257	222942	14.65	11.05	15.25	10.27
R28	7 Banbury Road	458256	223003	14.12	10.68	15.67	10.76
R29	9 Foxglove Road	458198	223768	14.12	10.68	15.67	10.76
R30	4 Brashfield Road	458588	223656	14.12	10.68	15.67	10.76
R31	6 Goldsmith Close	457191	223852	13.63	10.34	15.44	10.45
R32	Ashleys Bungalow	457315	224015	12.45	9.52	15.39	9.78
R33	Stable Cottage	458028	225237	12.54	9.57	14.88	9.48
R34	3 Langford Park Cottages	458809	221475	14.27	10.82	15.02	9.64
R35	Watergate Lodge	457251	226301	11.05	8.52	14.63	9.16
R36	Swifts House	456101	227664	11.68	8.98	15.26	9.32
R37	Baynards House	454804	229121	15.75	11.89	16.54	10.02
PR1	Proposed Residential Receptor	457737	225211	11.34	8.73	14.78	9.30
PR2	Proposed Residential Receptor	457724	225056	11.34	8.73	14.78	9.30
PR3	Proposed Residential Receptor	457631	225309	11.34	8.73	14.78	9.30

Likely Significant Effects

Construction Phase

7.60 Chapter 5 Construction Methodology and Phasing of the ES outlines the indicative construction process including likely duration, phasing, activities and plant. The main emissions during construction are likely to be dust and particulate matter generated during earth moving (particularly during dry months), or from construction materials. In respect of fires on Site it should be noted that suitable management strategies will be in place to prevent burning of any material during the construction phase. The main potential impacts of particulates/dust are:

- Visual – dust plume, reduced visibility, coating and soiling of surfaces leading to annoyance, loss of amenity, the need to clean surfaces;
- Physical and/or chemical contamination and corrosion of artefacts;
- Coating of vegetation and soil contamination; and
- Health impacts due to inhalation e.g. asthma or irritation of the eyes.

7.61 A number of other factors such as the amount of precipitation and other meteorological conditions will also greatly influence the amount of particulate matter generated.

7.62 Construction activities can give rise to short term elevated dust/PM₁₀ concentrations in neighbouring areas. This may arise from vehicle movements, soiling of the public highway, demolition or windblown stockpiles.

Particulate Matter

- 7.63 The UK Air Quality Standards seek to control the health implications of respirable particulate matter PM₁₀ (less than 10 micrometres in diameter). However, the majority of particles released from construction will be greater than this in size.
- 7.64 On this basis, mitigation measures should still be implemented to minimise these emissions as part of good site practice.

Dust

- 7.65 Particles greater than 10µm are likely to settle out relatively quickly and may cause annoyance due to their soiling capability. There are no formal standards or criteria for nuisance caused by deposited particles, however, a deposition rate of 200mg/m²/day is often presented as a threshold for serious nuisance, although this is usually only applied to long term exposure as people are generally more tolerant of dust for a short or defined period. Significant nuisance is likely when the dust coverage of surfaces is visible in contrast with adjacent clean areas, especially when it happens regularly. Severe dust nuisance occurs when the dust is perceptible without a clean reference surface.
- 7.66 Construction activities have the potential to suspend dust, which could result in annoyance of residents surrounding the Site.
- 7.67 Section 5: of Appendix 7.1: "Assessment of Air Quality Impact – Construction Phase" details the construction phase assessment techniques, criteria, and results.
- 7.68 Construction works on the Site have the potential to elevate localised PM₁₀ concentrations in the area.
- 7.69 The construction phase assessment concluded the impact significance of construction activities without the applications of the mitigation measures are a "medium risk" from the activities of earthworks and trackout, and construction.

Completed Development

- 7.70 Additional vehicle movements associated with the Development will generate additional

exhaust emissions, such as NO₂, PM₁₀ and PM_{2.5}, on the local and regional road networks. In order to quantify potential impacts of these emissions in the vicinity of the Site, a detailed dispersion modelling assessment has been undertaken using the ADMS-Roads software package. This modelling software is routinely used in the UK for environmental assessment work.

7.71 The assessment of likely significant impacts of road vehicle exhaust emissions has been undertaken for the following assessment years:

- Baseline 2019 = Existing Site Conditions (2019 conditions);
- 'Do Minimum' 2031 = Baseline + Cumulative Developments; and,
- 'Do Something' 2031 = Baseline + Cumulative Developments + Development.

7.72 The Development opening years were considered with appropriate 'Do Minimum' and 'Do Something' scenarios (see Appendix 7.1).

7.73 Reference should be made to the Air Quality Technical Report (Appendix 7.1) for the:

- Detailed Modelling of Operational Phase Road Vehicle Exhaust Emissions – Method Statement;
- Detailed Modelling of Operational Phase Road Vehicle Exhaust Emissions – Detailed Results Tables; and,
- Theoretical assessment assuming no improvement in emissions from baseline year to future year.

Nitrogen Dioxide (NO₂)

7.74 Predicted annual mean NO₂ concentrations were assessed against the AQO of 40 µg/m³. Reference should be made to the Air Quality Technical Report (see Appendix 7.1) for detailed results tables of predicted annual mean NO₂ concentrations.

7.75 As stated earlier in the chapter, the sensitivity of receptors is determined by the predicted concentration of pollutant at that receptor in the 'Do Minimum' scenario. i.e. receptors that already experience high levels of pollutant exposure are highly sensitive and vice versa.

Table 7.10: Significance at the Identified Sensitive Receptors (NO₂)

Receptor		NO ₂ (µg/m ³)				
		Do Minimum 2031	Do Something 2031	Dev Contribution	% Change of AQO	Significance of Effect
R1	108 Charlotte Ave	10.56	10.93	0.37	0.92	Negligible
R2	1 Orchard Way	13.10	13.33	0.23	0.57	Negligible
R3	13 Braeburn Ave	10.63	11.07	0.44	1.10	Negligible
R4	53 Juniper Gardens	14.12	14.22	0.10	0.25	Negligible
R5	102 Mullein Road	12.50	12.59	0.09	0.22	Negligible
R6	9 B4100	13.20	13.41	0.21	0.52	Negligible
R7	40 Pine Close	14.27	14.32	0.05	0.12	Negligible
R8	6 The Cook House, The Parade	13.57	13.62	0.05	0.12	Negligible
R9	14 Montgomery Road	11.68	11.71	0.03	0.07	Negligible
R10	Wanlan House, Launton Road	16.49	16.53	0.04	0.10	Negligible
R11	58 Shearwater Drive	14.95	14.99	0.04	0.10	Negligible
R12	24 Ravencroft	16.54	16.60	0.06	0.15	Negligible
R13	13 Kestrel Way	14.14	14.17	0.03	0.07	Negligible
R14	24 Kestrel Way	16.61	16.65	0.04	0.10	Negligible
R15	7 Haydock Road	13.78	13.79	0.01	0.02	Negligible
R16	8 Newton Close	15.31	15.35	0.04	0.10	Negligible
R17	1 Kingston Drive	10.83	10.87	0.04	0.10	Negligible
R18	15 Colwell Road	12.79	12.88	0.09	0.22	Negligible
R19	92 Isis Avenue	14.12	14.32	0.20	0.50	Negligible
R20	Lovelyinch House	11.62	11.64	0.02	0.05	Negligible
R21	36 Shannon Road	12.26	12.28	0.02	0.05	Negligible
R22	6 Dryden Avenue	11.82	11.96	0.14	0.35	Negligible
R23	58 Kings End	17.89	17.95	0.06	0.15	Negligible
R24	Fane House	18.70	18.76	0.06	0.15	Negligible
R25	2 Banbury Road	17.97	18.03	0.06	0.15	Negligible
R26	19 Field Street	18.16	18.21	0.05	0.12	Negligible
R27	6 Field Street	17.98	18.03	0.05	0.12	Negligible
R28	7 Banbury Road	13.80	13.84	0.04	0.10	Negligible
R29	9 Foxglove Road	12.58	12.61	0.03	0.07	Negligible
R30	4 Brashfield Road	12.73	12.74	0.01	0.02	Negligible
R31	6 Goldsmith Close	12.37	12.49	0.12	0.30	Negligible
R32	Ashleys Bungalow	11.14	11.24	0.10	0.25	Negligible
R33	Stable Cottage	12.24	12.26	0.02	0.05	Negligible
R34	3 Langford Park Cottages	14.58	14.60	0.02	0.05	Negligible
R35	Watergate Lodge	12.57	12.65	0.08	0.20	Negligible
R36	Swifts House	9.67	9.68	0.01	0.02	Negligible
R37	Baynards House	14.68	14.70	0.02	0.05	Negligible
PR1	Proposed Residential Receptor	-	9.80	-	-	-
PR2	Proposed Residential Receptor	-	9.61	-	-	-
PR3	Proposed Residential Receptor	-	9.30	-	-	-
Annual Mean AQO		40 µg/m ³				
*Located in the AQMA						

- 7.76 As indicated in Table 7.10 and Appendix 7.1, the annual mean NO₂ concentration at surrounding existing receptors from the effects of traffic is predicted to be negligible at all sensitive receptors.
- 7.77 The unmitigated effects are predicted to be a negligible increase at fifteen sensitive receptor locations. There is also predicted to be a negligible increase in NO₂ concentrations at all modelled sensitive receptors locations.

Particulate Matter (PM₁₀ and PM_{2.5})

- 7.78 Predicted annual mean ground level PM₁₀ concentrations were assessed against the AQO of 40µg/m³. Reference should be made to the Air Quality Technical Report (see Appendix 7.1) for detailed results tables of predicted annual mean PM₁₀ concentrations.

Table 7.11: Significance at the Identified Sensitive Receptors (PM₁₀)

Receptor		PM ₁₀ (µg/m ³)				Significance of Effect
		Do Minimum 2031	Do Something 2031	Dev Contribution	% Change of AQO	
R1	108 Charlotte Ave	15.65	15.82	0.17	0.42	Negligible
R2	1 OrchardWalk	16.71	16.82	0.11	0.27	Negligible
R3	13 Braeburn Ave	15.75	15.96	0.21	0.53	Negligible
R4	53 Juniper Gardens	17.18	17.23	0.05	0.13	Negligible
R5	102 Mullein Road	16.44	16.49	0.05	0.11	Negligible
R6	9 B4100	16.98	17.09	0.11	0.29	Negligible
R7	40 Pine Close	17.23	17.26	0.03	0.07	Negligible
R8	6 The Cook House, The Parade	16.97	17.00	0.03	0.06	Negligible
R9	14 Montgomery Road	16.20	16.21	0.01	0.04	Negligible
R10	Wanlan House, Launton Road	17.45	17.47	0.02	0.05	Negligible
R11	58 Shearwater Drive	17.16	17.18	0.02	0.06	Negligible
R12	24 Ravencroft	17.62	17.65	0.03	0.07	Negligible
R13	13 Kestrel Way	16.87	16.89	0.02	0.05	Negligible
R14	24 Kestrel Way	17.76	17.78	0.02	0.06	Negligible
R15	7 Haydock Road	17.67	17.68	0.01	0.02	Negligible
R16	8 Newton Close	17.81	17.83	0.02	0.05	Negligible
R17	1 Kingston Drive	15.65	15.68	0.03	0.06	Negligible
R18	15 Colwell Road	16.49	16.53	0.04	0.10	Negligible
R19	92 Isis Avenue	17.11	17.21	0.10	0.24	Negligible
R20	Lovelyinch House	16.19	16.20	0.01	0.03	Negligible
R21	36 Shannon Road	16.25	16.27	0.02	0.03	Negligible
R22	6 Dryden Avenue	16.34	16.42	0.08	0.19	Negligible
R23	58 Kings End	18.80	18.83	0.03	0.08	Negligible
R24	Fane House	18.43	18.46	0.03	0.07	Negligible
R25	2 Banbury Road	18.33	18.37	0.04	0.08	Negligible
R26	19 Field Street	18.23	18.26	0.03	0.07	Negligible

Receptor		PM ₁₀ (µg/m ³)				
		Do Minimum 2031	Do Something 2031	Dev Contribution	% Change of AQO	Significance of Effect
R27	6 Field Street	18.17	18.20	0.03	0.07	Negligible
R28	7 Banbury Road	17.14	17.16	0.02	0.05	Negligible
R29	9 Foxglove Road	16.60	16.62	0.02	0.05	Negligible
R30	4 Brashfield Road	16.67	16.68	0.01	0.01	Negligible
R31	6 Goldsmith Close	16.44	16.50	0.06	0.15	Negligible
R32	Ashleys Bungalow	16.37	16.43	0.06	0.14	Negligible
R33	Stable Cottage	16.57	16.59	0.02	0.03	Negligible
R34	3 Langford Park Cottages	17.52	17.52	<0.01	0.00	Negligible
R35	Watergate Lodge	17.78	17.82	0.04	0.11	Negligible
R36	Swifts House	15.78	15.79	0.01	0.02	Negligible
R37	Baynards House	17.94	17.95	0.01	0.02	Negligible
PR1	Proposed Residential Receptor	-	15.35	-	-	-
PR2	Proposed Residential Receptor	-	15.24	-	-	-
PR3	Proposed Residential Receptor	-	15.10	-	-	-
Annual Mean AQO		40 µg/m ³				
*Located in the AQMA						

- 7.79 As indicated in Table 7.11 and Appendix 7.1, the likely significant impact on annual mean PM₁₀ concentration from the Development traffic flows is predicted to be a negligible increase in PM₁₀ concentrations at all modelled sensitive receptors locations.
- 7.80 Predicted annual mean ground level PM_{2.5} concentrations were assessed against the AQO of 25µg/m³. Reference should be made to the Air Quality Technical Report (see Appendix 7.1) for detailed results tables of predicted annual mean PM_{2.5} concentrations.

Table 7.12: Significance at the Identified Sensitive Receptors (PM_{2.5})

Receptor		PM _{2.5} (µg/m ³)				
		Do Minimum 2031	Do Something 2031	Dev Contribution	% Change of AQO	Significance of Effect
R1	108 Charlotte Ave	9.79	9.88	0.09	0.37	Negligible
R2	1 Orchard Walk	11.09	11.15	0.06	0.24	Negligible
R3	13 Braeburn Ave	9.84	9.96	0.12	0.47	Negligible
R4	53 Juniper Gardens	11.34	11.37	0.03	0.11	Negligible
R5	102 Mullein Road	10.94	10.96	0.02	0.10	Negligible
R6	9 B4100	11.23	11.29	0.06	0.25	Negligible
R7	40 Pine Close	11.38	11.39	0.01	0.06	Negligible
R8	6 The Cook House, The Parade	11.23	11.24	0.01	0.05	Negligible
R9	14 Montgomery Road	10.32	10.33	0.01	0.03	Negligible
R10	Wanlan House, Launton Road	11.53	11.54	0.01	0.04	Negligible
R11	58 Shearwater Drive	11.14	11.15	0.01	0.05	Negligible
R12	24 Ravencroft	11.40	11.42	0.02	0.07	Negligible

Receptor		PM _{2.5} (µg/m ³)				
		Do Minimum 2031	Do Something 2031	Dev Contribution	% Change of AQO	Significance of Effect
R13	13 Kestrel Way	10.98	10.99	0.01	0.05	Negligible
R14	24 Kestrel Way	11.48	11.49	0.01	0.05	Negligible
R15	7 Haydock Road	10.76	10.76	<0.01	0.01	Negligible
R16	8 Newton Close	11.53	11.54	0.01	0.05	Negligible
R17	1 Kingston Drive	10.05	10.06	0.01	0.05	Negligible
R18	15 Colwell Road	10.51	10.54	0.03	0.09	Negligible
R19	92 Isis Avenue	10.86	10.91	0.05	0.21	Negligible
R20	Lovelynych House	10.02	10.03	0.01	0.04	Negligible
R21	36 Shannon Road	10.38	10.39	0.01	0.03	Negligible
R22	6 Dryden Avenue	10.40	10.44	0.04	0.17	Negligible
R23	58 Kings End	12.09	12.10	0.01	0.06	Negligible
R24	Fane House	12.04	12.05	0.01	0.06	Negligible
R25	2 Banbury Road	11.99	12.00	0.01	0.07	Negligible
R26	19 Field Street	11.93	11.94	0.01	0.06	Negligible
R27	6 Field Street	11.89	11.91	0.02	0.06	Negligible
R28	7 Banbury Road	11.58	11.59	0.01	0.04	Negligible
R29	9 Foxglove Road	11.28	11.29	0.01	0.04	Negligible
R30	4 Brashfield Road	11.32	11.32	<0.01	0.01	Negligible
R31	6 Goldsmith Close	11.00	11.03	0.03	0.13	Negligible
R32	Ashleys Bungalow	10.32	10.35	0.03	0.12	Negligible
R33	Stable Cottage	10.41	10.41	<0.01	0.03	Negligible
R34	3 Langford Park Cottages	11.00	11.00	<0.01	0.02	Negligible
R35	Watergate Lodge	10.86	10.89	0.03	0.10	Negligible
R36	Swifts House	9.60	9.60	<0.01	0.02	Negligible
R37	Baynards House	10.79	10.79	<0.01	0.01	Negligible
PR1	Proposed Residential Receptor	-	9.61	-	-	-
PR2	Proposed Residential Receptor	-	9.56	-	-	-
PR3	Proposed Residential Receptor	-	9.48	-	-	-
Annual Mean AQO		25 µg/m ³				
*Located in the AQMA						

7.81 As indicated in Table 7.12 and Appendix 7.1, the likely significant impact on annual mean PM_{2.5} concentration from the development traffic flows is predicted to be a negligible increase in PM_{2.5} concentrations at all modelled sensitive receptors locations.

7.82 The predicted concentration levels of for NO₂, PM₁₀ and PM_{2.5} at the selected existing receptors and the proposed receptors in the operational phase of the Development are predicted to be below the relevant AQOs for the protection of human health.

7.83 Considering the changes in percentage pollutant concentrations of NO₂, PM₁₀ and PM_{2.5} at all identified receptor locations, the significance of the air quality effects as a result of the

Development is 'negligible'.

Mitigation Measures

Construction Phase

- 7.84 Appropriate site-specific mitigation measures associated with the determined level of risk can be found in Section 8.2 of the IAQM Guidance on the Assessment of Dust from Demolition and Construction, the relevant site-specific mitigation measures are outlined in Appendix 7.1 (Tables 7.1 and 7.2). The mitigation measures have been divided into general measures applicable to all sites and measures applicable specifically to demolition, earthworks, construction and trackout. They are categorised into 'highly recommended' and 'desirable' measures.
- 7.85 The measures will be implemented through a Construction Environmental Management Plan (CEMP), which is an established method of managing environmental effects resulting from construction works.
- 7.86 The CEMP will be submitted to CDC (and other statutory authorities) prior to the commencement of the works. Compliance with the CEMP will be secured by planning condition.

Completed Development

- 7.87 As reported earlier in this chapter, the effects of emission impacts during the operational phase of the Development are not significant, therefore, no mitigation is required.

Residual Effects

- 7.88 The residual effects are the effects that remain after the implementation of the mitigation measures.

Construction Phase

- 7.89 Following the implementation of the mitigation measures detailed in the CEMP and outlined within Tables 7.1 and 7.2 of Appendix 7.1, the residual effects of dust associated with the construction phase are determined to be negligible, therefore are not considered significant.

Completed Development

- 7.90 As reported earlier in this chapter, the effects of emission impacts during the operational phase are determined to be negligible at all modelled receptor locations, therefore are not considered not significant.

Cumulative Effects

Construction Phase

- 7.91 Following the implementation of the standard mitigation measures discussed earlier, there will be no effects from the Development that could combine with effects from other developments to lead to cumulative effects during the construction phase. It is anticipated that any committed developments would implement best practise mitigation measures in a CEMP for their respective construction phases.

Completed Development

- 7.92 As the significance of the air quality effects from the Development is 'negligible' during the operational phase there will be no effects from the Development that could combine with effects from other developments to lead to cumulative effects during the operational phase.

Summary

- 7.93 This chapter has assessed the likely significant effects of the Development on the environment in respect of air quality during the demolition, construction and operational phases of the Development.

Construction Phase

- 7.94 The construction phase assessment has assessed the potential impact significance of construction activities of demolition, earthworks, construction and trackout, and the appropriate mitigation measures to reduce the impact risks have been discussed and recommended.

Operational Phase

- 7.95 The significance of the effects of changes in traffic flow as a result of the Development, with respect to NO₂, PM₁₀ and PM_{2.5} exposures, significance is determined to be 'negligible' at all

identified receptor locations.

- 7.96 All Development receptor locations are predicted to be below the AQO for NO₂, PM₁₀ and PM_{2.5}.
- 7.97 Given the quantitative nature of the assessment and the verification of the air quality dispersion model, the confidence of the assessment is deemed to be 'high'.
- 7.98 Table 7.13 contains a summary of the likely significant effects of the Development.

Table 7.13: Table of Significance – Air Quality

Potential Effect	Nature of Effect (Permanent/Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)
				I	UK	E	R	C	B	L	
Construction											
Earthworks	Temporary	N/A	CEMP							*	Negligible
Construction	Temporary	N/A	CEMP							*	Negligible
Trackout	Temporary	N/A	CEMP							*	Negligible
Completed Development											
Effect of NO ₂ emissions generated by road vehicles movements during operational phase	Permanent	Negligible	Not Required							*	Negligible
Effect of PM ₁₀ emissions generated by road vehicle movements during operational phase	Permanent	Negligible	Not Required							*	Negligible
Effect of PM _{2.5} emissions generated by road vehicle movements during operational phase	Permanent	Negligible	Not Required							*	Negligible
Effects of NO _x emissions generated by road vehicle movements during the operational phase	Permanent	Negligible	Not Required							*	Negligible
Cumulative Effects											
Construction	Temporary	N/A	CEMP							*	Negligible
Operation	Permanent	Negligible	Not Required							*	Negligible

* **Geographical Level of Importance**

I = International; UK = United Kingdom; E = England; R = Regional; C = County; B = Borough; L = Local

REFERENCES

-
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http://www.apis.ac.uk/overview/regulations/overview_clrtap.htm
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