

Growing Baldock

Environmental Statement Volume 1: Text
Chapter 6: Air Quality



October 2025

Urban&Civic

Hertfordshire

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6.1 INTRODUCTION

6.1.1 This chapter details the air quality assessment undertaken for the Proposed Development at land to the north and east of the existing town of Baldock, north of the A505 and east of the A1(M).

6.1.2 The chapter has been prepared by Georgie Coppin and Kathryn Barker of RPS Group. Georgie is an Air Quality Consultant with experience in preparing assessments for various built environment developments including residential schemes. Georgie also has experience in undertaking air quality monitoring campaigns for multiple pollutants across different sectors. The assessment has been checked and reviewed by Kathryn Barker, a member of the Institute of Air Quality Management and the Institution of Environmental Sciences. She has 10 years' experience assessing mixed-use developments and the impacts from traffic emissions.

6.1.3 This air quality assessment covers the:

- Construction phase - an evaluation of the temporary effects from fugitive construction dust and construction-vehicle exhaust emissions; and
- Operational phase – an evaluation of:
 - the impacts of the development traffic on the local area; and
 - the impacts on future occupants of the development from their exposure to the prevailing levels of air pollution, which can be a factor in the suitability of the Site for its proposed uses.

6.1.4 The description of development comprises:

Outline planning application with all matters reserved except for means of highway access into the development from the A505/Royston Road, North Road and Clothall Road for: up to 3,200 homes, up to 16ha of employment, waste and leisure infrastructure, a mixed use local centre, up to 1 secondary school, up to 2 x primary schools, up to 1 SEND school, health hub, green infrastructure (including parks, formal sports provision, play, habitat areas, informal open space and structural planting), internal street network, access junctions and railway crossing, public transport infrastructure, pedestrian/cycle network (including PRoW diversions, active travel routes, mobility hubs and crossing of the railway), utilities and drainage infrastructure (including diversions of existing and provision of new infrastructure, pumping stations, sustainable drainage, primary substations, rising main/strategic sewer and renewable energy infrastructure), ground remodelling/earthworks and any necessary demolitions.

6.1.5 The local authority, North Herts Council (NHC), has currently designated two Air Quality Management Areas (AQMA) due to elevated concentrations of nitrogen dioxide (NO₂) pollution from road traffic. The Application Site is located approximately 8 km to the northeast of the closest designated AQMA.

- 6.1.6 This chapter begins by setting out the policy and legislative context for the assessment. The methods and criteria used to assess potential air quality effects have then been described. The baseline air quality conditions have been established taking into account Defra estimates, local authority documents and the results of any local monitoring. The results of the assessment of air quality impacts have been presented. A conclusion has been drawn on the significance of the residual construction-phase effects and the residual operational-phase effects.

6.2 RELEVANT POLICY

National Policy

National Planning Policy Framework

6.2.1 The National Planning Policy Framework (NPPF) [i] is a material consideration for local planning authorities and decision-takers in determining applications. At the heart of the NPPF, is a presumption in favour of sustainable development, subject to caveats where a plan or project affects a habitats site. For determining planning applications, this means approving development proposals if they accord with an up-to-date local development plan, unless material considerations indicate otherwise. If the development plan does not contain relevant policies, or the policies are out of date, then planning permission should be granted unless the application of policies in the NPPF that protect areas or assets of particular importance provides a clear reason for refusing the development, or any adverse impacts would significantly outweigh the benefits.

6.2.2 The NPPF sets out three overarching objectives to achieve sustainable development. The relevant objective in the context of this air quality assessment is:

"An environmental objective – to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution and mitigating and adapting to climate change, including moving to a low carbon economy" (Paragraph 8c)

6.2.3 Under the heading 'Promoting sustainable transport', the NPPF 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 110)

6.2.4 Under the heading 'Conserving and enhancing the natural environment', the NPPF 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 187)

“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.” (Paragraph 199)

Planning Practice Guidance

6.2.5 The National Planning Practice Guidance (NPPG) was issued on-line on 6 March 2014 and is updated periodically by government as a live document. The last major update was on 1 November 2019. The Air Quality section of the NPPG describes the circumstances when air quality, odour and dust can be a planning concern, requiring assessment.

6.2.6 The NPPG advises that whether or not air quality is relevant to a planning decision will depend on the Proposed Development and its location. Concerns could arise if the development is likely to have an adverse effect on air quality in areas where it is already known to be poor, particularly if it could affect the implementation of air quality strategies and action plans and/or breach legal obligations (including those relating to the conservation of habitats and species). Air quality may also be a material consideration if the Proposed Development would be particularly sensitive to poor air quality in its vicinity. The NPPG states that when deciding whether air quality is relevant to a planning application, considerations could include whether the development would:

“Lead to changes (including any potential reductions) in vehicle-related emissions in the immediate vicinity of the Proposed Development or further afield. This could be through the provision of electric vehicle charging infrastructure; altering the level of traffic congestion; significantly changing traffic volumes, vehicle speeds or both; or significantly altering the traffic composition on local roads. Other matters to consider include whether the proposal involves the development of a bus station, coach or lorry park; could add to turnover in a large car park; or involve construction sites that would generate large Heavy Goods Vehicle flows over a period of a year or more;

Introduce new point sources of air pollution. This could include furnaces which require prior notification to local authorities; biomass boilers or biomass-fuelled Combined Heat and Power plant; centralised boilers or plant burning other fuels within or close to an air quality management area or introduce relevant combustion within a Smoke Control Area;

or extraction systems (including chimneys) which require approval or permits under pollution control legislation;

Expose people to harmful concentrations of air pollutants, including dust. This could be by building new homes, schools, workplaces or other development in places with poor air quality;

Give rise to potentially unacceptable impacts (such as dust) during construction for nearby sensitive locations;

Have a potential adverse effect on biodiversity, especially where it would affect sites designated for their biodiversity value."

- 6.2.7 The NPPG provides advice on how air quality impacts can be mitigated and notes "Mitigation options will need to be locationally specific, will depend on the Proposed Development and need to be proportionate to the likely impact. It is important that local planning authorities work with applicants to consider appropriate mitigation so as to ensure new development is appropriate for its location and unacceptable risks are prevented. Planning conditions and obligations can be used to secure mitigation where the relevant tests are met."

Local Policy

North Hertfordshire Local Plan (2022)

- 6.2.8 The North Herts Local Plan 2011 – 2031 was adopted in November 2022 and includes two policies relevant to air quality, including the following:

Policy D4: Air Quality

"Planning permission will be granted provided that development proposals:

Give consideration to the potential or actual impact on local air quality, both during the demolition/ construction phase and as a result of its final occupation and use;

Propose appropriate levels of mitigation to minimise emissions to the atmosphere and their potential effects upon health and the local environment; and

Carry out air pollution impact assessments, where required, to determine the impact on local air quality of the development.

Where an air quality impact assessment demonstrates that a development is unacceptable from a local air quality perspective the development will be refused.

Where air pollution impact assessments are not required there will still be a requirement on developers to provide appropriate levels of mitigation to address emissions of pollutants to the atmosphere."

Policy NE6: New and Improved Open Spaces

"Planning permission will be granted for development proposals that make provision for new and/or improved open space which:

c) Incorporate any necessary open space buffer(s) for landscape, visual, ecological or air quality reasons."

Any Other Relevant Policy, Legislation or Guidance

Air Quality Standards Regulations

6.2.9 The Air Quality Standards Regulations 2010 [ii], amended by The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 [iii], sets limit values for ambient air concentrations for the main air pollutants: particulate matter (PM₁₀ and PM_{2.5}), nitrogen dioxide (NO₂), sulphur dioxide (SO₂), ozone (O₃), carbon monoxide (CO), lead (Pb) and benzene, certain toxic heavy metals (arsenic, cadmium and nickel) and polycyclic aromatic hydrocarbons (PAHs).

6.2.10 These limit values are legally binding on the Secretary of State. The Government and devolved administrations operate various national ambient air quality monitoring networks to measure compliance and develop plans to meet the limit values.

UK Air Quality Strategy

6.2.11 The Environment Act 1995, as amended by the Environment Act 2021, established the requirement for the Government and the devolved administrations to produce a National Air Quality Strategy (AQS) for improving ambient air quality, the first being published in 1997 and having been revised several times since, with the latest published in 2007 [iv]. The Strategy sets UK air quality standards and objectives for the pollutants in the Air Quality Standards Regulations plus 1,3-butadiene and recognises that action at national, regional and local level may be needed, depending on the scale and nature of the air quality problem. There is no legal requirement to meet objectives set within the UK AQS except where equivalent limit values are set within the Air Quality Standards Regulations.

6.2.12 The 1995 Environment Act also established the UK system of Local Air Quality Management (LAQM), that requires local authorities to go through a process of review and assessment of air quality in their areas, identifying places where objectives are not likely to be met, then declaring Air Quality Management Areas (AQMs) and putting in place Air Quality Action Plans to improve air quality. These plans also contribute, at local level, to the achievement of the limit values in the Air Quality Standards Regulations.

6.2.13 The limit values and objectives relevant to this assessment are summarised in **Table 6.1**. Where the limit values and the AQS objectives differ, the more stringent has been used.

Table 6.1 – Summary of Relevant Air Quality Limit Values and Objectives

Pollutant	Averaging Period	Objectives/ Limit Values	Not to be Exceeded More Than
Nitrogen Dioxide (NO ₂)	1 hour	200 µg.m-3	18 times per calendar year
	Annual	40 µg.m-3	-
Particulate Matter (PM ₁₀)	24 Hour	50 µg.m-3	35 times per calendar year
	Annual	40 µg.m-3	-
Particulate Matter (PM _{2.5})	Annual	20 µg.m-3	-
		10 µg.m-3 to be met by 31st December 2040*	-

*The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 sets out an annual-mean PM_{2.5} target of 10 µg.m-3 to be met by the end of 2040.

- 6.2.14 On 14 January 2019, Defra published the 'Clean Air Strategy 2019'. The report sets out actions that the Government intends to take to reduce emissions from transport, in the home, from farming and from industry.
- 6.2.15 In October 2024, Defra published Interim Planning Guidance for PM_{2.5} Targets. The interim guidance, which is in place until a finalised guidance document is published, provides Defra's provisional position whereby evidence should be provided, at the planning application stage, that key sources of air pollution have been identified and appropriate action taken to minimise emissions of PM_{2.5}, and its precursors, as far as is reasonably practicable.
- 6.2.16 Consideration should be given to how exposure to PM_{2.5} has been considered in site selection and what mitigation will be implemented to reduce emissions of PM_{2.5}, as well as reduce PM_{2.5} exposure.

6.3 ASSESSMENT METHODOLOGY

Scope

- 6.3.1 Neither the NPPF nor the NPPG is prescriptive on the methodology for assessing air quality effects or describing significance; practitioners continue to use guidance provided by Defra and non-governmental organisations, including Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM). However, the NPPG does advise that “Assessments need to be proportionate to the nature and scale of development proposed and the potential impacts (taking into account existing air quality conditions), and because of this are likely to be locationally specific. The scope and content of supporting information is best discussed and agreed between the local planning authority and applicant before it is commissioned.” It lists a number of areas that might be usefully agreed at the outset.
- 6.3.2 This air quality assessment covers the elements recommended in the NPPG. The approach is consistent with the EPUK & IAQM Land-Use Planning & Development Control: Planning For Air Quality document [v], the IAQM Guidance on the assessment of dust from demolition and construction [vi], and, where relevant, Defra’s Local Air Quality Management Technical Guidance: LAQM.TG22 [vii]. It includes the key elements listed below:
- assessment of the existing air quality in the study area (existing baseline) and prediction of the future air quality without the development in place (future baseline), using official government estimates from Defra, publicly available air quality monitoring data for the area, and relevant Air Quality Review and Assessment (R&A) documents;
 - a qualitative assessment of likely construction-phase impacts with mitigation and controls in place; and
 - a quantitative prediction of the future operational-phase air quality impact with the development in place (with any necessary mitigation), encompassing:
 - the impacts of the development traffic on the local area; and
 - the impacts on future occupants of the development from their exposure to the prevailing levels of air pollution, which can be a factor in the suitability of the Site for its proposed uses.
- 6.3.3 Guidance on the assessment of dust from demolition and construction (Institute of Air Quality Management (IAQM), 2024) indicates that there could potentially be annoyance from dust and particulate matter (PM) with a diameter of 10 micrometres or smaller (PM₁₀), alongside effects on human health and ecological habitats, for receptors located within 250 m of onsite construction activities.
- 6.3.4 As such, the air quality study area has been defined with respect to construction dust and covers an area up to 250 m around the Site, and 250 m from construction site entrances.

In accordance with IAQM guidance (IAQM, 2024), receptors are considered within 20 m, 50 m, 100 m, and 250 m distance categories.

6.3.5 In accordance with EPUK & IAQM guidance, an assessment of traffic emissions includes all roads which are anticipated to experience the following change in traffic volume:

- Outside of an AQMA: over 500 Light Duty vehicles (LDVs) or over 100 Heavy Duty Vehicles (HDVs).
- Inside of an AQMA: over 100 LDVs or over 25 HDVs.

6.3.6 The location and geographic extent of the air quality study area used to inform the air quality assessment is presented in **Appendix 6.1**.

6.3.7 A full assessment of the proposed waste facilities will take place at detailed stage once the exact scale and design of development is known, to ensure no harmful odour effects.

Data Sources

6.3.8 In the scoping opinion, North Herts Council noted that while the development would not have a significant impact on the closest AQMA, the ES would need to include a chapter on air quality impacts during construction and operation.

6.3.9 The scoping response from Hertfordshire Public Health advises the developer to consider sensitive placement of sensitive receptors due to air pollution. It asks that the assessment ensure that the development will not contribute to a worsening of local air quality that may lead to poor health outcomes.

6.3.10 The North Herts Air Quality Planning Guidance has been consulted throughout the assessment. As required by the Air Quality Planning Guidance, a Damage Cost Assessment has been included in **Appendix 6.5**.

Assessment Approach

6.3.11 For the operational phase of the Proposed Development, the main pollutants from road traffic with potential for local air quality impacts are nitrogen oxides (NO_x) and particulate matter (PM₁₀). Emissions of total NO_x from combustion sources comprise nitric oxide (NO) and NO₂. The NO oxidises in the atmosphere to form NO₂. The assessment of operational impacts therefore focuses on changes in NO₂ and PM₁₀ concentrations. The impact from fine particulate matter, known as PM_{2.5} (a subset of PM₁₀) concentrations has also been considered.

6.3.12 For the construction phase of the Proposed Development the key pollutant is dust, covering both the PM₁₀ fraction that is suspended in the air that can be breathed, and the deposited dust that has fallen out of the air onto surfaces and which can potentially cause temporary annoyance effects.

- 6.3.13 Regarding exhaust emissions from construction-related vehicles (contractors' vehicles and Heavy Goods Vehicles (HGVs), diggers, and other diesel-powered vehicles), these are unlikely to have a significant impact on local air quality [vi] except for large, long-term construction sites: the EPUK & IAQM Land-Use Planning & Development Control: Planning For Air Quality document [v] indicates that air quality assessments should include developments increasing annual average daily Heavy Duty Vehicle (HDV) traffic flows by more than 25 within or adjacent to an AQMA and more than 100 elsewhere. The results of the Highways and Access assessment indicates that the net traffic generated by the scheme in 2033, the year with the highest number of construction vehicles, does not exceed the aforementioned EPUK & IAQM thresholds for any individual road; therefore, construction-vehicle exhaust emissions have not been assessed specifically.

Construction Phase - Methodology

- 6.3.14 Dust is the generic term used to describe particulate matter in the size range 1-75 µm in diameter [viii]. Particles greater than 75 µm in diameter are termed grit rather than dust. Dusts can contain a wide range of particles of different sizes. The normal fate of suspended (i.e. airborne) dust is deposition. The rate of deposition depends largely on the size of the particle and its density; together these influence the aerodynamic and gravitational effects that determine the distance it travels and how long it stays suspended in the air before it settles out onto a surface. In addition, some particles may agglomerate to become fewer, larger particles; whilst others react chemically.
- 6.3.15 The effects of dust are linked to particle size and two main categories are usually considered:
- PM₁₀ particles, those up to 10 µm in diameter, remain suspended in the air for long periods and are small enough to be breathed in and so can potentially impact on health; and
 - Dust, generally considered to be particles larger than 10 µm which fall out of the air quite quickly and can soil surfaces (e.g. a car, windowsill, laundry). Additionally, dust can potentially have adverse effects on vegetation and fauna at sensitive habitat sites.
- 6.3.16 The IAQM Guidance on the assessment of dust from demolition and construction sets out 250 m as the distance from the site boundary and 50 m from the site traffic route(s) up to 250 m of the entrance, within which there could potentially be nuisance dust and PM₁₀ effects on human receptors. For sensitive ecological receptors, the corresponding distances are 50m in both cases. These distances are set to be deliberately conservative.
- 6.3.17 Concentration-based limit values and objectives have been set for the PM₁₀ suspended particle fraction, but no statutory or official numerical air quality criterion for dust annoyance has been set at a UK, European or World Health Organisation (WHO) level.

-
- Construction dust assessments have tended to be risk based, focusing on the appropriate measures to be used to keep dust impacts at an acceptable level.
- 6.3.18 The IAQM dust guidance aims to estimate the impacts of both PM₁₀ and dust through a risk-based assessment procedure. The IAQM dust guidance document states: "The magnitude of impacts depend on the mitigation measures adopted. Therefore, the emphasis in this document is on classifying the risk of dust impacts from a site, which will then allow mitigation measures commensurate with that risk to be identified."
- 6.3.19 The IAQM dust guidance provides a methodological framework, but notes that professional judgement is required to assess effects: "This is necessary, because the diverse range of projects that are likely to be subject to dust impact assessment means that it is not possible to be prescriptive as to how to assess the impacts. Also, a wide range of factors affect the amount of dust that may arise, and these are not readily quantified."
- 6.3.20 Consistent with the recommendations in the IAQM dust guidance, a risk-based assessment has been undertaken for the development, using the well-established source-pathway-receptor approach:
- The dust impact (the change in dust levels attributable to the development activity) at a particular receptor will depend on the magnitude of the dust source and the effectiveness of the pathway (i.e. the route through the air) from source to receptor.
 - The effects of the dust are the results of these changes in dust levels on the exposed receptors, for example annoyance or adverse health effects. The effect experienced for a given exposure depends on the sensitivity of the particular receptor to dust. An assessment of the overall dust effect for the area as a whole has been made using professional judgement taking into account both the change in dust levels (as indicated by the Dust Impact Risk for individual receptors) and the absolute dust levels, together with the sensitivities of local receptors and other relevant factors for the area.
- 6.3.21 The detail of the dust assessment methodology is provided in **Appendix 6.2**.
- 6.3.22 The dust risk categories that have been determined for each of the four activities (demolition, earthworks, construction and trackout) have been used to define the appropriate site-specific mitigation measures based on those described in the IAQM dust guidance. The guidance states that provided the mitigation measures are successfully implemented, the resultant effects of the dust exposure will normally be 'not significant'.
- 6.3.23 This assessment does not consider the air quality impacts of dust from any contaminated land or buildings. If contaminated land is identified on the Application Site, the impacts will be assessed in other technical discipline reports.

Operational Phase - Methodology

Atmospheric Dispersion Modelling of Pollutant Concentrations

- 6.3.24 In urban areas, pollutant concentrations are primarily determined by the balance between pollutant emissions that increase concentrations, and the ability of the atmosphere to reduce and remove pollutants by dispersion, advection, reaction and deposition. An atmospheric dispersion model is used as a practical way to simulate these complex processes; such a model requires a range of input data, which can include emissions rates, meteorological data and local topographical information. The model used and the input data relevant to this assessment are described in the following sub-sections.
- 6.3.25 The atmospheric pollutant concentrations in an urban area depend not only on local sources at a street scale, but also on the background pollutant level made up of the local urban-wide background, together with regional pollution and pollution from more remote sources brought in on the incoming air mass. This background contribution needs to be added to the fraction from the modelled sources and is usually obtained from measurements or estimates of urban background concentrations for the area in locations that are not directly affected by local emissions sources. Background pollution levels are described in detail in Section 6.4.
- 6.3.26 The ADMS-Roads model has been used in this assessment to predict the air quality impacts from changes in traffic on the local road network. This is a version of the Atmospheric Dispersion Modelling System (ADMS), a formally validated model developed in the UK by Cambridge Environmental Research Consultants Ltd (CERC) and widely used in the UK and internationally for regulatory purposes.

NO₂ Monitoring Survey

- 6.3.27 A six-month monitoring survey was undertaken to obtain roadside and background NO₂ data to allow for verification of the ADMS dispersion model, and calculation of a baseline.
- 6.3.28 Monitoring of ambient NO₂ concentrations was undertaken using passive diffusion tubes over a six-month period. Tubes were supplied and analysed by Gradko International, a UKAS accredited laboratory. The diffusion tubes used for the monitoring scheme were prepared using 20% triethanolamine (TEA) absorbent in water, with NO₂ concentrations determined through spectrophotometrical analysis.
- 6.3.29 The monitoring survey and ratification of results have been undertaken with reference to Defra's Local Air Quality Management Technical Guidance LAQM.TG22. Monitoring was undertaken between 06/12/2023 and 06/12/2024, with each period lasting between four and five weeks.
- 6.3.30 Monitoring was undertaken at 18 different locations as shown in Figure 6.1.1 in **Appendix 6.1**. These monitoring locations were agreed with the Air Quality Consultant at the Council. **Appendix 6.3** shows the monitoring data.

Modelled Scenarios

6.3.31 The wider application considers three options with regards to the land parcel BA3:

- *Option 1 – Knights Templar expansion and relocation to BA3*
Relocation and expansion (up to 12FE) of Knights Templar school to BA3. BA3 to accommodate SEND school and secondary school
- *Option 2 – Knights Templar expansion*
Expansion of Knights Templar on existing site (up to 10FE). BA3 to accommodate SEND school and residential (c. 250 units)
- *Option 3 – Additional secondary school on BA3*
Provision of additional secondary school (up to 5FE) on BA3. BA3 to accommodate SEND school, secondary school and residential (c.90 units)

6.3.32 The following scenarios were modelled which represent the worst case traffic scenarios:

- Without Development – without the Proposed Development in the first year that the development is expected to be fully operational, 2040 and
- With Development, without secondary school – with the Proposed Development in the first year that the development is expected to be fully operational, 2040
- With Development, with secondary school in Option 1 - with the Proposed Development (including proposed school) in the first year that the development is expected to be fully operational, 2040.

Model Input Data

Traffic Flow Data

6.3.33 Traffic data used in the assessment have been provided by the project's transport consultants, ITP. The traffic flow data provided for this assessment are summarised in **Table 6.2**. The modelled road links are illustrated in Figure 6.1.2 of **Appendix 6.1**.

Table 6.2 – Traffic Data Used within the Assessment

Road Link ID	Road Link Name	Speed (km.hr-1)	Daily Two-Way Vehicle Flow					
			Without Development		With Development, Without School		With Development, With School	
			Total Vehicles	HDV	Total Vehicles	HDV	Total Vehicles	HDV
1	A507 North Road	48	12703	707	7664	292	7731	292
2	A507 Station Road	48	13044	652	7119	279	7680	279
3	A507 Clothall Road	48	5851	335	6509	189	6991	189

4	B656 Hitchin Street	48	15964	542	18334	592	18259	592
5	B656 Whitehorse Street	48	10466	472	13661	550	13586	550
6	B656 Royston Road	48	10699	513	10755	390	10751	390
7	Wallington Road	48	4574	71	6180	97	6916	97
8	South Road	48	9969	267	12706	318	12978	318
9	London Road	48	12819	236	15068	267	15190	267
10	High Street	48	13929	305	14753	319	14753	319
11	A505 (in vicinity of Baldock)	80	28910	1900	29267	1935	29267	1935
12	A1 (J9)	113	89059	4544	91320	4590	91256	4590
13	A1 (J10)	113	57394	3874	65325	4097	65175	4097
14	A1 (North of J9)	113	48641	3464	52277	3615	52277	3615
15	A507 Clothall Road (South of Wallington Road)	64	8484	530	6805	358	6787	358
16	BA1 all vehicle access	48	-	-	8667	264	8887	264

Notes:

HDV = Heavy Duty Vehicle - vehicles greater than 3.5 t gross vehicle weight including buses

LDV = Light Duty Vehicle

- 6.3.34 The average speed on each road has been reduced by 10 km.hr⁻¹ (or to 20 km.hr⁻¹ for roads where the AADT > 10,000) to take into account the possibility of slow-moving traffic near junctions and at roundabouts in accordance with LAQM.TG22.

Vehicle Emission Factors

- 6.3.35 The modelling has been undertaken using Defra's 2025 emission factor toolkit (version 13) which draws on emissions generated by the European Environment Agency (EEA) COPERT 5.8 emission calculation tool.

Meteorological Data

- 6.3.36 ADMS-Roads requires detailed meteorological data as an input. The most representative observing station for the region of the study area that supplies all the data in the required

format is Luton, approximately 20 km southwest of the Application Site. Meteorological data from that station for 2024 have been used within the dispersion model. The wind rose is presented in Figure 6.1.3 of **Appendix 6.1**.

Receptors

- 6.3.37 The air quality assessment predicts the impacts at locations that could be sensitive to any changes. For assessing human-health impacts, such sensitive receptors should be selected where the public is regularly present and likely to be exposed over the averaging period of the objective. LAQM.TG22 [vii] provides examples of exposure locations and these are summarised in **Table 6.3**.

Table 6.3 – Examples of Where Air Quality Objectives Apply

Averaging Period	Objectives should apply at:	Objectives should generally not apply at:
Annual-mean	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes.	Building façades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building's façade), or any other location where public exposure is expected to be short-term.
Daily-mean	All locations where the annual-mean objective would apply, together with hotels. Gardens of residential properties.	Kerbside sites (as opposed to locations at the building's façade), or any other location where public exposure is expected to be short-term.
Hourly-mean	All locations where the annual and 24 hour mean would apply. Kerbside sites (e.g. pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations etc which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations to which the public might reasonably be expected to spend 1-hour or longer.	Kerbside sites where the public would not be expected to have regular access.

- 6.3.38 Representative sensitive receptors for this assessment have been selected at properties where pollutant concentrations and/or changes in pollutant concentrations are anticipated to be greatest, as listed in **Table 6.4**.

Table 6. 4 – Modelled Sensitive Receptors

ID	Description	x	y
1	Residential	526512	234793
2	Residential	525846	234440
3	Residential	525319	234287
4	Education Facility	524884	234057
5	Residential	525529	233286
6	Residential	525176	233539
7	Residential	524848	233378
8	Residential	524599	233728
9	Residential	524378	233855
10	Residential	524616	234105
11	Residential	524449	234355
12	Residential	525395	233803
13	Residential	524747	233063
14	Residential	524742	233919
15	Carehome	523885	233529
16	Residential	524012	233040
17	Residential	524139	232884
18	Education Facility	523903	231947
Proposed 1	Education Facility	524395	234512
Proposed 2	Residential	524854	234346
Proposed 3	Residential	524335	234721
Proposed 4	Residential	524835	234708
Proposed 5	Residential	525694	234756
Proposed 6	Residential	525350	234973
Proposed 7	Residential	525406	233155
Proposed 8	Residential	525698	233656

- 6.3.39 The annual, daily and hourly-mean AQS objectives apply at the front and rear façades of all residential properties, the carehome and the educational facilities. The approaches used to predict the concentrations for these different averaging periods are described below.

- 6.3.40 Ecological receptors are considered in **Appendix 6.6**.

Long-Term Pollutant Predictions

- 6.3.41 Annual-mean NO_x and PM₁₀ concentrations have been predicted at representative sensitive receptors using ADMS-Roads, then added to relevant background concentrations. Primary NO in the NO_x emissions is converted to NO₂ to a degree determined by the availability of atmospheric oxidants locally and the strength of sunlight. For road traffic sources, annual-mean NO₂ concentrations have been derived from the modelled road-related annual-mean NO_x concentration using Defra's calculator [ix].

Short-Term Pollutant Predictions

- 6.3.42 In order to predict the likelihood of exceedances of the hourly-mean AQS objectives for NO₂ and the daily-mean AQS objective for PM₁₀, the following relationships between the short-term and the annual-mean values at each receptor have been considered.

Hourly-Mean AQS Objective for NO₂

- 6.3.43 Research undertaken in support of LAQM. TG22 has indicated that the hourly-mean limit value and objective for NO₂ is unlikely to be exceeded at a roadside location where the annual-mean NO₂ concentration is less than 60 µg.m⁻³. The threshold of 60 µg.m⁻³ NO₂ has been used as the guideline for considering a likely exceedance of the hourly-mean nitrogen dioxide objective.

Daily-Mean AQS Objective for PM₁₀

- 6.3.44 The number of exceedances of the daily-mean AQS objective for PM₁₀ of 50 µg.m⁻³ may be estimated using the relationship set out in LAQM.TG22:

$$\text{Number of Exceedances of Daily Mean of } 50 \mu\text{g.m}^{-3} = -18.5 + 0.00145 * (\text{Predicted Annual-mean PM}_{10})^3 + (206 / \text{Predicted Annual-mean PM}_{10} \text{ Concentration})$$

- 6.3.45 This relationship indicates that the daily-mean AQS objective for PM₁₀ is likely to be met if the predicted annual-mean PM₁₀ concentration is 31.8 µg.m⁻³ or less.
- 6.3.46 The daily mean objective is therefore not considered further within this assessment if the annual-mean PM₁₀ concentration is predicted to be less than 31.5 µg.m⁻³.

Fugitive PM₁₀ Emissions

- 6.3.47 Transport PM₁₀ emissions arise from both the tailpipe exhausts and from fugitive sources such as brake and tyre wear and re-suspended road dust. Improvements in vehicle technologies are reducing PM₁₀ exhaust emissions; therefore, the relative importance of fugitive PM₁₀ emissions is increasing. Current official vehicle emission factors for particulate matter include brake dust and tyre wear which studies suggest may account for approximately one-third of the total particulate emissions from road transport; but not re-suspended road dust (which remains unquantified).

Significance Criteria

- 6.3.48 The EPUK & IAQM Land-Use Planning & Development Control: Planning For Air Quality document [v] advises that:

“ The significance of the effects arising from the impacts on air quality will depend on a number of factors and will need to be considered alongside the benefits of the development in question. Development under current planning policy is required to be sustainable and the definition of this includes social and economic dimensions, as well as environmental. Development brings opportunities for reducing emissions at a wider level through the use of more efficient technologies and better designed buildings, which could well displace emissions elsewhere, even if they increase at the development site. Conversely, development can also have adverse consequences for air quality at a wider level through its effects on trip generation.”

- 6.3.49 When describing the air quality impact at a sensitive receptor, the change in magnitude of the concentration should be considered in the context of the absolute (i.e. long-term average) concentration at the sensitive receptor. **Table 6.5** provides the EPUK & IAQM approach for describing the long-term air quality impacts at sensitive human-health receptors in the surrounding area.

Table 6.5 – Impact Descriptors for Individual Sensitive Receptors

Long term average concentration at receptor in assessment year	% Change in concentration relative to Air Quality Assessment Level			
	1	2-5	6-10	>10
75 % or less of AQAL	Negligible	Negligible	Slight	Moderate
76 -94 % of AQAL	Negligible	Slight	Moderate	Moderate
95 - 102 % of AQAL	Slight	Moderate	Moderate	Substantial
103 – 109 % of AQAL	Moderate	Moderate	Substantial	Substantial
110 % or more than AQAL	Moderate	Substantial	Substantial	Substantial

1. AQAL = Air Quality Assessment Level, which may be an air quality objective, limit value, or an Environment Agency 'Environmental Assessment Level (EAL)'.
2. 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.
3. The table is only designed to be used with annual mean concentrations.
4. Descriptors for individual receptors only; the overall significance is determined using professional judgement. For example, a 'moderate' adverse impact at one receptor may not mean that the overall impact has a significant effect. Other factors need to be considered.
5. When defining the concentration as a percentage of the AQAL, use the 'without scheme' concentration where there is a decrease in pollutant concentration and the 'with scheme;' concentration for an increase.
6. The total concentration categories reflect the degree of potential harm by reference to the AQAL value. At exposure less than 75% of this value, i.e. well below, the degree of harm is likely to be small. As the exposure approaches and exceeds the AQAL, the degree of harm increases. This change naturally becomes more important when the result is an exposure that is approximately equal to, or greater than the AQAL.

7. It is unwise to ascribe too much accuracy to incremental changes or background concentrations, and this is especially important when total concentrations are close to the AQAL. For a given year in the future, it is impossible to define the new total concentration without recognising the inherent uncertainty, which is why there is a category that has a range around the AQAL, rather than being exactly equal to it.
- 6.3.50 The human-health impact descriptors above apply at individual receptors. The EPUK & IAQM guidance states that the impact descriptors “are not, of themselves, a clear and unambiguous guide to reaching a conclusion on significance. These impact descriptors are intended for application at a series of individual receptors. Whilst it maybe that there are ‘slight’, ‘moderate’ or ‘substantial’ impacts at one or more receptors, the overall effect may not necessarily be judged as being significant in some circumstances. ”
- 6.3.51 Professional judgement by a competent, suitably qualified professional is required to establish the significance associated with the consequence of the impacts. This judgement is likely to take into account the extent of the current and future population exposure to the impacts and the influence and/or validity of any assumptions adopted during the assessment process
- 6.3.52 In terms of site suitability, the EPUK & IAQM guidance considers an exceedance of an air quality objective at a building façade to be a significant adverse effect unless provision is made to reduce the resident’s or occupant’s exposure by some means.
- 6.3.53 This significance criteria differs from the magnitude and sensitivity categorisation in other EIA chapters. This is because the EPUK & IAQM guidance has its own specific criteria to determine the magnitude and sensitivity of the receptors and the determine significance. In particular the EPUK & IAQM significance criteria have more categories than the EIA significance of effects matrix and therefore have not been used in this chapter.

Uncertainties and Limitations

- 6.3.54 All air quality assessment tools, whether models or monitoring measurements, have a degree of uncertainty associated with the results. The choices that the practitioner makes in setting-up the model, choosing the input data, and selecting the baseline monitoring data will decide whether the final predicted impact should be considered a central estimate, or an estimate tending towards the upper bounds of the uncertainty range (i.e. tending towards worst-case).
- 6.3.55 The atmospheric dispersion model itself contributes some of this uncertainty, due to it being a simplified version of the real situation: it uses a sophisticated set of mathematical equations to approximate the complex physical and chemical atmospheric processes taking place as a pollutant is released and as it travels to a receptor. The predictive ability of even the best model is limited by how well the turbulent nature of the atmosphere can be represented.
- 6.3.56 Each of the data inputs for the model, listed earlier, will also have some uncertainty associated with them. Where it has been necessary to make assumptions, these have

- mainly been made towards the upper end of the uncertainty range informed by an analysis of relevant, available data.
- 6.3.57 The atmospheric dispersion model used for this assessment, ADMS Roads, has been validated by its supplier and is widely used by professionals in the UK and overseas. A site-specific verification (calibration) provides additional certainty and is particularly important when air quality levels are close to exceeding the objectives/limit values.
- 6.3.58 LAQM.TG22 requires that local authorities verify the results of any detailed modelling undertaken for the purposes of fulfilling their R&A duties. Model verification refers to the checks that are carried out on model performance at a local level. Modelled concentrations are compared with the results of monitoring. Where there is a disparity between modelled and monitored concentrations, the first step is to review the appropriateness of the data inputs to determine whether the performance of the model can be improved. Once reasonable efforts have been made to reduce the uncertainties in the data inputs, an adjustment may be established and applied to reduce any remaining disparity between modelled and monitored concentrations. No adjustment factor is deemed necessary where the modelled concentrations are within 25% of the monitored concentrations.
- 6.3.59 For the verification and adjustment of NO_x/NO₂ concentrations for R&A purposes, it is recommended that the comparison involves a combination of automatic and diffusion monitoring, rather than a single automatic monitor. This is to ensure any adjustment factor derived is representative of all locations modelled and not unduly weighted towards the characteristics at a single site. Where only diffusion tubes are used for the model verification, the study should consider a broad spread of monitoring locations across the study area to provide sufficient information relating to the spatial variation in pollutant concentrations.
- 6.3.60 Monitoring undertaken by RPS has been used within a model verification study for the Proposed Development and has been included at **Appendix 6.4**.
- 6.3.61 The main components of uncertainty in the total predicted concentrations, made up of the background concentration and the modelled fraction, include those summarised in **Table 6.6**.

Table 6.6 - Approaches to Dealing with Uncertainty used Within the Assessment

Concentration	Source of Uncertainty	Approach to Dealing with Uncertainty	Comments
Background Concentration	Characterisation of future baseline air quality (i.e. the air quality conditions in the future assuming that the development does not proceed)	The future background concentration used in the assessment is the same as the current background concentration and no reduction has been assumed. This is a conservative assumption as, in reality, background concentrations are likely to reduce over time as cleaner vehicle technologies form an increasing proportion of the fleet.	The background concentration is the major proportion of the total predicted concentration. The conservative assumptions adopted ensure that the background concentration used within the model should lead to a forecast concentration that is towards the top of the uncertainty range, rather than a central estimate.
Fraction from Modelled Sources	Traffic flow estimates	High growth assumptions have been used to develop the traffic dataset used within the model.	The modelled fraction is a minor proportion of the total predicted concentration.
	Traffic speed estimates	Estimated average traffic speeds have been used within the model. The average speed has been reduced in congested areas to take account of slow-moving and queuing traffic.	
	Road-related emission factors – projection to future years	The most recently published emission factors have been used within the modelling and these are based on the current and best understanding of the variation in emission factors in future years.	
	Meteorological Data	Uncertainties arise from any differences between the conditions at the met station and the development site, and between the historical met years and the future years. These have been minimised by using meteorological data collated at a representative measuring site. The model has been run for a full year of	

Concentration	Source of Uncertainty	Approach to Dealing with Uncertainty	Comments
		meteorological conditions. This means that the conditions in 8,760 hours have been considered in the assessment.	
	Dispersion Modelling	The model predictions have been compared with monitored concentrations. The model outputs have been adjusted accordingly. The fractional bias indicates that the model is performing well.	

- 6.3.62 The analysis of the component uncertainties indicates that, overall, the predicted total concentration is likely to be towards the top of the uncertainty range rather than being a central estimate. The actual concentrations that will be found when the development is operational are unlikely to be higher than those presented within this report and are more likely to be lower.

6.4 BASELINE CONDITIONS

6.4.1 The background concentration often represents a large proportion of the total pollution concentration, so it is important that the background concentration selected for the assessment is realistic. National Planning Practice Guidance and EPUK & IAQM guidance highlight public information from Defra and local monitoring studies as potential sources of information on background air quality. LAQM.TG22 recommends that Defra mapped concentration estimates are used to inform background concentrations in air quality modelling and states that: "Where appropriate these data can be supplemented by and compared with local measurements of background, although care should be exercised to ensure that the monitoring site is representative of background air quality".

6.4.2 For this assessment, the background air quality has been characterised by drawing on information from the following public sources:

- Defra maps [x], which show estimated pollutant concentrations across the UK in 1 km grid squares;
- Published results of local authority Review and Assessment (R&A) studies of air quality, including local monitoring and modelling studies; and
- Concentrations monitored during a six-month monitoring scheme undertaken by RPS at background locations.

6.4.3 A detailed description of how the baseline air quality has been derived for this Proposed Development site is summarised in the following paragraphs.

The Current Baseline

6.4.4 Monitors at urban background locations measure concentrations away from the local influence of emission sources and are therefore broadly representative of residential areas within large conurbations. Monitoring at local urban background locations is considered an appropriate source of data for the purposes of describing baseline air quality for this Proposed Development site.

6.4.5 RPS used diffusion tubes to monitor NO₂ at five urban background locations across the Proposed Development site. The measured annual-mean concentrations are presented in **Table 6.7**. The diffusion tube locations are shown in Figure 6.1.1 in **Appendix 6.1**.

Table 6.7 - Passively Monitored Urban Background Annual-Mean NO₂ Concentrations

Monitor Code	Location		Concentration
	x	y	
RPS4	524395	235419	8.32
RPS6	525458	234824	8.33
RPS7	525921	235638	10.4
RPS8	526391	235609	8.17
RPS9	526282	235410	8.26
RPS15	525912	232971	10.19

All concentrations have been annualised and bias adjusted

- 6.4.6 Defra's total annual-mean NO₂ concentration estimates have been collected for the 1 km grid squares of the monitoring sites and the Proposed Development and are summarised in **Table 6.8**.

Table 6.8 - Defra Mapped Annual-Mean Background NO₂ Concentration Estimates

Monitor Code	Approximate Distance from closest point of Application Site (km)	Concentration (µg.m-3)	
		Monitored	Estimated Defra Mapped
RPS4	0.35	8.32	7.82
RPS6	0.25	8.33	8.54
RPS7	0.00	10.4	8.54
RPS8	0.40	8.17	7.40
RPS9	0.45	8.26	7.40
RPS15	0.60	10.19	8.62
Proposed Development (maximum across the Site)			10.3

- 6.4.7 For NO₂, the Defra mapped background concentration estimates are similar to the results from monitoring. The background annual-mean NO₂ concentration has been derived from the average of the monitored data, 8.9 ug.m-3.
- 6.4.8 In the absence of PM₁₀ and PM_{2.5} at this site, the background annual-mean concentrations at the Application Site have been derived from the Defra mapped background concentration estimate.
- 6.4.9 **Table 6.9** Summarises the annual-mean background concentrations for NO₂, PM₁₀ and PM_{2.5} used in this assessment.

Table 6.9 - Annual-mean background concentrations

Pollutant	Data Source	Concentration (µg.m-3)
NO ₂	Average of measured background concentrations from project-specific monitoring scheme	8.9
PM ₁₀	Defra Mapped (2021)	13.8
PM _{2.5}		7.5

The Projected Future Baseline

- 6.4.10 Historically the view has been that background traffic-related NO₂ concentrations in the UK would reduce over time, due to the progressive introduction of improved vehicle technologies and increasingly stringent limits on emissions. After a prolonged period through the last decade where background annual-mean NO₂ concentrations did not generally decrease in line with expectations, the most recent monitoring studies indicate ambient traffic-related NO₂ concentrations are now falling. To ensure that the assessment takes a conservative approach, no reduction in the background has been applied for future years.

6.5 POTENTIAL EFFECTS

Construction Stage

- 6.5.1 The type of activities that could cause fugitive dust emissions are: demolition; earthworks; handling and disposal of spoil; wind-blown particulate material from stockpiles; handling of loose construction materials; and movement of vehicles, both on and off site.
- 6.5.2 The level and distribution of construction dust emissions will vary according to factors such as the type of dust, duration and location of dust-generating activity, weather conditions and the effectiveness of suppression methods.
- 6.5.3 The main effect of any dust emissions, if not mitigated, could be annoyance due to soiling of surfaces, particularly windows, cars and laundry. However, it is normally possible, by implementation of proper control, to ensure that dust deposition does not give rise to significant adverse effects, although short-term events may occur (for example, due to technical failure or exceptional weather conditions). The following assessment, using the IAQM methodology, predicts the risk of dust impacts and the level of mitigation that is required to control the residual effects to a level that is “not significant”.

Risk of Dust Impacts

- 6.5.4 The volume of the buildings on site that would be demolished has been estimated at between 12,000m³ and 75,000m³. The dust emission magnitude for the demolition phase is classified, using the IAQM dust guidance, as medium.
- 6.5.5 The site area is 220ha. As this is over 110,000m², the dust emission magnitude for the earthworks phase is therefore classified as large.
- 6.5.6 The total volume of the buildings to be constructed would be over 75,000 m³ and the dust emission magnitude for the construction phase is classified as large.
- 6.5.7 Assuming that the maximum number of outwards movements in any one day is over 50 HDVs, the dust emission magnitude for trackout would be classified as large.

Table 6.10 - Dust Emission Magnitude for Demolition, Earthworks, Construction and Trackout

Demolition	Earthworks	Construction	Trackout
Medium	Large	Large	Large

Pathway and Receptor - Sensitivity of the Area

- 6.5.8 All demolition, earthworks and construction activities are assumed to occur within the Site boundary. As such, receptors at distances within 20 m, 50 m, 100 m and 250 m of the site boundary have been identified and are illustrated in Figure 6.1.4 of **Appendix**

6.1. The sensitivity of the area has been classified, and the results are provided in **Table 6.11** below.

Table 6.11 - Sensitivity of the Surrounding Area for Demolition, Earthworks and Construction

Potential Impact	Sensitivity of the Surrounding Area	Reason for Sensitivity Classification
Dust Soiling	High	Residential properties around Clothall Common, on Walnut Avenue and Laxton Gardens to the southwest of the Site, Royston Road and Bygrave Road towards the north of the Site. 10 – 100 high sensitivity receptors located within 20 m of the site boundary (Table 6.2.5, Appendix 6.2)
Human Health	Low	Residential properties around Clothall Common, on Walnut Avenue and Laxton Gardens to the southwest of the Site, Royston Road and Bygrave Road towards the north of the Site. Background PM ₁₀ concentrations for the assessment = 13.8 ug.m-3. 10 – 100 high sensitivity receptors located within 20 m of the site boundary and PM ₁₀ concentrations below 24 ug.mg-3 (Table 6.2.6, Appendix 6.2)
Ecological	Low	Local Nature Reserves (Ivel Springs and Weston Hill) within 20m of site boundary (Table 6.2.7, Appendix 6.2).

6.5.9 The Dust Emission Magnitude for trackout is classified as medium and trackout may occur on roads up to 250 m from the Site. The major routes within 250 m of the Site are North Road, South Road and the A505. The sensitivity of the area has been classified, and the results are provided in **Table 6.12**.

Table 6.12 - Sensitivity of the Surrounding Area for Trackout

Potential Impact	Sensitivity of the Surrounding Area	Reason for Sensitivity Classification
Dust Soiling	High	Between 10 and 100 residential properties aligning North Road and South Road. 10 – 100 high sensitivity receptors located within 20 m of the roads (Table 6.2.5, Appendix 6.2)
Human Health	Low	Between 10 and 100 residential properties aligning North Road and South Road. Background PM ₁₀ concentrations for the assessment = 13.8 µg.m-3

		10 – 100 high sensitivity receptors located within 20 m of the roads and PM ₁₀ concentrations below 24 µg.m ⁻³ (Table 6.2.6, Appendix 6.2).
Ecological	Low	Local Nature Reserve (Ivel Springs) within 20 m of North Road (Table 6.2.7, Appendix 6.2).

Overall Dust Risk

- 6.5.10 The Dust Emission Magnitude has been considered in the context of the Sensitivity of the Area (Tables 6.2.5 to 6.2.7, **Appendix 6.2**) to give the Dust Impact Risk. **Table 6.13** summarises the Dust Impact Risk for the four activities.

Table 6.13 - Dust Impact Risk for Demolition, Earthworks, Construction and Trackout

Source	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	High	High	High
Human Health	Low	Low	Low	Low
Ecology	Low	Low	Low	Low
Risk	Medium	High	High	High

- 6.5.11 Taking the Site as a whole, the overall risk is deemed to be high. The mitigation measures appropriate to a level of risk for the Site as a whole and for each of the phases are set out in Section 6.6.

Post-Completion Stage

- 6.5.12 The 'Worst Case School Option' as outlined in Section 6.3.31 assesses the highest possible level of impact when a school is included within the Proposed Development.
- 6.5.13 The 'No School' option assesses the impacts when no school is included within the Proposed Development.

Assessment of Air Quality Impacts on Surrounding Area – Worst Case School Option

- 6.5.14 This section of the report summarises the future operational-phase air quality impacts of the key pollutants associated with the development traffic of the Proposed Development.

Nitrogen Dioxide (NO₂)

- 6.5.15 **Table 6.14** presents the annual-mean NO₂ concentrations predicted at the façades of existing receptors.

Table 6.14 - Predicted Annual-Mean NO₂ Impacts at Existing Receptors

Receptor ID	Concentration (µg.m-3)		With - Without Dev as % of the AQS Objective	Impact Descriptor
	Without Development	With Development		
1	9.4	9.4	0	Negligible
2	9.7	9.6	0	Negligible
3	9.8	9.7	0	Negligible
4	9.1	9.2	0	Negligible
5	9.7	9.6	0	Negligible
6	10.3	10.1	0	Negligible
7	10.2	10.7	1	Negligible
8	9.6	9.7	0	Negligible
9	10.0	10.1	0	Negligible
10	10.8	10.3	-1	Negligible
11	9.7	9.4	-1	Negligible
12	9.3	9.3	0	Negligible
13	9.5	9.6	0	Negligible
14	9.3	9.3	0	Negligible
15	13.0	13.2	1	Negligible
16	10.0	10.0	0	Negligible
17	9.4	9.4	0	Negligible
18	9.4	9.4	0	Negligible
Maximum	13.0	13.2	-	-
Minimum	9.1	9.2	-	-

- 6.5.16 Predicted annual-mean NO₂ concentrations in the opening year at the façades of the existing receptors are below the AQS objective for NO₂. When the magnitude of change is considered in the context of the absolute concentrations, the impact descriptor is 'negligible'.
- 6.5.17 As all predicted annual-mean NO₂ concentrations are below 60 µg.m-3, the hourly-mean objective for NO₂ is likely to be met at all receptors. The short-term NO₂ impact can be considered 'negligible' and is not considered further within this assessment.
- 6.5.18 Overall, the impact on the surrounding area from NO₂ is considered to be '**Negligible**', using the criteria adopted for this assessment and based on professional judgement.

Particulate Matter (PM₁₀)

6.5.19 **Table 6.15** presents the annual-mean PM₁₀ concentrations predicted at the façades of existing receptors.

Table 6.15 - Predicted Annual-Mean PM₁₀ Impacts at Existing Receptors

Receptor ID	Concentration (µg.m-3)		With - Without Dev as % of the AQS Objective	Impact Descriptor
	Without Development	With Development		
1	14.2	14.3	0	Negligible
2	14.7	14.7	0	Negligible
3	14.8	14.8	0	Negligible
4	14.0	14.0	0	Negligible
5	14.4	14.6	1	Negligible
6	15.4	15.3	0	Negligible
7	15.3	16.1	2	Negligible
8	14.8	14.9	0	Negligible
9	15.3	15.5	1	Negligible
10	15.7	15.3	-1	Negligible
11	14.7	14.4	-1	Negligible
12	14.2	14.4	0	Negligible
13	14.7	14.8	0	Negligible
14	14.2	14.3	0	Negligible
15	16.1	16.3	0	Negligible
16	14.3	14.4	0	Negligible
17	14.0	14.1	0	Negligible
18	14.0	14.0	0	Negligible
Maximum	16.1	16.3	-	-
Minimum	14.0	14.0	-	-

6.5.20 Predicted annual-mean PM₁₀ concentrations in the opening year at the façades of the existing receptors are well below the AQS objective for PM₁₀. When the magnitude of change is considered in the context of the absolute concentrations, the impact descriptor is categorised as '**Negligible**' at all receptors.

6.5.21 As all predicted annual mean PM₁₀ concentrations are below 31.5 µg.m-3, the daily-mean PM₁₀ objective is expected to be met at all receptors and the short-term PM₁₀ impact is not considered further within this assessment.

- 6.5.22 Overall, the impact on the surrounding area from PM₁₀ is considered to be '**Negligible**', using the criteria adopted for this assessment and based on professional judgement.

Fine Particulate Matter (PM_{2.5})

- 6.5.23 **Table 6.16** presents the annual-mean PM_{2.5} concentrations predicted at the façades of existing receptors.

Table 6.16 - Predicted Annual-Mean PM_{2.5} Impacts at Existing Receptors

Receptor ID	Concentration (µg.m-3)		With - Without Dev as % of the AQS Objective	Impact Descriptor
	Without Development	With Development		
1	7.7	7.8	0	Negligible
2	8.0	8.0	0	Negligible
3	8.1	8.1	0	Negligible
4	7.6	7.6	0	Negligible
5	7.9	8.0	0	Negligible
6	8.4	8.3	0	Negligible
7	8.3	8.7	2	Negligible
8	8.1	8.1	0	Negligible
9	8.3	8.5	1	Negligible
10	8.5	8.3	-1	Negligible
11	8.0	7.8	-1	Negligible
12	7.7	7.8	0	Negligible
13	8.0	8.1	0	Negligible
14	7.8	7.8	0	Negligible
15	8.9	9.0	1	Negligible
16	7.8	7.9	0	Negligible
17	7.7	7.7	0	Negligible
18	7.6	7.7	0	Negligible
Maximum	8.9	9.0	-	-
Minimum	7.6	7.6	-	-

- 6.5.24 Predicted annual-mean PM_{2.5} concentrations in the opening year (2040) at the façades of the existing receptors are below the current AQS objective of 20 µg.m-3 for PM_{2.5} at all receptors and the target of 10 µg.m-3 to be met by the end of 2040. When the magnitude of change is considered in the context of the absolute concentrations, the impact descriptor is categorised as '**Negligible**' at all receptors.

- 6.5.25 Overall, the impact on the surrounding area from PM_{2.5} is considered to be '**Negligible**', using the criteria adopted for this assessment and based on professional judgement.

Assessment of New Population Exposure (Site Suitability)

- 6.5.26 This section of the report summarises the operational-phase air quality impacts on future occupants of the development from their exposure to the prevailing levels of air pollution, which can be a factor in the suitability of the Site for its proposed uses.
- 6.5.27 **Table 6.17** presents the annual-mean NO₂, PM₁₀ and PM_{2.5} concentrations predicted at the façades of proposed receptors.

Table 6.17 - Predicted NO₂, PM₁₀ and PM_{2.5} Concentrations (µg.m-3) at Proposed Receptors

Receptor ID	Annual-mean NO ₂	Annual-mean PM ₁₀	Annual-mean PM _{2.5}
Proposed 1	9.3	14.2	7.7
Proposed 2	9.2	14.2	7.7
Proposed 3	9.7	14.8	8.1
Proposed 4	9.7	14.9	8.1
Proposed 5	9.4	14.4	7.8
Proposed 6	9.6	14.8	8.1
Proposed 7	9.3	14.1	7.7
Proposed 8	9.5	14.4	7.9
Maximum	9.7	14.9	8.1
Minimum	9.2	14.1	7.7

- 6.5.28 The long-term and short-term objectives apply at the Proposed Development.
- 6.5.29 The predicted annual-mean NO₂ concentrations range between 9.2 and 9.7 µg.m-3, well below the annual-mean AQS objective of 40 µg.m-3 at all receptors. Furthermore, as the annual-mean NO₂ concentration is predicted to be less than 60 µg.m-3, the hourly-mean AQS objective is expected to be met.
- 6.5.30 The predicted annual-mean PM₁₀ concentrations range between 14.1 and 14.9 µg.m-3, well below the annual-mean AQS objective of 40 µg.m-3 at all receptors. Furthermore, as the annual-mean PM₁₀ concentration is predicted to be less than 31.5 µg.m-3, the daily-mean AQS objective for this pollutant is expected to be met.
- 6.5.31 Predicted annual-mean PM_{2.5} concentrations range between 7.7 and 8.1 µg.m-3. Predicted concentrations at all receptors are below the annual-mean AQS objective of 20 µg.m-3 and the future target of 10 µg.m-3 to be met by the end of 2040.

Assessment of Air Quality Impacts on Surrounding Area –No School Option On the Application Site (Option 2)

6.5.32 This section of the report summarises the future operational-phase air quality impacts of the key pollutants associated with the development traffic of the Proposed Development.

Nitrogen Dioxide (NO₂)

6.5.33 **Table 6.18** presents the annual-mean NO₂ concentrations predicted at the façades of existing receptors.

Table 6.18 - Predicted Annual-Mean NO₂ Impacts at Existing Receptors

Receptor ID	Concentration (µg.m ⁻³)		With - Without Dev as % of the AQS Objective	Impact Descriptor
	Without Development	With Development		
1	9.4	9.4	0	Negligible
2	9.7	9.6	0	Negligible
3	9.8	9.7	0	Negligible
4	9.1	9.1	0	Negligible
5	9.7	9.6	0	Negligible
6	10.3	10.1	-1	Negligible
7	10.2	10.6	1	Negligible
8	9.6	9.7	0	Negligible
9	10.0	10.1	0	Negligible
10	10.8	10.3	-1	Negligible
11	9.7	9.4	-1	Negligible
12	9.3	9.3	0	Negligible
13	9.5	9.6	0	Negligible
14	9.3	9.3	0	Negligible
15	13.0	13.1	0	Negligible
16	10.0	10.0	0	Negligible
17	9.4	9.4	0	Negligible
18	9.4	9.4	0	Negligible
Maximum	13.0	13.1	-	-
Minimum	9.1	9.1	-	-

6.5.34 Predicted annual-mean NO₂ concentrations in the opening year at the façades of the existing receptors are below the AQS objective for NO₂. When the magnitude of change is considered in the context of the absolute concentrations, the impact descriptor is 'negligible'.

- 6.5.35 As all predicted annual-mean NO₂ concentrations are below 60 µg.m⁻³, the hourly-mean objective for NO₂ is likely to be met at all receptors. The short-term NO₂ impact can be considered 'negligible' and is not considered further within this assessment.
- 6.5.36 Overall, the impact on the surrounding area from NO₂ is considered to be '**Negligible**', using the criteria adopted for this assessment and based on professional judgement.

Particulate Matter (PM₁₀)

- 6.5.37 Table 6.19 presents the annual-mean PM₁₀ concentrations predicted at the façades of existing receptors.

Table 6.19 - Predicted Annual-Mean PM₁₀ Impacts at Existing Receptors

Receptor ID	Concentration (µg.m ⁻³)		With - Without Dev as % of the AQS Objective	Impact Descriptor
	Without Development	With Development		
1	14.2	14.3	0	Negligible
2	14.7	14.7	0	Negligible
3	14.8	14.8	0	Negligible
4	14.0	14.0	0	Negligible
5	14.4	14.6	1	Negligible
6	15.4	15.2	-1	Negligible
7	15.3	16.0	2	Negligible
8	14.8	14.9	0	Negligible
9	15.3	15.5	0	Negligible
10	15.7	15.3	-1	Negligible
11	14.7	14.4	-1	Negligible
12	14.2	14.3	0	Negligible
13	14.7	14.8	0	Negligible
14	14.2	14.2	0	Negligible
15	16.1	16.1	0	Negligible
16	14.3	14.4	0	Negligible
17	14.0	14.0	0	Negligible
18	14.0	14.0	0	Negligible
Maximum	16.1	16.1	-	-
Minimum	14.0	14.0	-	-

- 6.5.38 Predicted annual-mean PM₁₀ concentrations in the opening year at the façades of the existing receptors are well below the AQS objective for PM₁₀. When the magnitude of

change is considered in the context of the absolute concentrations, the impact descriptor is categorised as '**Negligible**' at all receptors.

6.5.39 As all predicted annual mean PM₁₀ concentrations are below 31.5 µg.m⁻³, the daily-mean PM₁₀ objective is expected to be met at all receptors and the short-term PM₁₀ impact is not considered further within this assessment.

6.5.40 Overall, the impact on the surrounding area from PM₁₀ is considered to be 'Negligible', using the criteria adopted for this assessment and based on professional judgement.

Fine Particulate Matter (PM_{2.5})

6.5.41 **Table 6.20** presents the annual-mean PM_{2.5} concentrations predicted at the façades of existing receptors.

Table 6.20 - Predicted Annual-Mean PM_{2.5} Impacts at Existing Receptors

Receptor ID	Concentration (µg.m ⁻³)		With - Without Dev as % of the AQS Objective	Impact Descriptor
	Without Development	With Development		
1	7.7	7.8	0	Negligible
2	8.0	8.0	0	Negligible
3	8.1	8.1	0	Negligible
4	7.6	7.6	0	Negligible
5	7.9	8.0	0	Negligible
6	8.4	8.3	-1	Negligible
7	8.3	8.7	2	Negligible
8	8.1	8.1	0	Negligible
9	8.3	8.4	0	Negligible
10	8.5	8.3	-1	Negligible
11	8.0	7.8	-1	Negligible
12	7.7	7.8	0	Negligible
13	8.0	8.1	0	Negligible
14	7.8	7.8	0	Negligible
15	8.9	8.9	0	Negligible
16	7.8	7.9	0	Negligible
17	7.7	7.7	0	Negligible
18	7.6	7.7	0	Negligible
Maximum	8.9	8.9	-	-
Minimum	7.6	7.6	-	-

- 6.5.42 Predicted annual-mean PM_{2.5} concentrations in the opening year at the façades of the existing receptors are below the current AQS objective of 20 µg.m-3 and the target of 10 µg.m-3 to be met by the end of 2040. for PM_{2.5} at all receptors. When the magnitude of change is considered in the context of the absolute concentrations, the impact descriptor is categorised as 'Negligible' at all receptors.
- 6.5.43 Overall, the impact on the surrounding area from PM_{2.5} is considered to be 'Negligible', using the criteria adopted for this assessment and based on professional judgement.

Assessment of New Population Exposure (Site Suitability)

- 6.5.44 This section of the report summarises the operational-phase air quality impacts on future occupants of the development from their exposure to the prevailing levels of air pollution, which can be a factor in the suitability of the Site for its proposed uses.
- 6.5.45 **Table 6.21** presents the annual-mean NO₂, PM₁₀ and PM_{2.5} concentrations predicted at the façades of proposed receptors.

Table 6.21 - Predicted NO₂, PM₁₀ and PM_{2.5} Concentrations (µg.m-3) at Proposed Receptors

Receptor ID	Annual-mean NO ₂	Annual-mean PM ₁₀	Annual-mean PM _{2.5}
Proposed 1	9.3	14.2	7.7
Proposed 2	9.2	14.1	7.7
Proposed 3	9.7	14.7	8.0
Proposed 4	9.7	14.9	8.1
Proposed 5	9.3	14.4	7.8
Proposed 6	9.6	14.8	8.1
Proposed 7	9.2	14.1	7.7
Proposed 8	9.5	14.4	7.9
Maximum	9.7	14.9	8.1
Minimum	9.2	14.1	7.7

- 6.5.46 The long-term and short-term objectives apply at the Proposed Development.
- 6.5.47 The predicted annual-mean NO₂ concentrations range between 9.2 and 9.7 µg.m-3, well below the annual-mean AQS objective of 40 µg.m-3 at all receptors. Furthermore, as the annual-mean NO₂ concentration is predicted to be less than 60 µg.m-3, the hourly-mean AQS objective is expected to be met.
- 6.5.48 The predicted annual-mean PM₁₀ concentrations range between 14.1 and 14.9 µg.m-3, well below the annual-mean AQS objective of 40 µg.m-3 at all receptors. Furthermore, as the annual-mean PM₁₀ concentration is predicted to be less than 31.5 µg.m-3, the daily-mean AQS objective for this pollutant is expected to be met.

- 6.5.49 Predicted annual-mean PM_{2.5} concentrations range between 7.7 and 8.1 µg.m⁻³. Predicted concentrations at all receptors are below the annual-mean AQS objective of 20 µg.m⁻³.

Embedded Mitigation

- 6.5.50 Defra's Interim Planning Guidance for PM_{2.5} Targets requires that consideration be given to how exposure to PM_{2.5} has been considered in site selection and what mitigation will be implemented to reduce emissions of PM_{2.5}, as well as reduce PM_{2.5} exposure.
- 6.5.51 Specifically, the guidance provides the following prompts for consideration:
- How has exposure to PM_{2.5} been considered when selecting the development site; and
 - What actions and/or mitigations have been considered to reduce PM_{2.5} exposure for development users, and nearby receptors, and to reduce emissions of PM_{2.5} and its precursors.
- 6.5.52 **Table 6.22** provides a summary of how the Proposed Development has taken into consideration PM_{2.5} exposure and emissions. Where required, additional mitigation measures are included in Section 6.6: Mitigation Measures

Table 6.22 - Consideration of PM_{2.5} Exposure and Emissions at the Proposed Development

Embedded and Implemented Mitigation Measures for PM_{2.5}	
Onsite exposure (i.e. future users)	Residential dwellings set back from roads and other sources of pollution. Promotion of sustainable travel
Offsite exposure (i.e. existing receptors)	Potential contributions to redevelopment of Baldock Railway Station Updates to Baldock Road Network – rerouting of traffic away from sensitive receptors.
Proposed Development emissions	Provision of EV charging Promotion of green areas within development.

6.6 MITIGATION MEASURES

Construction Stage

- 6.6.1 The IAQM dust guidance lists mitigation measures for low, medium and high-risk sites.
- 6.6.2 The IAQM dust guidance states that "For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be 'not significant'." The IAQM dust guidance recommends that significance is only assigned to the effect after the activities are considered with mitigation in place and that the mitigation is secured by for example planning conditions, a legal obligation, or by legislation.
- 6.6.3 These measures will be included in the Outline Construction Environmental Management Plan (OCEMP) and future detailed CEMPs to be submitted for phases and RMAs. As summarised in **Table 6.13**, the predicted Dust Impact Risk is classified as medium for demolition and high for construction, earthworks and trackout. The general site measures described as 'highly recommended' for high-risk sites are listed below. The 'highly recommended' measures for medium risk demolition and high-risk construction, earthworks and trackout are also listed.

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
- Display the head or regional office contact information

Dust Management Plan

- Develop and implement a Dust Management Plan (DMP) (which may include measures to control other emissions), approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the Site. The DMP may include monitoring of dust.

Site Management

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off- site, and the action taken to resolve the situation in the logbook.

- Hold regular liaison meetings with other high risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.

Monitoring

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of the site boundary, with cleaning to be provided if necessary.
- Carry out regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Agree dust deposition, dust flux, or real-time PM₁₀ continuous monitoring locations with the Local Authority. Commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. A shorter monitoring period or concurrent upwind and downwind monitoring may be agreed by the local authority. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction [xi].

Preparing and Maintaining the Site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. Use screening intelligently where possible – e.g. locating site offices between potentially dusty activities and the receptors.
- Erect solid screens or barriers around the site boundary.
- Fully enclose site or specific operations where there is a high potential for dust production and the Site is active for an extended period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Depending on the duration that stockpiles will be present and their size - cover, seed, fence or water to prevent wind whipping.

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 practicable.

- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate)
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

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 suppression/mitigation, using non-potable water where possible.
- Use enclosed chutes, conveyors and covered skips, where practicable.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- Avoid bonfires and burning of waste materials.

Medium Risk Measures Specific to Demolition

- Ensure effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.

High Risk Measures Specific to Construction

- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.

- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.

High Risk Measures Specific to Trackout

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as soon as practicable any material tracked out of the Site. This may require the sweeper being continuously in use.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the Site).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10 m from receptors where possible.

Post-Completion Stage

Mitigation for the Operational Impact of the Development on the Surrounding Area

- 6.6.4 When the change in concentration at existing sensitive receptors is considered in the context of the future concentration, the overall air quality impact on the surrounding area as a whole is categorised as '**Negligible**' and the resulting effect is considered to be 'not significant'. On that basis, no mitigation measures are considered necessary.

Mitigation for New Population Exposure (Site Suitability)

- 6.6.5 The predicted pollutant concentrations at proposed sensitive receptors are below the relevant AQS objectives. As such, the air quality effect of exposure on future occupants is considered to be '**Negligible**' and therefore 'not significant'. On that basis, no mitigation measures are considered necessary.

6.7 RESIDUAL EFFECTS

Construction Stage

- 6.7.1 Provided the package of mitigation measures is implemented, the residual construction dust effects will not be significant. The IAQM dust guidance states that "For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation". Hence the residual effect will be '**Negligible**' and therefore is not considered to be a significant effect. The IAQM dust guidance recommends that significance is only assigned to the effect after the activities are considered with mitigation in place.

Post-Completion Stage

- 6.7.2 It is generally considered good practice that, where possible, an assessment should communicate effects both numerically and descriptively. Professional judgement by a competent, suitably qualified professional is required to establish the significance associated with the consequence of the impacts.
- 6.7.3 Given that change in concentration at existing sensitive receptors as a whole is categorised as '**Negligible**' and that predicted pollutant concentrations at proposed sensitive receptors for the Proposed Development are below the AQS objectives, using professional judgement, the overall residual air quality effect is considered to be "not significant".
- 6.7.4 There will therefore be a '**Negligible**' impact on the local air quality and health of the existing community living in the vicinity.

Summary of Effects

Potential Effect	Significance (pre-mitigation)	Mitigation Measure	Significance of residual effect
Construction Stage			
Impact of suspended particulate matter on human-health and deposited dust (nuisance) on human-health and nuisance	Not applicable. The IAQM dust guidance recommends that significance is only assigned to the effect after the activities are considered with mitigation in place.	The OCEMP and subsequent detailed CEMPS will include measures to reduce creation of dust, increase distance between dusty processes and receptors and measures to manage and monitor dust. A full list of mitigation measures outlined in detail in Section 6.6.	Negligible
Post-Completion Stage			

Impact of concentrations of NO ₂ , PM ₁₀ and PM _{2.5} on existing receptors.	Negligible	None	Negligible
Impact of concentrations of NO ₂ , PM ₁₀ and PM _{2.5} on human-health of future occupants of the development.	Negligible	None	Negligible

6.8 CUMULATIVE EFFECTS

Construction Phase

- 6.8.1 During the construction phase, there is the potential for cumulative effects where two or more Proposed Developments are within 500m of each other; and then only for receptors within 250 m of both developments. Cumulative effects would then only be experienced if construction works on multiple schemes were to take place simultaneously. Of the cumulative schemes listed in Chapter 2 (Proposed Development) it has been identified that the Land east of Rhee Spring and Orwell View, Royston Road development is located within 500m of the Site. The risk of dust impacts is best mitigated at source. It is assumed that any surrounding construction sites and developments would implement dust mitigation and controls proportionate to the level of risk as set out in IAQM guidance, as appropriate, to be secured by planning condition through a CEMP and there should be no significant residual cumulative air quality effect.

Operational Phase

- 6.8.2 During the operational phase, cumulative effects have been considered to the extent that the traffic from other developments has been included in the traffic data provided for this assessment. The other developments included within the traffic data provided are described in Chapter 4 (Transport) of this ES. As outlined in Section 6.6, the resulting air quality effect is considered to be '**Negligible**' and 'not significant' overall.

6.9 REFERENCE LIST

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- i Communities and Local Government, December 2024, National Planning Policy Framework
 - ii Defra, 2010, The Air Quality Standards Regulations.
 - iii The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020
 - iv Defra, 2007, The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. Volume 2.
 - v EPUK & IAQM, January 2017, Land-Use Planning & Development Control: Planning For Air Quality
 - vi IAQM, 2024, Guidance on the assessment of dust from demolition and construction
 - vii Defra, 2022, Local Air Quality Management Technical Guidance, 2022 (LAQM.TG22)
 - viii British Standard Institute, 1983, BS 6069:Part 2:1983, ISO 4225-1980 Characterization of air quality. Glossary
 - ix <http://laqm.defra.gov.uk/review-and-assessment/tools/tools.html>
 - x Drawn from Defra Maps at <http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018>
 - xi IAQM, 2012, Air Quality Monitoring in the Vicinity of Demolition and Construction Sites