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Air Quality Assessment

Land east of Blackmore Farm, Sandridge Common,
Melksham

Air Quality Assessment

Project: LAND EAST OF BLACKMORE FARM, SANDRIDGE
COMMON, MELKSHAM

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1. EXECUTIVE SUMMARY

- 1.1 Cass Allen has been instructed by Gleeson Land Ltd to assess the potential air quality effects associated with a proposed residential development at Land east of Blackmore Farm, Sandridge Common, Melksham in Wiltshire. The assessment was carried out referencing relevant local and national planning policy and guidance.
- 1.2 The site is not located within or near an Air Quality Management Area (AQMA), indicating that local air quality is generally acceptable. Pollutant concentrations in the vicinity of the site are primarily influenced by vehicle emissions along the A3102 Sandridge Common and the local road network. Agricultural sources in the vicinity are also likely to influence background pollutant concentrations.
- 1.3 Potential construction phase dust soiling and particulate matter (PM: PM₁₀) health effects were assessed qualitatively, resulting in Medium and Low Risk levels being identified, respectively, in the absence of mitigation. Suitable best practice mitigation measures have been recommended, and no significant residual air quality impacts are expected.
- 1.4 The suitability of the site was appraised using local monitoring data to determine future air quality conditions at proposed receptor locations. A detailed atmospheric dispersion model was utilised to predict NO₂, PM₁₀ and PM_{2.5} concentrations at relevant existing receptor locations within the study area during the operational phase. The findings indicate that pollutant concentrations at all locations will be below the relevant AQOs during the operational phase.
- 1.5 Furthermore, no significant impacts on local air quality are anticipated as a result of development-generated traffic. Taking into account the predicted extent and magnitude of changes in NO₂, PM₁₀ and PM_{2.5} concentrations at relevant receptors, the overall effect of the development is considered to be 'not significant', with regard to air quality, with no requirement for additional mitigation.
- 1.6 In summary, it is our view that the site is suitable for the development in terms of air quality and that there are no air quality constraints with respect to planning consent.

2. INTRODUCTION

- 2.1 Cass Allen has been instructed by Gleeson Land Ltd to assess the potential air quality effects associated with a proposed residential development at Land east of Blackmore Farm, Sandridge Common, Melksham in Wiltshire. The assessment has been carried out referencing relevant local and national planning policy and guidance.
- 2.2 A planning application including 650 dwellings was submitted in 2023 for the 'Phase 1' site, immediately west of this site ('Phase 2') (reference: PL/2023/01949), and included an AQA as part of the Environmental Impact Assessment (EIA). The AQA, as detailed in Environmental Statement Chapter 13 – Air Quality, concluded that there would be no significant residual construction phase impacts, following the implementation of suitable best practice mitigation, and no significant residual operational phase impacts with no requirement for additional mitigation. Planning permission was refused on non-air quality grounds. However, a subsequent 2023 application (reference: PL/2023/11188) with a reduced number of dwellings (500) was approved in May 2025.
- 2.3 The aim of the assessment is to consider air quality conditions, and their potential to influence the development in terms of its design, scale and layout, taking into account the following aspects:
- Dust and PM emissions generated by construction phase activities;
 - Exhaust emissions from construction plant and traffic;
 - The exposure of new sensitive receptors to elevated pollutant concentrations
 - Emissions from traffic generated by the operation of the development; and
 - Potential cumulative impacts with respect to Phase 1, in relation to the above.
- 2.4 Subsequently, where required, appropriate measures are identified to minimise the impacts.
- 2.5 This report contains technical terminology; a glossary of terms can be found at www.cassallen.co.uk/glossary.

3. PROJECT DESCRIPTION AND SITE CONTEXT

3.1 This assessment has been undertaken to inform the:

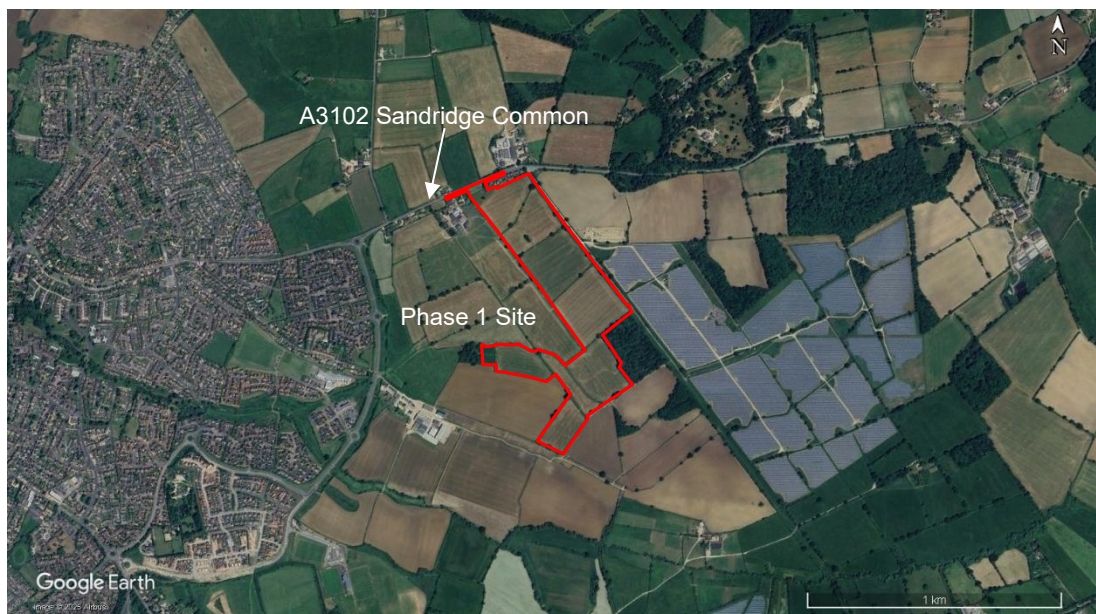
Outline application for the erection of up to 275 dwellings (including affordable), associated infrastructure, landscape and biodiversity enhancements, all matters reserved except for access from Sandridge Common.

3.2 The site is not located within or near an AQMA, indicating that air quality in the vicinity is generally acceptable. The site is currently open farmland and is located in a rural area to the east of Melksham town. It is bounded to the north by a small residential estate along A3102 Sandridge Common, to the east by a solar farm and to the south by further farmland.

3.3 Immediately west of the site is a draft allocation in the emerging plan, of which part of the allocation received outline planning permission in May 2025 for up to 500 dwellings, employment land and land for a primary school (ref: PL/2023/11188). This has the potential to be affected by emissions associated with both the construction and operational phases of the development, in addition to nearby existing dwellings.

3.4 The site location is shown in Figure 1.

Figure 1 Site Location and Surrounding Area



4. LEGISLATION AND PLANNING POLICY

Air Quality Legislation

- 4.1 The wider air quality legislation underpinning national, regional and local planning policy, is summarised in Appendix 1.
- 4.2 The National AQOs and Air Quality Standards Regulations limit and target values for the UK are summarised in the Air Quality Strategy. These limits, for ten key air pollutants, are based on both European Union directives and World Health Organization (WHO) guidelines. They are periodically updated, informed by the latest scientific evidence, to protect public health, vegetation and ecosystems. The Local Air Quality Management (LAQM) regime requires local authorities to regularly evaluate the air quality in their areas based on these AQOs.
- 4.3 As a regional pollutant, many sources of PM_{2.5} are beyond local authority control therefore, it does not form part of the LAQM regime. However, long-term (2040) targets for ambient PM_{2.5} concentrations are set in 'The Environmental Targets (Fine Particulate Matter) (England) Regulations' (2023), and an interim (2028) target is published in the 'Environmental Improvement Plan' (2023). PM_{2.5} is a key air pollutant for health impacts, and local authorities must monitor progress towards meeting these reduced levels.
- 4.4 The National AQOs for the pollutants most associated with vehicle emissions, and therefore applicable to this assessment, are detailed in Table 1.

Table 1 UK National Air Quality Objectives

Pollutant	Objective	Averaging Period
Nitrogen Dioxide (NO ₂)	40µg/m ³	Annual mean
	200µg/m ³ not to be exceeded more than 18 times per year	1-hour mean
Particulate Matter (PM ₁₀)	40µg/m ³	Annual mean
	50µg/m ³ not to be exceeded more than 35 times per year	24-hour mean
Particulate Matter (PM _{2.5})	20µg/m ³	Annual mean

- 4.5 The above AQOs are typically applied where there is 'relevant exposure', i.e., where members of the public are likely to be present for the relevant averaging periods, or regularly exposed, and not in workplaces where relevant provisions concerning health and safety at work apply.

National Policy

- 4.6 Outline guidance for the assessment of air quality affecting new developments is given in the 'National Planning Policy Framework' (NPPF) (December 2024; as amended February 2025). Relevant sections in this case are included in Appendix 1.

Local Policy

4.7 The Wiltshire Council (WC) planning policy relevant to air quality is summarised in Appendix 1.

4.8 To address the requirements of the national and local policies, the following key air quality matters have been considered:

- Construction phase fugitive emissions of dust and PM impacts at existing receptors;
- Construction phase plant and vehicle emissions impacts at existing receptors;
- Operational phase vehicle emissions exposure at proposed receptors; and
- Operational phase vehicle emissions impacts at existing receptors.

5. ASSESSMENT METHODOLOGY

- 5.1 The scope and methodology for this assessment have been determined with regard to:
- Defra 'LAQM Technical Guidance' (May 2025) (LAQM.TG22); and
 - Environmental Protection UK (EPUK) & Institute of Air Quality Management (IAQM), 'Land Use Planning & Development Control: Planning for Air Quality' (January 2017) (LUPDC).

- 5.2 Reference has also been made to other relevant technical guidance, where applicable.

Construction Phase

- 5.3 The assessment of potential air quality impacts during the construction phase has focused on the generation and dispersion of dust and PM₁₀, following the IAQM 'Guidance on the Assessment of Dust from Demolition and Construction' (January 2024) methodology, summarised as follows:
- Step 1 – screen the need for an assessment: consider impacts to sensitive human and ecological receptors within 250m or 50m of the site boundary, respectively (indicated on Figure 2), and within 50m of a route used by construction vehicles up to 250m from the site entrance.
 - Step 2A – estimate the dust emission magnitude for each of the main construction activities – demolition, earthworks, general construction, and trackout.
 - Step 2B – determine the sensitivity of the receiving environment, through consideration of factors such as meteorological conditions, number of nearby receptors, their proximity and sensitivity. Other factors to consider are detailed in Box 9 of the guidance. A wind rose for nearby Larkhill meteorological station is included in Appendix 2.
 - Step 2C – define the risk of impacts.
 - Step 3 – identify site-specific mitigation requirements (in addition to basic project controls).
- 5.4 The IAQM methodology has been used to assess the potential impact of dust and PM₁₀ arising from onsite activities. As indicated within the guidance, the use of professional judgment is necessary, due to the diverse range of projects that are subject to dust impact assessment, meaning that it is not possible to be prescriptive as to how to assess the impacts.
- 5.5 In addition, exhaust emissions from construction vehicles and plant may impact local air quality. The potential for significant effects resulting from these emissions has also been considered with reference to screening and significance criteria in LUPDC.
- 5.6 A review of the Multi-Agency Geographic Information for the Countryside (MAGIC) website did not identify any statutory designated ecological sites within the relevant screening distances, and therefore these have been excluded from the construction phase assessment.

Operational Phase

- 5.7 Concentrations of NO₂, PM₁₀ and PM_{2.5} have been considered in the operational phase assessment as road traffic is a major source of these pollutants and their concentrations are often close to, or in exceedance of, the relevant AQOs in urban locations.

Air Quality Impacts

- 5.8 LUPDC indicates the magnitude of change in traffic flows that is potentially significant, and therefore likely to require further assessment, as follows:
- 5.9 For roads distant from an AQMA:
- Light Duty Vehicle (LDV) flows of >500 Annual Average Daily Traffic (AADT); and/or
 - Heavy Duty Vehicle (HDV) flows of >100 AADT.
- 5.10 In locations where these thresholds are not exceeded, detailed assessment of air quality impacts is not normally required, and the resulting effect can be considered 'not significant'. These criteria were, therefore, used to inform the study area, in liaison with the project's Transport Consultant (i-Transport LLP).

Site Suitability

- 5.11 The development also has the potential to expose future users to elevated pollutant concentrations. As such, an appraisal of predicted exposure is required to address planning requirements.

Modelled Receptors

- 5.12 Cambridge Environmental Research Consultants' (CERC) ADMS-Roads (version 5.1.0.2) atmospheric dispersion model has been used to predict pollutant concentrations both without and with the development in place at existing sensitive receptor (R) and committed sensitive receptor (CR) locations, as detailed in Table 2.

Table 2 Modelled Receptor Locations

ID	Description	Grid Reference (OSGB)	Height (m)*
R1	1 Sandridge Common	392786.8, 164578.1	1.5
R2	255 Sandridge Common	392483.8, 164479.3	
R3	289 Sandridge Common	392358.0, 164397.2	
R4	Linnet Lane	392052.6, 164268.2	
R5	82 Sandridge Common	391866.4, 164228.7	
R6	3 Vines Court	391577.0, 164214.2	
R7	91 Sandridge Road	391472.2, 164239.0	
R8	83 Sandridge Road	391378.0, 164217.4	

ID	Description	Grid Reference (OSGB)	Height (m)*
R9	Sandridge Road	390880.1, 164235.4	
R10	37 Lowbourne	390809.2, 164236.7	
R11	23 Union Street	390700.8, 163996.0	
R12	The Manor School	390703.3, 163943.0	
R13	14A Lowbourne	390618.9, 163871.3	
R14	28 Bank Street	390478.6, 163967.0	
R15	Linnet Lane	392126.7, 164250.1	
R16	Goldfinch Road	392199.3, 163927.8	
R17	19 Thyme Road	391991.1, 163398.9	
R18	Rosebrook Gardens	391198.0, 163000.0	
R19	3 Spa Road	390526.7, 163598.4	
R20	2 Spa Road	390544.8, 163564.1	
R21	1 Lavender Close	391154.8, 163112.5	
R22	12 Clover Close	391112.0, 163110.4	
R23	1 King Street, flat 1	390472.6, 163564.7	
R24	Market Place, flat above 'Refa Tandoori' restaurant	390461.0, 163556.4	4.5
R25	77 Semington Road	390293.6, 162951.3	1.5
R26	9 Bradford Road	390057.1, 164075.3	
R27	37 Bath Road, flat above 'Melksham Beauty Clinic'	390387.1, 164117.3	4.5
R28	18 Conway Crescent	390874.5, 162792.8	1.5
CR1	Façade of Phase 1 Development	392284.7, 164330.3	
CR2	Façade of Phase 1 Development	392464.2, 164414.6	

* To represent the average adult breathing zone above floor level and to align with Defra national background modelling used within this assessment.

5.13 A review of the MAGIC website did not identify any statutory designated ecological sites in the vicinity of roads affected by significant changes in traffic flows, and therefore, these have been excluded from the operational phase assessment.

5.14 To assess the local air quality effects of the development, the following scenarios have been modelled:

- 2024 – Model Verification;
- 2028 – Anticipated Opening Year, Without Development; and
- 2028 – Anticipated Opening Year, With Development + Phase 1.

5.15 The study area, including modelled road links and receptors, is shown in Figure 2 below.

- 5.16 Details of the traffic data used in the model are included in Appendix 3, and other model inputs such as emission factors, verification and adjustment, in Appendix 4. In order to present a robust, cumulative assessment, the development-generated flows for both Phase 1 and Phase 2 have been combined in the 'with development' scenario, and both developments excluded in the 'without development' scenario.

PM_{2.5} Targets

- 5.17 Additionally, Defra's 'PM_{2.5} Targets: Interim Planning Guidance' (October 2024), prompts developers to consider:

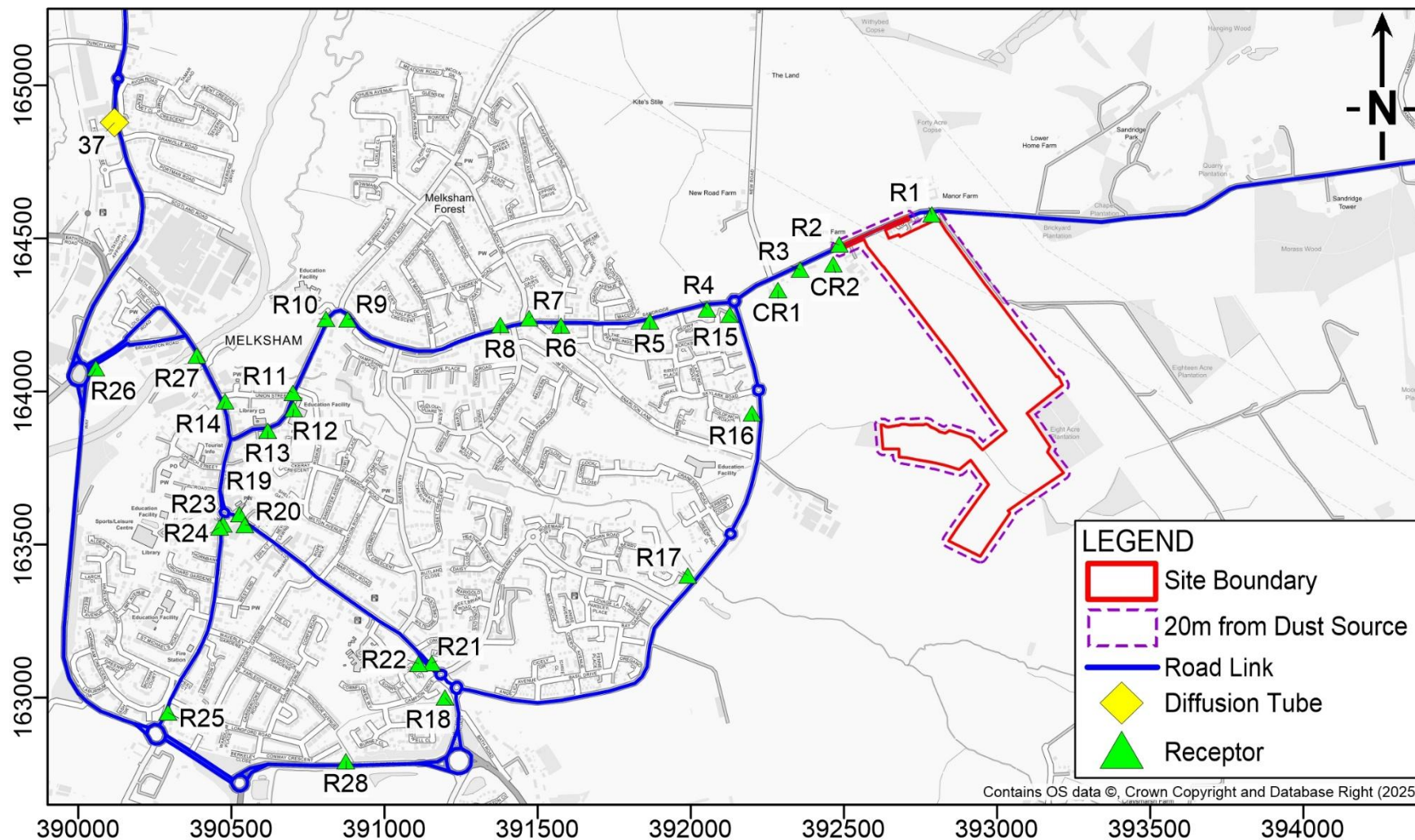
1. *How has exposure to PM_{2.5} been considered when selecting the development site?*
2. *What actions and/or mitigations have been considered to reduce PM_{2.5} exposure for development users and nearby receptors (houses, hospitals, schools etc.) and to reduce emissions of PM_{2.5} and its precursors?*

- 5.18 Accordingly, these aspects are also considered in the operational phase assessment.

Significance Criteria

- 5.19 Significance criteria applicable to the assessment of vehicle emissions impacts have been derived from LUPDC. Where the 'without' and 'with' development pollutant concentrations are predicted at an individual receptor, the guidance recommends expressing the magnitude of incremental change as a proportion of the Air Quality Assessment Level (normally the applicable AQO).
- 5.20 LUPDC significance criteria applicable to the assessment of impacts at existing receptors are included in Appendix 5. It should be noted that, in line with LUPDC, *'the criteria should not be applied rigidly; in some instances, it may be appropriate to amend them on the basis of professional judgement... the objective is to identify situations where there is a possibility of a significant effect on local air quality.'*
- 5.21 For proposed receptors, nearby monitored pollutant concentrations have been compared to the relevant AQOs to determine the potential for exceedance, and therefore, the suitability of the site for the proposed use.

Figure 2 Study Area



6. BASELINE CONDITIONS

- 6.1 Air quality conditions in the vicinity of the site have been reviewed to provide a baseline for consideration. The closest collected data are included in the tables below and were obtained from WC and Defra. Monitoring locations are indicated on Figure 2.

Table 3 WC Monitored Concentrations Across Study Area – NO₂

ID	Location	Type	Distance to site (km)	Monitored Annual Mean (µg/m ³)				
				2020	2021	2022	2023	2024
37	Melksham N	Roadside	2.48	27.0	29.0	27.2	22.2	21.8

Note: Data obtained from WC 2025 Air Quality Annual Status Report (ASR) (2025). 2020 / 2021 results are likely to be atypical due to COVID-19 travel restrictions.

- 6.2 As indicated in Table 3 above, annual mean NO₂ concentrations recorded at diffusion tube 37 were well below (defined by the IAQM as <75% of) the relevant AQOs during the most recent monitoring years, 2020-2024. The general trend shows air quality conditions at this site improving over time, which is also the case across the wider district, as illustrated in Figures A.1, A.2 and A.3 of the WC ASR.

Table 4 Mapped Background Annual Mean Concentrations Across Study Area (µg/m³)

2024				2028			
*NO _x	NO ₂	PM ₁₀	PM _{2.5}	NO _x	NO ₂	PM ₁₀	PM _{2.5}
6.3 - 10.5	5.1 - 8.2	11.0 - 12.1	6.5 - 7.2	5.6 - 9.1	4.5 - 7.2	10.6 - 11.8	6.2 - 6.9

Note: Data obtained from <https://uk-air.defra.gov.uk/data/laqm-background-home>. A range is given as the study area spans multiple grid squares. * Nitrogen oxides (nitric oxide (NO) & NO₂).

- 6.3 No monitoring of PM₁₀ or PM_{2.5} is undertaken in the vicinity of the site. However, Defra-predicted background concentrations for 2024 and 2028 are well below (defined by the IAQM as less than 75% of) the relevant AQOs. These background concentrations are later combined with roadside modelling results to provide total predicted environmental concentrations at receptor locations.

7. CONSTRUCTION PHASE ASSESSMENT

- 7.1 Sensitive receptors were identified within the relevant IAQM screening distances, therefore, the assessment progressed to Step 2, which has been summarised in the tables below.

Table 5 Step 2A – Dust Emission Magnitude for Construction Activities

Activity	Magnitude	Explanation
Demolition	N/A	Site is currently vacant.
Earthworks	Large	Total site area >110,000m ² , potentially dusty soil type, >10 heavy earth moving vehicles active at any one time.
Construction	Large	Total building volume >75,000m ³ .
Trackout	Large	20-50 HDV outward movements per day, potentially dusty surface material, unpaved road length >100m.

Table 6 Step 2B – Sensitivity of the Area

Potential Impact	Details	Construction Activity		
		Earthworks	Construction	Trackout
Dust Soiling: Amenity	10-100 High sensitivity receptors within 20m of site boundary*	Medium	Medium	Medium
PM ₁₀ : Health	As above and low background PM ₁₀ concentration	Low	Low	Low

* Assumes completion of Phase 1.

Table 7 Step 2C – Summary of Impact Risks to Define Site-Specific Mitigation

Potential Impact	Construction Activity		
	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	Medium
Human Health	Low	Low	Low

- 7.2 It should be noted that the prevailing winds are south-westerly (as shown in Figure 2) and thus, locations to the north-east, downwind of the site, are most at risk of construction dust impacts. As a robust case, the development is considered Medium Risk for dust soiling effects and Low Risk for PM₁₀ health effects, in the absence of mitigation. Following implementation of the recommended mitigation measures for the relevant activities' risk levels in Appendix 6, it is anticipated that the residual effect of the construction phase will be not significant.
- 7.3 With regard to construction traffic, the construction phase flows are not expected to exceed the criteria detailed in paragraph 5.9 and therefore, significant residual effects are not anticipated.

8. OPERATIONAL PHASE ASSESSMENT

Site Suitability

- 8.1 As detailed in Section 6, measured annual mean NO₂ concentrations at diffusion tube 37 were well below the AQO during the five most recent monitoring years, 2020-2024. This monitoring is undertaken along Beanacre Road, which carries significantly more traffic than Sandridge Common adjacent to the development. Thus, vehicle emissions at this location are expected to be elevated due to a greater number of vehicles and potential for congestion. As such, concentrations recorded here are considered robust with respect to the more rural site location, where traffic is typically sparser and more free flowing, and proposed dwellings will be set back from the roadside.
- 8.2 Regarding PM₁₀ and PM_{2.5}, Defra background concentrations are predicted to be well below the respective annual mean AQOs. Given that these pollutants are largely influenced by regional sources, concentrations at the site are expected to be approaching background levels and any local contributions from road vehicle emissions are not likely to lead to exceedances.
- 8.3 With recently monitored local annual mean NO₂ concentrations at tube 37 below 60µg/m³, a breach of the hourly mean AQO for NO₂ at the site is unlikely (as indicated in LAQM.TG22). Equally, exceedances of the 24-hour mean AQO for PM₁₀ at the site are not anticipated, as Defra-predicted annual mean background concentrations are below the 32µg/m³ proxy value.
- 8.4 Accordingly, it is not anticipated that proposed receptors would be exposed to exceedances of the relevant AQOs; therefore, the site is considered suitable for the proposed use, with no requirement for additional assessment or mitigation.
- 8.5 In addition to the above, Defra guidance requires consideration of how a development will reduce exposure to PM_{2.5}. In terms of selecting this development site, which is in an area where PM_{2.5} concentrations are expected to be well below the AQO and where there is no requirement to reduce exposure further, exposure to PM_{2.5} has been considered. Furthermore, the site provides new amenity areas for existing and future residents, including play areas and allotments, away from primary emissions sources.

Air Quality Impacts

- 8.6 To assess the potential air quality impacts resulting from operational phase development-generated vehicle emissions for Phases 1 and 2 combined, at existing receptor locations, dispersion modelling has been undertaken to quantify pollutant concentrations in both 'without development' and 'with development' scenarios. A summary of the worst-case impacts is provided in Table 8, with full model results detailed in Appendix 7.

Table 8 Worst-Case Predicted Operational Impacts at Existing Receptors in 2028

Pollutant	Receptor	Annual Mean Concentration (µg/m³)			Change (% AQO)	Impact Descriptor
		AQO	Without	With		
Highest Absolute Concentrations						
NO ₂	R26	40	28.3	28.9	1.6	Negligible
PM ₁₀	R26	40	16.1	16.3	0.5	Negligible
PM _{2.5}	R26	20	9.2	9.3	0.5	Negligible
Maximum Predicted Changes						
NO ₂	R2	40	10.8	12.9	5.2	Negligible
PM ₁₀	R2	40	12.4	13.1	2.0	Negligible
PM _{2.5}	R2	20	7.3	7.7	2.1	Negligible

Note: Results are reported to the nearest 0.1 $\mu\text{g}/\text{m}^3$. Any apparent discrepancies are due to rounding.

- 8.7 No existing receptors are expected to experience pollutant concentrations in excess of the relevant annual mean AQOs. Furthermore, the impact at all receptor locations is considered 'Negligible' in accordance with LUPDC.
- 8.8 As such, based on the extent of predicted population exposure to NO₂, PM₁₀ and PM_{2.5} impacts, the overall effect of the development is considered 'not significant' with regard to air quality.
- 8.9 Nonetheless, in addition to the above, Defra guidance requires consideration of how a development will reduce emissions of PM_{2.5}. The development will include a Travel Plan intended to encourage the transition to more sustainable forms of transport, with lower emissions of PM_{2.5} and other pollutants. Additionally, by providing on site amenity areas and pedestrian and cycle linkages to the Phase 1 site and beyond, the development will minimise the requirement for private car trips.

9. CONCLUSIONS

- 9.1 Cass Allen was instructed by Gleeson Land Ltd to assess the potential air quality effects associated with a proposed residential development at Land east of Blackmore Farm, Sandridge Common, Melksham in Wiltshire. The assessment was carried out regarding relevant local and national planning policy and guidance.
- 9.2 Potential construction phase dust soiling and PM₁₀ health effects were assessed qualitatively, resulting in Medium and Low Risk levels being identified, respectively, in the absence of mitigation. Suitable best practice mitigation measures have been recommended, and no significant residual air quality impacts are expected.
- 9.3 The suitability of the site was appraised using local monitoring data to determine future air quality conditions at proposed receptor locations. A detailed atmospheric dispersion model was utilised to predict NO₂, PM₁₀ and PM_{2.5} concentrations at relevant existing receptor locations within the study area during the operational phase. The findings indicate that pollutant concentrations at all locations will be below the relevant AQOs during the operational phase.
- 9.4 Furthermore, no significant impacts on local air quality are anticipated as a result of development-generated traffic. Taking into account the predicted extent and magnitude of changes in NO₂, PM₁₀ and PM_{2.5} concentrations at relevant receptors, the overall effect of the development is considered to be 'not significant', with regard to air quality, with no requirement for additional mitigation.
- 9.5 In summary, it is our view that the site is suitable for the development in terms of air quality and that there are no air quality constraints with respect to planning consent.

Appendix 1 Air Quality Legislation and Policy

Legislation

Defra and the Devolved Administrations (2007) - The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volumes 1 and 2):

The Air Quality Strategy provides a framework for reducing air pollution in the UK, with the aim of meeting the requirements of European Union (EU) legislation. This has been brought into UK law via the EU (Withdrawal) Act 2018 (as amended) and is referred to as 'retained EU law'.

The air quality standards set within the Air Quality Strategy are recommended by the Expert Panel on Air Quality Standards (EPAQS) and the World Health Organisation (WHO), based on current scientific knowledge regarding the effects of each pollutant on health and the environment.

The AQOs are medium-term policy-based targets set by the government, taking into account economic efficiency, practicability, feasibility and timescales. Whilst some of the AQOs correspond with the EPAQS / WHO limits, others have a margin of tolerance, by specifying a number of permitted exceedances of the standard over a given period.

Many of the AQOs in the Air Quality Strategy have been made statutory in England via The Air Quality (England) Regulations, 2000, The Air Quality (England) Amendment Regulations, 2002 and The Air Quality Standards (Amendment) Regulations, 2016 – Statutory Instrument 2016 No. 1184.

Environmental Protection Act (1990):

Section 79 of the Environmental Protection Act 1990 defines statutory nuisance relevant to dust and particles as:

Any dust, steam, smell or other effluvia arising from industrial, trade or business premises or smoke, fumes or gases emitted from premises so as to be prejudicial to health or a nuisance...

Any accumulation or deposit which is prejudicial to health or a nuisance.

Furthermore, Section 80 states that where a statutory nuisance is shown to exist, the Local Authority must serve an abatement notice. Failure to comply with an abatement notice is an offence and if necessary, the Local Authority may abate the nuisance and recover expenses. However, there are no statutory limit values for dust deposition above which 'nuisance' is deemed to exist and nuisance is a subjective concept, its perception being highly dependent upon the existing conditions and the change which has occurred.

Environment Act (2021):

The Act mandates that local authorities review and document local air quality within their jurisdiction by way of staged appraisals and respond accordingly, with the aim of meeting the AQOs defined in the Regulations. There is a requirement for local authorities to identify relevant sources of emissions that are likely to be responsible for any failure to achieve the AQOs, or to identify relevant sources within neighbouring authorities' areas. Where the objective(s) are not likely to be achieved within the relevant period(s), the authority is required to designate an AQMA. For each AQMA the Local Authority is required to draw up an Air Quality Action Plan (AQAP) to secure improvements in air quality, in order to work towards achieving air quality standards in the future.

Defra (2019) Clean Air Strategy:

The UK Government's Clean Air Strategy sets out the comprehensive actions required to improve air quality, required from all parts of government and society.

The primary focus of previous iterations of the Clean Air Strategy has been NO₂, and its principal source – road traffic. The 2019 Strategy broadens the focus into other areas, including actions on clean growth and pollutant emissions from other sources such as industry, agriculture, and domestic wood-burning stoves.

Policy

National

NPPF sections relevant to air quality are stated below for planning policy context:

110. *...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.*
187. *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 ... air ... pollution. Development should, wherever possible, help to improve local environmental conditions such as air ... quality.*
198. *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.*
199. *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.*
201. *The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.*

Local

The Wiltshire Core Strategy (adopted January 2015) outlines the strategic planning policy for Wiltshire and contains the following policy relevant to this assessment:

Core Policy 55

Air quality

Development proposals, which by virtue of their scale, nature or location are likely to exacerbate existing areas of poor air quality, will need to demonstrate that measures can be taken to effectively mitigate emission levels in order to protect public health, environmental quality and amenity. Mitigation measures should demonstrate how they will make a positive contribution to the aims of the Air Quality Strategy for Wiltshire and where relevant, the Wiltshire Air Quality Action Plan. Mitigation may include:

- i. landscaping, bunding or separation to increase distance from highways and junctions*
- ii. possible traffic management or highway improvements to be agreed with the local authority*
- iii. abatement technology and incorporating site layout/separation and other conditions in site planning*
- iv. traffic routing, site management, site layout and phasing*
- v. where appropriate, contributions will be sought toward the mitigation of the impact a development may have on levels of air pollutants.*

Core Policy 57

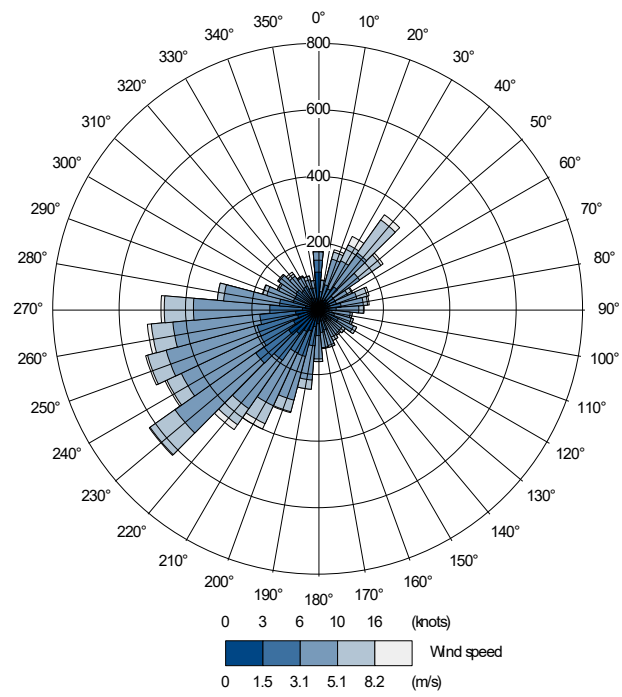
Ensuring high quality design and place shaping

A high standard of design is required in all new developments... Development is expected to create a strong sense of place through drawing on the local context and being complementary to the locality. Applications for new development must be accompanied by appropriate information to demonstrate how the proposal will make a positive contribution to the character of Wiltshire through:

...

- vii having regard to the compatibility of adjoining buildings and uses, the impact on the amenities of existing occupants, and ensuring that appropriate levels of amenity are achievable within the development itself, including the consideration of ... pollution (e.g. ... smoke, fumes, ...).

Appendix 2 Wind Rose for Larkhill (2024)



Appendix 3 Traffic Data

Traffic data for the dispersion model were obtained from i-Transport LLP and supplemented by additional data from Department for Transport (DfT) Traffic Counts. Where necessary, traffic data were converted to the appropriate assessment years using a robust factor derived from Defra Trip End Model Presentation Program (TEMPPro) (version 8.1).

Road Link Details

Link ID	Description	Road Type	Speed (km/h)
1	A350 Beanacre Road, south of Avon Road, roundabout approach/exit	Urban (not London)	10
2	A350 Beanacre Road, north of Granville Road		30
3	A350 Beanacre Road, south of Granville Road, north of Scotland Road, traffic light junction		10
4	A350 Beanacre Road, south of Scotland Road		30
5	A350 roundabout		10
6	A350 Beanacre Road, north of Avon Road, roundabout approach/exit		10
7	A350 Beanacre Road		30
8	A350 Beanacre Road, north of Bath Road		5
9	A350 Beanacre Road, south of Bath Road, north of business park		5
10	A350 Beanacre Road, south of business park, north of Farmers Roundabout		5
11	A350 Beanacre Road, Farmers Roundabout exit		10
12	A350 Beanacre Road, Farmers Roundabout entrance		5
13	Farmers Roundabout		5
14	A3102 Bradford Road eastbound, Farmers Roundabout exit		5
15	A3102 Bradford Road onto Old Broughton Road onto Bath Road		20
16	A3102 Bradford Road westbound, Farmers Roundabout entrance		5
17	New Broughton Road onto A3102 Bradford Road		20
18	A3102 Bath Road, north of Sainsburys/Waitrose mini roundabout		15
19	A3102 Bath Road, south of Sainsburys/Waitrose mini roundabout, north of Union Street		15
20	A3102 Bank Street, south of Union Street		15
21	A3102 Bank Street, north of High Street/Lowbourne, mini roundabout		10
22	A3102 Lowbourne, east of Bank Street/High Street, west of car park, mini roundabout		10
23	A3102 Lowbourne, east of car park, south of Sandridge Road		30
24	A3102 Sandridge Road, mini roundabouts		20
25	A3102 Sandridge Road		30
26	A3102 Sandridge Road, west of Blackmore Road		15
27	A3102 Sandridge Road, east of Blackmore Road		15
28	A3102 Sandridge Road, west of Snarlton Lane		15
29	A3102 Sandridge Common, east of Snarlton Lane, west of The Bramblings		30

Link ID	Description	Road Type	Speed (km/h)
30	A3102 Sandridge Common, east of The Bramblings		45
31	A3102 Sandridge Common, west of roundabout		15
32	Sandridge Common/Eastern Way roundabout		15
33	A3102 Sandridge Common, west of New Road, east of roundabout		15
34	A3102 Sandridge Common, east of New Road, west of Phase 1 site access		10
35	A3102 Sandridge Common, between Phase 1 and 2 site accesses		10
36	A3102 Sandridge Common, east of Phase 2 site access, west of Lopes Close		10
37	A3102 Sandridge Common, east of Lopes Close		45
38	A3102 Sandridge Common onto Sandridge Hill		80
39	Eastern Way, south of Sandridge Common roundabout		15
40	Eastern Way		45
41	Eastern Way, north of roundabout		15
42	Eastern Way/Skylark Road roundabout		15
43	Eastern Way, south of roundabout		15
44	Eastern Way		45
45	Eastern Way, north of roundabout		15
46	Eastern Way/Cranesbill Road roundabout		15
47	Eastern Way, south of roundabout		15
48	Eastern Way onto road south of Barratt Homes Hunters Wood Estate		45
49	Road south of Barratt Homes Hunters Wood Estate, east of Spa Road roundabout		15
50	Spa Road roundabout		15
51	Spa Road between roundabouts		15
52	Spa Road/Snowberry Lane/Campion Drive roundabout		15
53	Spa Road, north of roundabout, south of Longleaze Lane		5
54	Spa Road, north of Longleaze Lane, south of Thornleigh		30
55	Spa Road, north of Thornleigh, west of roundabout		5
56	Spa Road/King Street/Market Place roundabout		5
57	Market Place, north of roundabout, south of Place Road		5
58	High Street, north of Place Road, south of Lowbourne/Bank Street		10
59	Market Place, south of roundabout, north of zebra crossing		5
60	King Street onto Semington Road, south of zebra crossing, north of Peel Court/Hazelwood Road		30
61	Semington Road, south of Peel Court/Hazelwood Road, north of Semington Road Roundabout		15
62	A350 Western Way, south of Farmers Roundabout		10

Link ID	Description	Road Type	Speed (km/h)
63	A350 Western Way		80
64	A350 Western Way, west of Semington Road Roundabout		15
65	Semington Road Roundabout		15
66	A350 Western Way, eastbound, between roundabouts		20
67	A350 Western Way, westbound, between roundabouts		20
68	Western Way Roundabout		15
69	A365 Western Way, east of roundabout		15
70	A365 Western Way		80
71	A365 Western Way, west of The Spa Roundabout		15
72	The Spa Roundabout		15
73	Spa Road, north of The Spa Roundabout		15
74	Spa Road, south of Spa Road roundabout		15

Traffic Data

Link ID	2024 Model Verification		2028 Without Development		2028 With Development	
	AADT	%HDV	AADT	%HDV	AADT	%HDV
1	36,431	6.05	38,713	5.92	39,172	5.85
2	36,431	6.05	38,713	5.92	39,172	5.85
3	36,431	6.05	38,713	5.92	39,172	5.85
4	36,431	6.05	38,713	5.92	39,172	5.85
5	36,431	6.05	38,713	5.92	39,172	5.85
6	36,431	6.05	38,713	5.92	39,172	5.85
7	36,431	6.05	38,713	5.92	39,172	5.85
8	36,431	6.05	38,713	5.92	39,172	5.85
9	36,431	6.05	38,713	5.92	39,172	5.85
10	36,431	6.05	38,713	5.92	39,172	5.85
11	18,216	6.05	19,356	5.92	19,586	5.85
12	18,216	6.05	19,356	5.92	19,586	5.85
13	-	-	25,253	4.46	26,569	4.40
14	-	-	7,418	2.41	7,928	2.26
15	-	-	7,418	2.41	7,928	2.26
16	-	-	7,418	2.41	7,928	2.26
17	-	-	7,418	2.41	7,928	2.26
18	-	-	15,136	1.52	16,157	1.42
19	-	-	15,136	1.52	16,157	1.42
20	-	-	15,136	1.52	16,157	1.42
21	-	-	15,136	1.52	16,157	1.42
22	-	-	10,277	1.15	13,110	0.90

Link ID	2024 Model Verification		2028 Without Development		2028 With Development	
	AADT	%HDV	AADT	%HDV	AADT	%HDV
23	-	-	10,277	1.15	13,110	0.90
24	-	-	7,883	1.68	10,716	1.23
25	-	-	7,883	1.68	10,716	1.23
26	-	-	7,883	1.68	10,716	1.23
27	-	-	8,806	4.19	12,075	3.06
28	-	-	8,806	4.19	12,075	3.06
29	-	-	8,806	4.19	12,075	3.06
30	-	-	8,806	4.19	12,075	3.06
31	-	-	8,806	4.19	12,075	3.06
32	-	-	6,571	4.21	9,398	3.15
33	-	-	8,806	4.19	13,655	2.70
34	-	-	8,806	4.19	13,655	2.70
35	-	-	8,806	4.19	13,655	2.70
36	-	-	8,423	4.20	9,225	3.83
37	-	-	8,423	4.20	9,225	3.83
38	-	-	8,423	4.20	9,225	3.83
39	-	-	8,545	4.24	10,125	3.57
40	-	-	8,545	4.24	10,125	3.57
41	-	-	8,545	4.24	10,125	3.57
42	-	-	8,545	4.24	10,125	3.57
43	-	-	8,545	4.24	10,125	3.57
44	-	-	8,545	4.24	10,125	3.57
45	-	-	8,545	4.24	10,125	3.57
46	-	-	8,545	4.24	10,125	3.57
47	-	-	8,545	4.24	10,125	3.57
48	-	-	8,545	4.24	10,125	3.57
49	-	-	8,545	4.24	10,125	3.57
50	-	-	8,138	4.68	8,899	5.95
51	-	-	11,393	4.78	12,462	4.37
52	-	-	11,393	4.78	12,462	4.37
53	-	-	5,697	4.78	6,231	4.37
54	-	-	11,393	4.78	12,462	4.37
55	-	-	11,393	4.78	12,462	4.37
56	-	-	6,423	4.39	7,266	3.88
57	-	-	2,430	2.29	3,336	1.67
58	-	-	4,859	2.29	6,671	1.67

Link ID	2024 Model Verification		2028 Without Development		2028 With Development	
	AADT	%HDV	AADT	%HDV	AADT	%HDV
59	-	-	4,859	2.29	5,603	1.98
60	-	-	4,859	2.29	5,603	1.98
61	-	-	4,859	2.29	5,603	1.98
62	-	-	13,638	6.82	13,638	6.82
63	-	-	27,275	6.82	27,275	6.82
64	-	-	13,638	6.82	13,638	6.82
65	-	-	16,743	6.22	17,154	6.09
66	-	-	13,638	6.82	13,638	6.82
67	-	-	13,638	6.82	13,638	6.82
68	-	-	19,979	6.15	20,051	6.12
69	-	-	11,852	3.70	12,106	3.62
70	-	-	23,705	3.70	24,212	3.62
71	-	-	11,852	3.70	12,106	3.62
72	-	-	14,136	3.72	14,433	4.61
73	-	-	5,697	4.78	5,953	7.37
74	-	-	11,393	4.78	11,904	7.37

Appendix 4 Dispersion Model Details

Model Details and Input Parameters

Parameter	Value
Emissions Factors	Defra Emissions Factors Toolkit v13.1 using the traffic data in Appendix 3
Emissions Year	2024 for verification, 2028 for future scenarios
Background Concentrations	Defra 2021 background maps – 2024 for verification, 2028 for future scenarios
Surface Roughness	Dispersion site – 0.5m; Meteorological Station – 0.2m
Monin-Obukhov Length	Dispersion site – 30m; Meteorological Station – 10m
Meteorological Data	Hourly sequential, Larkhill (2024)
Road-contribution Adjustment Factor	2.3 – see Model Verification, below
NO _x to NO ₂ conversion	Defra NO _x to NO ₂ Calculator v9.1 and Defra-mapped background concentrations
Street Canyon	Not applicable to this study area
Gradient	Not applicable to this study area

Model Verification

The model has been verified using the LAQM.TG22 methodology. The model has been used to predict 2024 annual mean road-NO_x contributions at a roadside monitoring location within the study area, in line with the Phase 1 AQA model verification. The modelled road-NO_x concentrations have been compared with the 'measured' road-NO_x utilising the Defra NO_x to NO₂ Calculator. Due to the lack of local PM monitoring data, the adjustment factor for NO₂ was also utilised for PM₁₀ and PM_{2.5}, following the LAQM.TG22 methodology.

Model Verification (all concentrations in µg/m³)

Monitor ID	Monitored NO ₂	Background NO ₂	Monitored Road NO _x	Modelled Road NO _x	Ratio
37	21.8	8.2	30.6	13.2	2.3

Appendix 5 Operational Phase Significance Criteria

Long Term Average Concentration at Receptors in Assessment Year	% Change in Concentration Relative to Air Quality Objective (AQO)			
	1	2 – 5	6 – 10	>10
75% or less of AQO	Negligible	Negligible	Slight	Moderate
76 - 94% of AQO	Negligible	Slight	Moderate	Moderate
95 - 102% of AQO	Slight	Moderate	Moderate	Substantial
103 - 109% of AQO	Moderate	Moderate	Substantial	Substantial
110% or more of AQO	Moderate	Substantial	Substantial	Substantial

Notes:

- 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.
- The Table is only designed to be used with annual mean concentrations.
- 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.
- The total concentration categories reflect the degree of potential harm by reference to the AQO 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 AQO, 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 AQO.
- 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 AQO. 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 AQO, rather than being exactly equal to it.
- When defining the concentration as a percentage of the AQO, 'without scheme' concentration should be used where there is a decrease in pollutant concentration and the 'with scheme;' concentration where there is an increase. Where concentrations increase, the impact is described as adverse, and where it decreases as beneficial.
- LUPDC states that an assessment must reach a conclusion on the likely significance of the predicted effect. It should be noted that this is a binary judgement of either it is significant, or it is not significant.

Appendix 6 Recommended Construction Phase Mitigation

Highly Recommended Mitigation Measures for Medium-Risk Sites

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences onsite.
- 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, where applicable.
- 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 Appendix. Further, 'desirable' measures from IAQM guidance should be included as appropriate for the site. The DMP may include monitoring of dust deposition, dust flux, real-time PM₁₀ continuous monitoring and/or visual inspections.

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 complaints log available to the Local Authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on or offsite should be recorded, and the action taken to resolve the situation, in the logbook.

Monitoring

- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues onsite 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. Where possible commence baseline monitoring at least three months before work commences onsite or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.

Preparing and Maintaining the Site

- Plan the site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles onsite.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being reused onsite. If they are being reused onsite cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating Vehicle/Machinery and Sustainable Travel

- Ensure all vehicle operators 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.

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 is available on the site for effective dust/PM suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes/conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available onsite 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.

Measures Specific to Construction (Medium Risk)

- 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 make sure that that appropriate additional control measures are in place.

Measures Specific to Trackout (Medium Risk)

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, 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 onsite haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site logbook.
- 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 where reasonably practicable).
- 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 10m from receptors, where possible.

Appendix 7 Dispersion Model Results

Annual Mean NO₂ Impacts

Receptor	Without (µg/m ³)	With (µg/m ³)	With % of AQO	Change (µg/m ³)	Change (% AQO)	Impact Descriptor
R1	7.7	8.0	19.9	0.3	0.7	Negligible
R2	10.8	12.9	32.3	2.1	5.2	Negligible
R3	9.2	10.7	26.8	1.5	3.8	Negligible
R4	7.3	7.9	19.9	0.7	1.7	Negligible
R5	8.8	9.6	24.1	0.9	2.2	Negligible
R6	8.6	9.4	23.5	0.8	2.0	Negligible
R7	9.3	10.3	25.7	0.9	2.4	Negligible
R8	9.0	9.9	24.8	0.9	2.3	Negligible
R9	10.1	10.8	27.0	0.7	1.7	Negligible
R10	11.7	12.8	31.9	1.0	2.5	Negligible
R11	11.7	12.8	32.0	1.1	2.8	Negligible
R12	10.3	11.1	27.8	0.8	1.9	Negligible
R13	10.8	11.6	29.1	0.9	2.1	Negligible
R14	15.4	15.9	39.8	0.5	1.3	Negligible
R15	7.2	7.7	19.2	0.5	1.4	Negligible
R16	6.4	6.6	16.5	0.2	0.6	Negligible
R17	6.9	7.1	17.7	0.2	0.5	Negligible
R18	8.4	8.7	21.8	0.3	0.8	Negligible
R19	19.0	19.6	48.9	0.6	1.4	Negligible
R20	12.7	13.1	32.8	0.4	0.9	Negligible
R21	20.3	20.9	52.2	0.6	1.5	Negligible
R22	9.6	9.8	24.6	0.2	0.5	Negligible
R23	14.3	15.0	37.4	0.6	1.6	Negligible
R24	9.3	9.5	23.8	0.2	0.5	Negligible
R25	12.4	12.8	32.0	0.4	0.9	Negligible
R26	28.3	28.9	72.3	0.6	1.6	Negligible
R27	10.8	10.9	27.4	0.2	0.4	Negligible
R28	12.1	12.3	30.6	0.1	0.3	Negligible
CR1	6.8	7.3	18.4	0.6	1.5	Negligible
CR2	6.7	7.3	18.2	0.6	1.5	Negligible

Note: Results are reported to the nearest 0.1µg/m³. Any apparent discrepancies in results are due to rounding.

Annual Mean PM₁₀ Impacts

Receptor	Without (µg/m ³)	With (µg/m ³)	With % of AQO	Change (µg/m ³)	Change (% AQO)	Impact Descriptor
R1	11.9	12.0	30.0	0.1	0.3	Negligible
R2	12.4	13.1	32.9	0.8	2.0	Negligible
R3	11.9	12.5	31.2	0.6	1.4	Negligible
R4	11.7	12.0	29.9	0.3	0.8	Negligible
R5	12.7	13.1	32.8	0.5	1.2	Negligible
R6	12.4	12.8	32.1	0.4	1.0	Negligible
R7	12.5	12.9	32.2	0.4	1.0	Negligible
R8	12.5	12.9	32.2	0.4	1.0	Negligible
R9	12.8	13.2	32.9	0.3	0.8	Negligible
R10	13.6	14.1	35.3	0.5	1.3	Negligible
R11	13.5	14.1	35.2	0.6	1.4	Negligible
R12	12.8	13.2	33.0	0.4	0.9	Negligible
R13	13.0	13.4	33.4	0.4	1.0	Negligible
R14	14.5	14.8	36.9	0.2	0.6	Negligible
R15	11.4	11.7	29.2	0.2	0.6	Negligible
R16	11.5	11.6	29.0	0.1	0.2	Negligible
R17	11.9	12.0	30.0	0.1	0.2	Negligible
R18	12.2	12.3	30.8	0.1	0.2	Negligible
R19	13.6	13.8	34.6	0.2	0.5	Negligible
R20	13.0	13.2	32.9	0.2	0.4	Negligible
R21	14.2	14.4	36.0	0.2	0.6	Negligible
R22	12.2	12.3	30.7	0.1	0.2	Negligible
R23	13.0	13.2	33.0	0.2	0.6	Negligible
R24	11.9	12.0	30.0	0.1	0.2	Negligible
R25	14.1	14.2	35.5	0.2	0.4	Negligible
R26	16.1	16.3	40.9	0.2	0.5	Negligible
R27	12.8	12.8	32.0	0.1	0.2	Negligible
R28	14.0	14.0	35.1	<0.1	0.1	Negligible
CR1	11.3	11.5	28.7	0.2	0.6	Negligible
CR2	11.2	11.4	28.5	0.2	0.5	Negligible

Note: Results are reported to the nearest 0.1 µg/m³. Any apparent discrepancies in results are due to rounding.

Annual Mean PM_{2.5} Impacts

Receptor	Without (µg/m ³)	With (µg/m ³)	With % of AQO	Change (µg/m ³)	Change (% AQO)	Impact Descriptor
R1	7.0	7.1	35.3	0.1	0.4	Negligible
R2	7.3	7.7	38.3	0.4	2.1	Negligible
R3	7.0	7.3	36.5	0.3	1.5	Negligible
R4	6.9	7.0	35.2	0.2	0.8	Negligible
R5	7.6	7.8	39.2	0.2	1.2	Negligible
R6	7.5	7.7	38.3	0.2	1.0	Negligible
R7	7.5	7.7	38.5	0.2	1.0	Negligible
R8	7.5	7.7	38.5	0.2	1.0	Negligible
R9	7.4	7.5	37.7	0.2	0.9	Negligible
R10	7.8	8.1	40.3	0.3	1.3	Negligible
R11	8.1	8.4	41.9	0.3	1.5	Negligible
R12	7.7	7.9	39.6	0.2	1.0	Negligible
R13	7.8	8.0	40.0	0.2	1.1	Negligible
R14	8.6	8.8	43.8	0.1	0.6	Negligible
R15	6.8	6.9	34.4	0.1	0.6	Negligible
R16	6.7	6.7	33.5	<0.1	0.2	Negligible
R17	7.1	7.2	35.8	<0.1	0.2	Negligible
R18	7.3	7.3	36.7	<0.1	0.2	Negligible
R19	8.2	8.3	41.4	0.1	0.6	Negligible
R20	7.8	7.9	39.6	0.1	0.4	Negligible
R21	8.3	8.5	42.3	0.1	0.6	Negligible
R22	7.3	7.3	36.6	<0.1	0.2	Negligible
R23	7.8	7.9	39.7	0.1	0.6	Negligible
R24	7.2	7.3	36.4	<0.1	0.2	Negligible
R25	7.9	8.0	40.1	0.1	0.4	Negligible
R26	9.2	9.3	46.3	0.1	0.5	Negligible
R27	7.3	7.4	36.9	<0.1	0.2	Negligible
R28	8.0	8.0	40.0	<0.1	0.1	Negligible
CR1	6.7	6.8	33.9	0.1	0.6	Negligible
CR2	6.6	6.7	33.6	0.1	0.6	Negligible

Note: Results are reported to the nearest 0.1 µg/m³. Any apparent discrepancies in results are due to rounding.



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