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# Air Quality and Minerals Dust Risk Assessment

Land off Hatfield Road and to the South of  
Gardens, Smallford, St Albans AL4 0HN

# Air Quality and Minerals Dust Risk Assessment

**Project:** LAND OFF HATFIELD ROAD AND TO THE SOUTH OF GARDENS, SMALLFORD, ST ALBANS AL4 0HN

**Report reference:** RP01-24326-R1

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REVISION	ISSUE DATE	REPORT BY	CHECKED BY	NOTES
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1	05 December 2025	Hazel Swinfen, BSc (Hons), MIAQM, AMIEnvSc, Senior Air Quality Consultant	Paul Hayward, BSc (Hons) MSc MIAQM MIEnvSc, Technical Director - Air Quality	Revised

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## 1. EXECUTIVE SUMMARY

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- 1.1 Cass Allen has been instructed by Stonebond Properties (St Albans) Limited to assess the potential air quality effects of, and potential dust impacts upon, a proposed residential development at land off Hatfield Road and to the South of Gardens, Smallford, St Albans, AL4 0HN. The assessment was carried out regarding relevant local and national planning policy and guidance.
- 1.2 The site is not located within or near an existing Air Quality Management Area (AQMA), indicating that air quality in the vicinity is generally acceptable. Pollutant concentrations at the site are primarily influenced by vehicle emissions along the local road network.
- 1.3 Potential construction phase dust soiling and particulate matter (PM: PM<sub>10</sub>) 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 An appraisal of the potential exposure of future residents to elevated concentrations of nitrogen dioxide (NO<sub>2</sub>) and PM (PM<sub>10</sub> and PM<sub>2.5</sub>) was also undertaken and pollutant concentrations across the site are expected to be below the relevant Air Quality Objectives (AQOs) when operational. Furthermore, no significant impacts on local air quality are anticipated as a result of vehicle trips associated with the development, with no requirement for additional assessment or mitigation.
- 1.5 A semi-quantitative dust risk assessment was undertaken to consider the impact of the proposed sand and gravel quarry to the east, upon users of the development. The assessment included analysis of local meteorological data and the nature of the relevant dust sources. Based on the results of the assessment, as a robust worst-case, dust generated by the quarry is expected to have a slight adverse effect upon future residents, which is classified by the IAQM as not significant.
- 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

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- 2.1 Cass Allen has been instructed by Stonebond Properties (St Albans) Limited to assess the potential air quality effects of, and potential dust impacts upon, a proposed residential development at land off Hatfield Road and to the South of Gardens, Smallford, St Albans, AL4 0HN. The assessment was carried out regarding relevant local and national planning policy and guidance.
- 2.2 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; and
  - Emissions from traffic generated by the operation of the development.
- 2.3 Additionally, to the east of the site is an area of vacant land with the potential to be developed into a sand and gravel quarry (Hertfordshire County Council application reference: PL/0232/21). It is understood that planning permission has not yet been granted, however, a semi-quantitative dust-risk assessment is presented herein to consider the potential mineral dust impacts at the site.
- 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](http://www.cassallen.co.uk/glossary).

### 3. PROJECT DESCRIPTION AND SITE CONTEXT

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- 3.1 The proposal is for full planning permission for 52 dwellings (including 50% affordable housing) with access off Hatfield Road, associated hard and soft landscaping and open space.
- 3.2 The site currently comprises vacant land with scrub and scattered trees with mature vegetation on the northern, eastern and western boundaries. The north-east corner is made up of hardstanding associated with the historic use of the area for storage by the garden centre. The site also contains a small building and associated area of hardstanding which is currently used for the sale and display of camping equipment. Access to the site is taken through an area of grassland that currently forms part of an overflow car park for the garden centre.
- 3.3 With regard to air quality, the site is not located within or near an existing AQMA, indicating that air quality in the vicinity is generally acceptable. Pollutant concentrations at the site are primarily influenced by vehicle emissions along the local road network. The site is bordered by residential properties and their gardens along the northern and western boundaries and a short-stay carpark to the southeast. All of which have the potential to be affected by construction and operational phase emissions generated by the development.
- 3.4 Beyond the garden centre is an area of vacant land proposed to become a sand and gravel quarry (Hertfordshire County Council application reference: PL/0232/21) which, if permitted, would have the potential to cause mineral dust impacts at the site.
- 3.5 The site (red) and proposed quarry (blue) locations are shown in Figure 1 below.

**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<sub>2.5</sub> are beyond local authority control therefore, it does not form part of the LAQM regime. However, long-term (2040) targets for ambient PM<sub>2.5</sub> 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<sub>2.5</sub> 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 <sub>2</sub> )	40µg/m <sup>3</sup>	Annual mean
	200µg/m <sup>3</sup> not to be exceeded more than 18 times per year	1-hour mean
Particulate Matter (PM <sub>10</sub> )	40µg/m <sup>3</sup>	Annual mean
	50µg/m <sup>3</sup> not to be exceeded more than 35 times per year	24-hour mean
Particulate Matter (PM <sub>2.5</sub> )	20µg/m <sup>3</sup>	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.

### Dust Legislation

- 4.6 Section 79 of the Environmental Protection Act 1990 defines statutory nuisance 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';* and

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

- 4.7 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.

### **National Policy**

- 4.8 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**

- 4.9 There is currently no St Albans policy in relation to air quality or dust. However, the draft Local Plan 2041 Regulation 19 publication (2024) contains the following policies related to this assessment:

*HW1 – Air and Noise Pollution*

*Development proposals, including those for new residential dwellings... or in areas which may exceed national legislative air quality pollution limits, must carry out suitable assessments for... air pollution.*

*Proposals which are found to be affected by... air pollution must demonstrate suitable mitigation, including as required:*

*a) Maintaining distances between road and other sources of... air pollution (including odour pollution) and people;*

*b) Using green infrastructure, in particular trees, where this can create a barrier or maintain separation between sources of pollution and receptors;*

*c) Appropriate means of filtration, [and] ventilation... on affected buildings;*

*d) Effective control of dust and emissions from construction, operation and demolition;*

*e) Use of optimal layout and orientation to promote avoidance of elevated pollution without mitigation which will reduce the level of mitigation where necessary;*

*f) Air quality... assessments at the earliest stage of development.*

*Development proposals that would generate new... air pollution in proximity to residential... uses must demonstrate and put in place measures to avoid or mitigate any such impacts.*

Strategic Policy SP8 - Transport Strategy

*The Council will prioritise the use of active and sustainable transport modes and deliver accessibility improvements to the transport and highways network by:...*

*f) Requiring new development to assess future air quality impacts from transport, where necessary, including funding contributions to wider schemes that will mitigate the impact of the scheme being proposed where appropriate...*

4.10 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;
- Potential mineral dust impacts at proposed receptors; and
- Operational phase vehicle emissions impacts at existing receptors.

## 5. ASSESSMENT METHODOLOGY

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- 5.1 The scope and methodology for this assessment have been determined with regard to:
- Defra 'LAQM Technical Guidance' (May 2025) (LAQM.TG22);
  - Institute of Air Quality Management (IAQM) Guidance on the Assessment of Mineral Dust Impacts for Planning (May 2016); and
  - Environmental Protection UK (EPUK) & 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 PM<sub>10</sub>, 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, the number of nearby receptors, their proximity and their sensitivity. Other factors to consider are detailed in Box 9 of the guidance. A wind rose for nearby Luton 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 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.
- 5.5 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**

### **Air Quality**

- 5.6 Concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> 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**

- 5.7 The LUPDC guidance indicates the magnitude of change in traffic flows that is potentially significant, and therefore likely to require further assessment, as follows:
- 5.8 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.
- 5.9 The development has therefore been screened against these criteria. Where these thresholds are not exceeded, a detailed assessment of air quality impacts is not normally required, and the resulting effect can be considered 'not significant'.

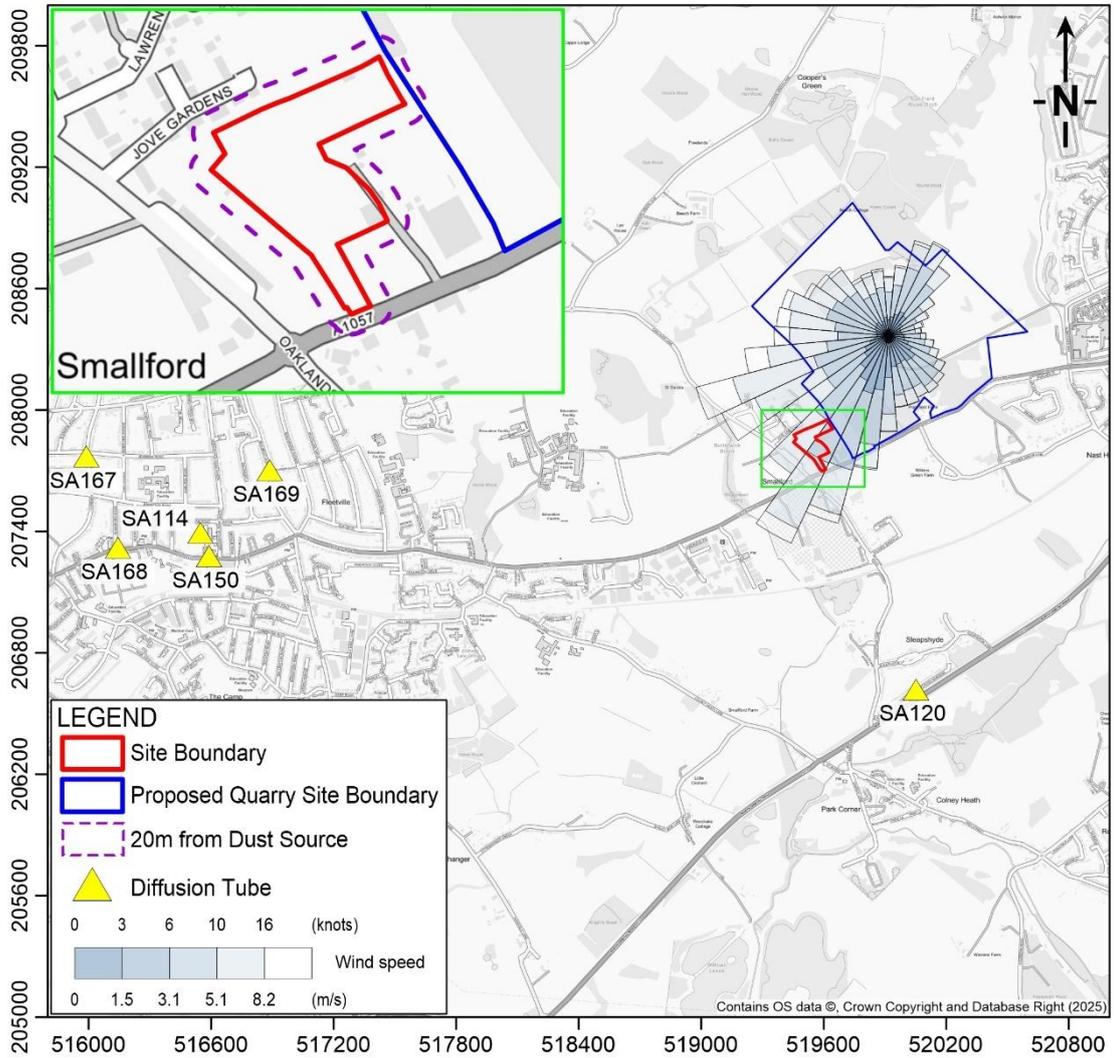
### **Site Suitability**

- 5.10 The development also has the potential to expose future users to elevated pollutant concentrations. Recently recorded pollutant concentrations in the locality have been compared to the relevant AQOs to determine likely conditions at the site and its suitability for the proposed residential use.
- 5.11 Additionally, Defra's 'PM<sub>2.5</sub> Targets: Interim Planning Guidance' (October 2024), prompts developers to consider:
1. *How has exposure to PM<sub>2.5</sub> been considered when selecting the development site?*
  2. *What actions and/or mitigations have been considered to reduce PM<sub>2.5</sub> exposure for development users and nearby receptors (houses, hospitals, schools etc.) and to reduce emissions of PM<sub>2.5</sub> and its precursors?*
- 5.12 Accordingly, these aspects are also considered in the operational phase assessment.

### **Minerals Dust**

- 5.13 A semi-quantitative dust risk assessment has been undertaken following the methodology outlined in Appendix 3 and assumed worst-case inputs.

**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 collected data are included in the tables below and were obtained from St. Albans City & District Council (SACDC) and Defra. Monitoring locations are indicated on Figure 2.

**Table 2 Monitored Concentrations Across Study Area – NO<sub>2</sub>**

ID	Location	Type	Distance to site (km)	Monitored Annual Mean (µg/m <sup>3</sup> )				
				2020	2021	2022	2023	2024
SA114	Fleetville 1 Royal Road	Background	2.94	20.7	23.1	22.5	19.1	15.9
SA120	Sleapcross Gardens Smallford	Kerbside	1.18	20.2	20.7	20.3	18.5	17.0
SA150	Hatfield/Royal Road	Kerbside	2.92	21.9	20.5	20.7	20.1	19.7
SA167	Clarence Road	Roadside	3.47	-	-	20.4	18.2	16.7
SA168	Hatfield Road (Co-op Funeral Services)	Roadside	3.35	-	-	21.4	20.5	17.5
SA169	Beaumont Avenue	Roadside	2.57	-	-	13.1	12.4	13.5

Note: Data obtained from SACDC 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 2 above, annual mean NO<sub>2</sub> concentrations at the closest monitoring locations to the site were consistently well below (defined by the IAQM as less than 75% of) the 40µg/m<sup>3</sup> AQO between 2020 and 2024 (where data were available). Furthermore, the general trend shows local air quality improving with time, as is displayed in Figure A.6 of the ASR.

**Table 3 Current (2025) Background Annual Mean Concentrations at the Site (µg/m<sup>3</sup>)**

NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
9.8 - 11.5	12.8 - 13.5	7.4 - 8.1

Note: Data obtained from <https://uk-air.defra.gov.uk/data/iaqm-background-home>. A range is given as the study area spans multiple grid squares.

6.3 Whilst no monitoring of PM<sub>10</sub> or PM<sub>2.5</sub> is undertaken by SACDC, Defra-predicted annual mean background concentrations for the current year (2025), shown in Table 3, are well below their respective AQOs. Further discussion regarding the implications of baseline conditions to the development is provided in Section 8.

## 7. CONSTRUCTION PHASE ASSESSMENT

- 7.1 The IAQM methodology has been used to assess the potential impact of dust and PM<sub>10</sub> arising from on-site 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.
- 7.2 As sensitive receptors were identified within the relevant IAQM screening distances, the assessment progressed to Step 2, which has been summarised in the tables below.

**Table 4 Step 2A – Dust Emission Magnitude for Construction Activities**

Activity	Magnitude	Explanation
Demolition	Small	Total building volume to be demolished <12,000m <sup>3</sup> (small building currently used for the sale and display of camping equipment)
Earthworks	Medium	Total site area 18,000 - 110,000m <sup>3</sup> , 5-10 heavy earth-moving vehicles active at once
Construction	Medium	Total building volume 12,000 - 75,000m <sup>3</sup>
Trackout	Small	<20 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length 50 - 100m

**Table 5 Step 2B – Sensitivity of the Area**

Potential Impact	Details	Construction Activity			
		Demolition	Earthworks	Construction	Trackout
Dust Soiling: Amenity	1-10 high sensitivity receptors within 20m of site boundary; *demolition only in southeastern corner next to short-stay car park	Low*	Medium	Medium	Medium
PM <sub>10</sub> : Health	As above, and low background PM <sub>10</sub> concentration	Low	Low	Low	Low

**Table 6 Step 2C – Summary of Impact Risks to Define Site-Specific Mitigation**

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

- 7.3 It should be noted that the prevailing winds (as shown in Appendix 2) are south-westerly 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 PM<sub>10</sub> health effects, in the absence of mitigation. Following implementation of the recommended mitigation measures for the relevant activities' risk levels in Appendix 4, it is anticipated that the residual effect of the construction phase will be not significant.
- 7.4 With regard to construction traffic, the construction phase flows are not expected to exceed the criteria detailed in paragraph 5.8 and therefore, significant residual effects are not anticipated.

## 8. OPERATIONAL PHASE AIR QUALITY APPRAISAL

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### Site Suitability

- 8.1 As detailed in Section 6, monitored annual mean NO<sub>2</sub> concentrations at all of the diffusion tubes in the study area were well below the AQO during 2020-2024. With this monitoring undertaken in the more urban area of St Albans, with more emission sources including a greater density of roads, it is considered robust with respect to the more rural site, where traffic is typically more free-flowing. Furthermore, these diffusion tubes are located much closer to the roadside than the proposed dwellings within the development, as such, concentrations within the site boundary are expected to be lower still.
- 8.2 Regarding PM<sub>10</sub> and PM<sub>2.5</sub>, Defra background concentrations (Table 3) 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 NO<sub>2</sub> concentrations below 60µg/m<sup>3</sup>, a breach of the hourly mean AQO for NO<sub>2</sub> is unlikely (as indicated in LAQM.TG22). Equally, exceedances of the 24-hour mean AQO for PM<sub>10</sub> are not anticipated, as Defra-predicted annual mean concentrations are below the 32µg/m<sup>3</sup> proxy value.
- 8.4 Accordingly, the development is not expected to expose future occupants to unacceptable air quality, and the site is considered suitable for the proposed residential use, with no requirement for additional mitigation.
- 8.5 In addition to the above, Defra guidance now requires consideration of how a development will reduce exposure to PM<sub>2.5</sub>. In terms of selecting this development site, which is set back considerably from the roadside and in an area where background PM<sub>2.5</sub> concentrations are expected to be well below the AQO, exposure to PM<sub>2.5</sub> has been considered.
- 8.6 Furthermore, regarding the proposed quarry to the east, the IAQM Minerals Dust guidance states that mineral site impacts are more likely to be associated with coarse PM (i.e., PM<sub>10</sub>), stating *for quarries, most of this suspended dust will be in the coarse sub-fraction (PM<sub>2.5-10</sub>), rather than in the fine (PM<sub>2.5</sub>) fraction*. Given the relatively large particle size of sand, the development is not expected to expose residents to significant levels of PM<sub>2.5</sub> resulting from the operations at the quarry.

### Vehicle Emissions Impacts

- 8.7 The project's Transport Consultant (Markides Associates) has indicated that the development is expected to lead to 269 daily weekday (07:00-19:00) trips which is not expected to exceed the AADT screening criteria detailed in paragraph 5.8. Therefore, the residual effect of the development's operational phase vehicle trip generation on existing sensitive receptors in the vicinity is expected to be not significant. As such, further assessment of operational impacts is not required, in line with LUPDC guidance.

- 8.8 In addition to the above, Defra guidance now requires consideration of how a development will reduce emissions of PM<sub>2.5</sub>. As outlined above, the effect of development-generated vehicle emissions on local air quality, including PM<sub>2.5</sub> concentrations, is not expected to be significant. Additionally, the site has good public transport connections, with the bus stops along Hatfield Road offering regular services.

## 9. DUST RISK ASSESSMENT

### Prevailing Meteorological Conditions

- 9.1 The potential for dust to impact at sensitive locations is dependent upon the prevailing meteorological conditions, particularly wind direction and wind speed, during emissions. In order to consider conditions at the site, a review of historical weather data from Luton meteorological station was undertaken. This station is located ~14.8km north-northwest of the site and it is anticipated that conditions would be reasonably similar over this distance. The data were therefore, considered suitable for the assessment of dust impacts.
- 9.2 Table 7 contains the meteorological data from Luton meteorological station, over the period 1 January 2015 to 31 December 2024 (inclusive). The directions which have the potential to impact at the development site are shown in **bold**. A wind rose for these data is overlaid on Figure 2 and shown in Appendix 2.

**Table 7 Wind Direction, Frequency and Speed Data**

Wind Direction (blowing from)		Frequency of total Wind (%)	Frequency of Wind at speeds >5m/s (%)
Degrees (°)	Compass		
<b>345 – 15</b>	<b>N</b>	5.62	1.64
<b>15 – 45</b>	<b>NNE</b>	8.23	2.42
<b>45 – 75</b>	<b>ENE</b>	3.92	1.11
<b>75 – 105</b>	<b>E</b>	3.34	0.65
<b>105 - 135</b>	<b>ESE</b>	5.22	0.73
135 - 165	SSE	6.02	1.07
165 - 195	S	8.66	1.69
195 - 225	SSW	17.17	6.62
225 - 255	WSW	14.65	8.55
255 - 285	W	10.43	5.99
285 - 315	WNW	8.19	3.30
<b>315 - 345</b>	<b>NNW</b>	6.10	2.28
Total	-	97.55	36.03
Missing / Incomplete	-	2.38	-
Calms	-	0.35	-

- 9.3 As shown in Table 7, the prevailing wind direction at the site is from the southwest, with a total wind frequency of 31.82% from the south-southwest and west-southwest sectors, combined. As described in the IAQM guidance, high wind speeds (>5m/s) increase the likelihood of dust being raised and blown from the source.

- 9.4 Dry materials are more easily raised into the air and so rainfall acts as a natural dust suppressant. Climate average data for the purposes of the assessment were obtained from Rothamsted climate station, which recorded over 120 days annually with rainfall over 1mm between 1991 and 2020.

## **Dust Risk**

### **Residual Source Emissions**

- 9.5 The exact details of the proposed quarry operations are not known, however it is anticipated that best-practice mitigation measures will be implemented and adhered to throughout the lifetime of the quarry. The IAQM guidance defines 'residual source emissions' as *the potential dust emissions after designed-in mitigation measures have been taken into account*. Therefore, as a robust assumption, the residual source emissions from the proposed quarry are classified as 'medium' for the purposes of this assessment.

### **Frequency of Potentially Dusty Winds**

- 9.6 As shown in Table 7, the total frequency of winds with the potential to transport dust is 36.03%. However, the frequency of these winds blowing from the quarry site towards the development is 8.83% (from the north-northwest through to east-southeast sectors combined). This is classed as 'moderately frequent' in the IAQM guidance and is considered a robust assumption as these sectors cover a much wider range of degrees than would actually be affected at any one time.

### **Receptor Distance from Source**

- 9.7 The majority of proposed receptors are located between 100m and 200m from the quarry site boundary, defined as 'intermediate' within the IAQM guidance. However, the closest proposed dwellings are located less than 100m from the quarry site boundary and as such, a worst-case classification of 'close' has been used for all receptors in this assessment.

### **Pathway Effectiveness**

- 9.8 The combination of 'moderately frequent' winds and 'close' proposed receptors leads to a 'moderately effective' dust pathway.

### **Dust Impact Risk**

- 9.9 The combination of a 'moderately effective' pathway and a 'medium' residual source emission magnitude, results in a 'low risk' of dust impacts at the development.

### **Receptor Sensitivity**

- 9.10 The receptor sensitivity is classed as 'high' according to the IAQM guidance, due to the development comprising residential properties where a high level of amenity would be expected.

### **Magnitude of Dust Effects**

- 9.11 The combination of a 'high' receptor sensitivity and a 'low risk' of dust impact results in a 'slight adverse effect' at the development.

### **Summary**

- 9.12 In summary, should the sand and gravel quarry be granted planning permission, there is the potential for a slight adverse effect of dust at the development, using the robust assumptions outlined above. However, it is likely that the quarry would require an Environmental Permit, and consequently, the residual source emissions would be lower in reality. Nonetheless, an effect of this magnitude is considered not significant within the IAQM Mineral Dust guidance.

## 10. CONCLUSIONS

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- 10.1 Cass Allen was instructed by Stonebond Properties (St Albans) Limited to assess the potential air quality effects of, and potential dust impacts upon, a proposed residential development at land off Hatfield Road and to the South of Gardens, Smallford, St Albans, AL4 0HN. The assessment was carried out regarding relevant local and national planning policy and guidance.
- 10.2 Potential construction phase dust soiling and PM<sub>10</sub> 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.
- 10.3 It is not anticipated that the development would expose future residents to pollutant concentrations exceeding, or close to, the relevant AQOs. Furthermore, construction and operational phase generated vehicle movements are not expected exceed the relevant EPUK & IAQM LUPDC guidance screening thresholds, and therefore, an overall 'not significant' effect is anticipated, with no requirement for further assessment or additional mitigation measures.
- 10.4 A semi-quantitative dust risk assessment was undertaken to consider the impact of the proposed sand and gravel quarry to the east, upon users of the development. The assessment included analysis of local meteorological data and the nature of the relevant dust sources. Based on the results of the assessment, as a robust worst-case, dust generated by the quarry is expected to have a slight adverse effect upon future residents, which is classified by the IAQM as not significant.
- 10.5 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'; and*

*'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 NO<sub>2</sub>, 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.

## National Policy

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.

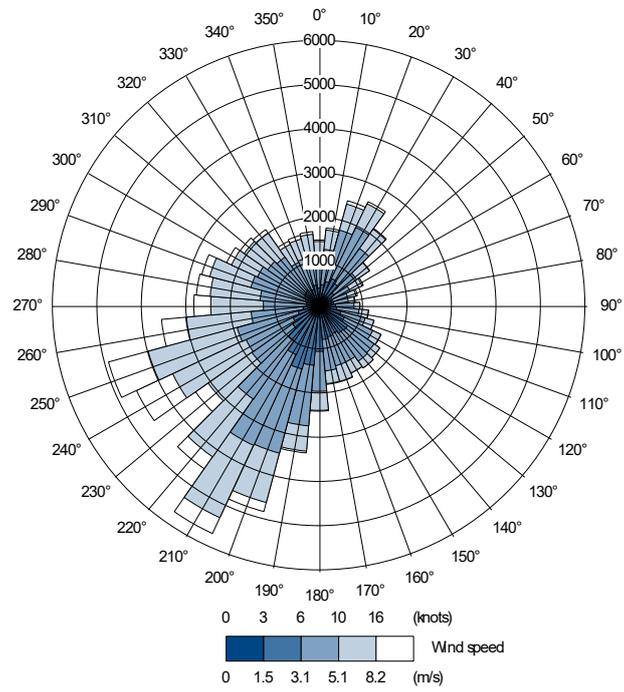
187. Planning policies and decisions should contribute to and enhance the natural and local environment by: ... preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of ... air ... pollution. Development 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.

## Appendix 2 Wind Rose for Luton (2015-2024)



## Appendix 3 IAQM Dust Risk Assessment Methodology

The IAQM Guidance on the Assessment of Mineral Dust Impacts for Planning methodology is summarised below.

### Categorisation of Frequency of Potentially Dusty Winds

Frequency Category	Criteria
Infrequent	Frequency of winds (>5 m/s) from the direction of the dust source on dry days are less than 5%
Moderately frequent	The frequency of winds (>5 m/s) from the direction of the dust source on dry days are between 5% and 12%
Frequent	The frequency of winds (>5 m/s) from the direction of the dust source on dry days are between 12% and 20%
Very frequent	The frequency of winds (>5 m/s) from the direction of the dust source on dry days are greater than 20%

### Categorisation of Receptor Distance from Source

Category	Criteria
Distant	Distant Receptor is between 200m and 400m from the dust source
Intermediate	Intermediate Receptor is between 100m and 200m from the dust source
Close	Close Receptor is less than 100m from the dust source

### Pathway Effectiveness

Receptor Distance Category	Distance		Frequency of potentially dusty winds			
			Infrequent	Moderately frequent	Frequent	Very frequent
Category	Close		Ineffective	Moderately effective	Highly Effective	Highly Effective
		Intermediate	Ineffective	Moderately effective	Moderately effective	Highly Effective
		Distant	Ineffective	Ineffective	Moderately effective	Moderately effective

### Estimation of Dust Impact Risk

Pathway Effectiveness		Residual Source Emissions		
		Small	Medium	Large
Highly effective pathway	Highly effective pathway	Low Risk	Medium Risk	High Risk
	Moderately effective pathway	Negligible Risk	Low Risk	Medium Risk
	Ineffective pathway	Negligible Risk	Negligible Risk	Low Risk

### Descriptors for magnitude of dust effects

Dust impact risk		Receptor Sensitivity		
		Low	Medium	High
Dust impact risk	High Risk	Slight Adverse Effect	Moderate Adverse Effect	Substantial Adverse Effect
	Medium Risk	Negligible Effect	Slight Adverse Effect	Moderate Adverse Effect
	Low Risk	Negligible Effect	Negligible Effect	Slight Adverse Effect
	Negligible Risk	Negligible Effect	Negligible Effect	Negligible Effect

# Appendix 4 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 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, 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 PM<sub>10</sub> 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 on request.
- Record any exceptional incidents that cause dust and/or air emissions, either on or off-site 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 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 PM<sub>10</sub> continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site 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 practicable.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on-site.
- 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 re-used on-site. If they are being reused on-site 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 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.

**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.



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