



AIR QUALITY ASSESSMENT

on behalf of

KEADY CONSTRUCTION LTD

for

SITE 2, DALEFIELD WAY, GRAVESEND

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Summary

This air quality report has been prepared to accompany a planning application for a B8 development at Site 2, Dalefield Way, Gravesend. It assesses the potential changes in air quality due to the construction and operation of the proposed development and whether these potential changes would significantly alter air quality.

The assessment of dust soiling and human health impacts during the construction phase of the development results in the proposal of dust mitigation measures. The implementation of these will ensure that residual dust impacts during the construction phases are not significant.

Concentrations of NO₂ are likely to be below the short-term objective at the proposed development site, which is therefore considered suitable for its intended use with regard to air quality.

The proposed development is not expected to have a significant effect on local air quality.

There is, therefore, no reason for this application to be refused on the grounds of air quality.

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1 Introduction

- 1.1 Miller Goodall Ltd has been instructed to prepare an air quality assessment to accompany a planning application for a development at Site 2, Dalefield Way, Gravesend. The site lies within the administrative boundary of Gravesham Borough Council (GBC).
- 1.2 The report provides an assessment of the potential air quality impacts associated with the construction and operational phases of the proposed development. Existing air quality at and around the development is reviewed, and the potential effect of the development on local air quality is assessed following Defra¹ and EPUK and IAQM guidance².
- 1.3 The main pollutants of health concern from road traffic exhaust releases are nitrogen dioxide (NO₂) and fine particulates, normally assessed as the fraction of airborne particles of mean aerodynamic diameter less than ten micrometres (PM₁₀) and 2.5 micrometres (PM_{2.5}) since these pollutants are most likely to approach their respective air quality objectives in proximity to major roads and congested areas. This assessment has therefore focused on the impact of the proposed development on concentrations of NO₂, PM₁₀ and PM_{2.5}.

2 Site Description

- 2.1 The proposed development site is located approximately 1.5 km to the southeast of Gravesend town centre and is currently vacant land.
- 2.2 West Court Marshes is located to the north and west of the proposed development site. There are residential dwellings approximately 40 m northwest of the proposed development site. Dalefield Way Industrial Park is located to the east of the site, which houses open storage. Dalefield Way runs along the southern site boundary, residential dwellings are located beyond this road. The site location is shown in **Appendix A**.
- 2.3 The site is not located in an Air Quality Management Area (AQMA). The nearest AQMA is 1.5 km to the northwest of the site in Gravesend town centre.

¹ Department for the Environment Food and Rural Affairs (2022). Local Air Quality Management Technical Guidance Document LAQM.TG(22)

² EPUK and IAQM (January 2017) Land Use Planning and Development Control: Planning for Air Quality (v1.2)

3 Proposed Development

- 3.1 The proposed development is for the expansion of the Dalefield Way Industrial Park. The expansion of Dalefield Way Industrial Park consists of two separate applications, Site 1 and Site 2, both of which consist of open storage (planning use class B8). This air quality assessment is for Site 2, which is the western site. Site 2 consists of 9,576 m² of hardstanding area and 2,969 m² of tarmacked area. Neither Site 1 nor Site 2 will house facilities for staff or visitors.

4 Policy Context

4.1 National Planning Policy Framework

- 4.1.1 The National Planning Policy Framework^[3] advises at Paragraph 199 that development should be compliant with relevant objectives and limit values, opportunities to improve air quality should be included particularly at the design stage, and that new development should be consistent with existing air quality areas of concern and the local air quality action plans. The key theme of the policy is that existing areas of poor air quality (for example AQMAs or Clean Air Zones) should be not significantly worsened by a development scheme.

4.2 Planning Practice Guidance

- 4.2.1 The Planning Practice Guidance (PPG)⁴, provides guidance on how planning can take account of the impact of new development on air quality. It provides advice on how assessments should be prepared, information sources to use, what impacts and issues should be predicted, and mitigation.

4.3 Air Quality Objectives

- 4.3.1 The standards and objectives relevant to the LAQM framework have been prescribed through the Air Quality (England) Regulations (2000) and the Air Quality (England) (Amendment) Regulations 2002; the Air Quality Standards Regulations 2010 set out the combined Daughter Directive limit

³ Ministry of Housing, Communities and Local Government, 2024. National Planning Policy Framework

⁴ Ministry of Housing, Communities and Local Government, Ministry of Housing, Communities & Local Government (2018 to 2021) and Department for Levelling Up, Housing and Communities, *Planning Practice Guidance – Air Quality* 2019 [Air quality – GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/air-quality)

values and interim targets for Member State compliance. This framework of air quality legislation was converted into domestic law through the European Union (Withdrawal) Act 2018^[5].

4.3.2 The relevant air quality standards and objectives⁶ are presented in **Table 1**.

Table 1: Air Quality Strategy Objectives (England) for the Purposes of Local Air Quality Management

Pollutant	Air Quality Objective	
	Concentration	Measured As
Nitrogen dioxide (NO ₂)	200 µg/m ³	1-hour mean not to be exceeded more than 18 times per year
	40 µg/m ³	Annual mean
Particles (PM ₁₀)	50 µg/m ³	24-hour mean not to be exceeded more than 35 times per year
	40 µg/m ³	Annual mean
Particles (PM _{2.5})	20 µg/m ³	Annual mean (target)
	10 µg/m ³	Annual mean (target) (to be achieved by 2040)

4.3.3 Pollutant standards relate to ambient pollutant concentrations in air, set based on medical and scientific evidence of how each pollutant affects human health. Where an air quality objective is unlikely to be met by the relevant deadline, local authorities must designate those areas as AQMAs and take action to work towards meeting the objectives. Following the designation of an AQMA, local authorities are required to develop an Air Quality Action Plan (AQAP) to work towards meeting the objectives and to improve air quality locally.

4.3.4 Possible exceedances of air quality objectives are generally assessed in relation to those locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the objective.

⁵ UK Parliament (2018): <http://www.legislation.gov.uk/ukpga/2018/16/contents/enacted>

⁶ UK Parliament (2020): <https://www.legislation.gov.uk/uksi/2020/1313/made>

4.3.5 As the development is for B8 use, the annual mean air quality objectives do not apply to users of the development; however, the short-term objectives still apply¹.

4.4 Kent and Medway Air Quality Partnership (2015) Air Quality Planning Guidance

4.4.1 GBC is a part of the Kent and Medway Air Quality Partnership. The Kent and Medway Air Quality Partnership has two air quality guidance documents⁷. The guidance documents only differ in their approach to mitigation (Mitigation Option A and Mitigation Option B). It is recommended that clarification should be sought from the relevant local authority regarding which guidance to adhere to. Due to time constraints, a consultation has not been undertaken. Consequently, both guidance documents have been reviewed and referred to in this report.

5 Methodology

5.1 Data Sources

5.1.1 The air quality assessment has been undertaken and prepared with reference to information from several sources, as detailed in **Table 2**.

Table 2: Key Information Sources

Data Source	Reference
Bureau Veritas	Bureau Veritas (2024) <i>Gravesham Borough Council Annual Status Report 2024</i>
Kent and Medway Air Quality Partnership	Kent and Medway Air Quality Partnership (2015) Air Quality Planning Guidance (Mitigation Option A and Mitigation Option B)
Institute of Air Quality Management (IAQM)	IAQM "Guidance on the assessment of dust from demolition and construction" v2.2 2024
Department for Environment Food and Rural Affairs (Defra)	Defra <i>Local Air Quality Management Technical Guidance TG(22)</i> , updated 2022

⁷ Kent & Medway Air Quality Partnership (2015) Air Quality Planning Guidance (Mitigation Option A and Mitigation Option B)

Data Source	Reference
Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM)	EPUK and IAQM (January 2017) <i>Land Use Planning and Development Control: Planning for Air Quality (v1.2)</i>
Ministry of Housing, Communities & Local Government	Planning Practice Guidance: Air Quality, November 2019 National Planning Policy Framework (NPPF), December 2024
Defra's LAQM Support Tools	Local Air Quality Management 1 km x 1 km grid background pollutant maps

5.2 Kent and Medway Air Quality Partnership (2015) Air Quality Planning Guidance

- 5.2.1 The level of assessment has been determined by the Kent and Medway Air Quality Partnership (2015) Air Quality Planning Guidance⁷.

Checklist 1: Screening checklist

- 5.2.2 The proposed development is categorised as a major size development as it is B8 and over 5,000 m². The proposed development is not located within nor close to an AQMA.
- 5.2.3 Due to the size of the development, an air quality assessment cannot be screened out, and checklist 2 has been referred to.

Checklist 2: Air quality and emissions mitigation assessment checklist

- 5.2.4 The development is deemed a large-scale major development because it is over 1,000 m². The proposed development does not meet any of the other checklist 2 criteria. Within the air quality planning guidance⁷ it is recommended that the consultant refer to section 5 for standard mitigation for all developments and contact the Air Quality Officer to confirm whether an air quality assessment and/or emission mitigation assessment is also required. As discussed in **Section 4.4**, consultation has not been completed due to time constraints. Therefore, professional judgment will be utilised to determine the level of assessment required.

- 5.2.5 A simple air quality assessment has been prepared to determine the impact of the construction and operational phases of the development on existing receptors and the mitigation required to comply with the air quality planning guidance⁷. An emission mitigation assessment is not deemed necessary because the proposed development is not expected to cause a change in vehicle movements associated with Dalefield Way Industrial Park.

5.3 IAQM Construction Dust Assessment

- 5.3.1 The IAQM has produced guidance⁸ on the assessment of air quality impacts arising from dust associated with construction and demolition activities and provides a methodology by which to complete such assessments. The IAQM methodology provides a risk assessment structure to determine the likely impact of the development on nearby receptor locations and recommends mitigation measures that should be implemented to reduce any such impact. The methodology for the assessment is shown in **Appendix B**. The study area in relation to dust and the zones of interest used within the assessment (<20 m, 20 m – 50 m and 50 – 100 m from the site) are shown in **Appendix C**. The dust assessment informed the recommended mitigation outlined in **Appendix D**.

5.4 Simple Air Quality Assessment

- 5.4.1 A simple assessment of air quality in terms of the impact of the development and suitability of the site, which relies on already published information, has been completed using sources such as the Local Authority's monitoring network and the Defra LAQM support tools.
- 5.4.2 The open storage is not expected to house goods which generate dust or odour. Therefore, dust and odour have not been assessed for the operational phase of the proposed development.

6 Baseline Air Quality

6.1 Local Air Quality

- 6.1.1 Baseline air quality at and around the site of the proposed development has been established by examining GBC monitoring data provided in the 2024 Annual Status Report and background concentration maps provided by Defra for the grid squares covering the proposed development.

⁸ Institution of Air Quality Management, 2024. Guidance on the assessment of dust from demolition and construction" v2.2

6.1.2 The site is not located within an AQMA. The nearest AQMA is 1.5 km to the northwest of the site in Gravesend town centre.

6.2 Air Quality Monitoring

Nitrogen Dioxide (NO₂)

- 6.2.1 GBC monitors NO₂ via automatic monitoring stations and diffusion tubes. There is one monitoring site, diffusion tube GR123, within 1 km of the proposed development site.
- 6.2.2 The results from the diffusion tube are shown in **Table 3** and the monitor’s location is shown in **Appendix A**.

Table 3: Annual Mean NO₂ Concentrations Monitored by GBC within the Study Area

Site ID & Classification	Location	Annual Mean NO ₂ Concentrations (µg/m ³)				
		2019	2020	2021	2022	2023
GR123 (roadside)	566538 173109	26.3	21.5	21.2	20.8	17.0
Annual Mean NO ₂ air quality objective					40 µg/m ³	

- 6.2.3 The monitoring results in **Table 3** indicate that annual mean concentrations of NO₂ were below the NO₂ annual mean objective at GR123 during the period shown.
- 6.2.4 The results indicate that the short-term objective for NO₂ was unlikely to be exceeded at GR123 as monitored annual mean concentrations were well below the indicative screening concentration of 60 µg/m³ during the period shown.

Particulate Matter (PM₁₀ & PM_{2.5})

- 6.2.5 GBC undertakes PM₁₀ monitoring at two automatic monitoring stations. However, these monitoring stations are over 4 km from the site, and both are located inside AQMAs. Therefore, neither is representative of conditions at the proposed development site. There have been no recorded exceedances of PM₁₀ since 2019 at either automatic monitoring station.
- 6.2.6 GBC does not undertake PM_{2.5} monitoring.

6.3 Background Concentrations

6.3.1 Background concentrations of NO₂, PM₁₀ and PM_{2.5} obtained from the 2021-based background concentration maps provided by Defra for the grid squares covering the proposed development and receptor locations⁹ are shown in **Table 4**.

Table 4: Background Pollutant Concentrations Obtained for the 1km x 1km Grid Square Covering the Site

Grid Square	Pollutant	2025
		(µg/m ³)
566500, 173500	NO ₂	15.44
	PM ₁₀	11.61
	PM _{2.5}	7.06

7 Construction Dust Impact Assessment

7.1 Step 1 – Requirement for a Detailed Assessment

7.1.1 There are sensitive receptors located within 250m of the site boundary, therefore, a detailed assessment of the construction phase of the development has been undertaken. There are no ecological designations within 50m of the site boundary or 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s) which require assessment.

7.2 Step 2 – Assess the Risk of Dust Impacts

Step 2A Dust Emission Magnitude

7.2.1 The potential dust emission magnitude in relation to the development has been determined using the criteria detailed in **Table B1** in **Appendix B**. The scale and nature of works onsite were considered to determine the potential dust emission magnitude for earthwork activities and trackout activities. No demolition or construction is required at the development site.

⁹ <http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2021>

7.2.2 Information to determine the classification has been estimated from the site plans, Google Earth and information provided by the Applicant. The dust emission magnitude is outlined in **Table 5**.

Table 5: Dust Emission Magnitudes for Each Activity

Activity	Dust Emission Magnitudes	Justification for Sensitivity Classification
Earthworks	Small	the site area is less than 18,000 m².
Trackout	Small	there are likely to be less than 20 HDV outward movements in any one day.

Step 2B Sensitivity of the Receptors to Dust Soiling and Health Effects

7.2.3 Dwellings are located between 20 m – 50 m from earthworks and 20 m of road edges used by traffic associated with the site construction. In accordance with the criteria in **Table B2** in **Appendix B** and the IAQM guidance, the sensitivity of human receptors is **high**.

Step 2B Sensitivity of the Area to Dust Soiling and Human Health Effects of PM₁₀

7.2.4 The sensitivity of the area for dust soiling and human health effects has been determined using the criteria detailed in **Table B3** and **Table B4** respectively in **Appendix B**.

7.2.5 The sensitivity of the area to dust soiling and human health for each activity is summarised in **Table 6**.

Table 6: Outcome of Defining the Sensitivity of the Area

Pollution	Activity	Sensitivity of the Surrounding Area	Justification for Sensitivity Classification
Dust Soiling	Earthworks	Medium	There are 10 – 100 highly sensitive receptors between 20 m – 50 m of the site boundary.
	Trackout	High	There are 10 – 100 highly sensitive receptors within 20 m of the trackout route, up to 200 m of the site exit.
Human Health	Earthworks	Low	There are 10 – 100 highly sensitive receptors between 20 m – 50 m of the site boundary. Background PM ₁₀ pollutant concentrations are below 24 µg/m ³ .
	Trackout	Low	There are 10 – 100 highly sensitive receptors within 20 m of the trackout route, up to 200 m of the site exit. Background PM ₁₀ pollutant concentrations are below 24 µg/m ³ .

Step 2C Risk of Impacts

- 7.2.6 The dust emission magnitude and sensitivity of the area were combined and the risk of impacts have been determined using the criteria detailed in **Table B5** to **Table B8** in **Appendix B**.
- 7.2.7 A summary of the risks, before mitigation measures are applied, for dust soiling and human health are shown in **Table 7**.

Table 7: Risk of Dust Impacts

Potential Impact	Dust Risk	
	Earthworks	Trackout
Dust Soiling	Low	Low
Human Health	Negligible	Negligible

7.3 Step 3 – Site-Specific Mitigation

- 7.3.1 Step 3 of the IAQM guidance identifies appropriate site-specific mitigation. These measures are related to the site risk for each activity. Mitigation measures specific to trackout are proposed based on the risk classifications in **Table 7**. There are no mitigation measures specific to earthworks because the risk is low. Recommended mitigation measures are shown in **Appendix D**.
- 7.3.2 The general mitigation measures (for site management, preparing and maintaining the site, operating vehicle/machinery, operations and waste management), are appropriate for a site with a ‘low risk’ classification¹⁰.

7.4 Step 4 – Determine Significant Effects

- 7.4.1 The characteristics of the site and the surrounding area suggest that mitigation would not be impracticable or ineffective. With the implementation of the mitigation measures, therefore, the residual impacts from the construction are considered to be not significant when considered following IAQM guidance.

¹⁰ For those mitigation measures that are general, the highest risk category should be applied. For example, if the site is medium risk for earthworks and construction, but a high risk for demolition and track-out, the general measures applicable to a high risk site should be applied.

8 Effect of Air Quality on the Proposed Development

- 8.1 As discussed, due to the development being for B8 use, the annual mean air quality objectives do not apply to the development itself; however, the short-term objectives still apply¹.
- 8.2 LAQM.TG(22) provides a qualitative screening approach to determine whether there is a risk of exceedance of the one-hour NO₂ air quality objective. If the ambient NO₂ annual mean concentration is above 60 µg/m³ there is a risk that the one-hour objective (200 µg/m³) may be exceeded. The monitored NO₂ concentrations, shown in **Table 3**, are all well below 60 µg/m³ and, therefore, when considered in light of guidance in LAQM.TG(22), the 1-hour mean objective is unlikely to be exceeded.
- 8.3 The background concentrations in **Table 4** indicate that background concentrations of NO₂, PM₁₀ and PM_{2.5} around the development are well below health-based air quality objectives of 40 µg/m³ for these pollutants.
- 8.4 There is one monitoring site, GR123, within 1 km of the proposed development site. GR123 is located approximately 530 m southwest of the proposed development site, adjacent to the Lion Roundabout. The A226, B261, Lower Higham Road and Dering Way lead into the Lion Roundabout. Traffic associated with Dalefield Way Industrial Park is expected to travel along Dering Way and onto Lion Roundabout. Comparatively, the proposed development is adjacent to a roundabout, which has minor roads leading into it, Dering Way and Dalefield Way. The traffic passing the proposed development will consist of traffic associated with Dalefield Way Industrial Park and the housing located on Dalefield Way. Therefore, GR123 is expected to experience higher volumes of congested traffic compared to the proposed development site and consequently be exposed to higher concentrations of road-related air pollution. The monitoring results in **Table 3** indicate that NO₂ annual mean concentrations have been well below 60 µg/m³ at GR123 since 2019.
- 8.5 The evidence from existing information sources is that the proposed development site is likely to experience levels of NO₂ below the short-term objective.

9 Impact of the Proposed Development on Existing Air Quality

- 9.1 The expansion of Dalefield Way Industrial Park, Site 1 and Site 2, will result in the transfer of the existing storage space and associated vehicle space within Dalefield Way Industrial Park to the proposed Site 1 and Site 2.

- 9.2 The client has advised that Site 1 and Site 2 will not result in a change of traffic associated with Dalefield Way Industrial Park. Traffic associated with Site 2 will continue to be accessed via the main site entrance.
- 9.3 Therefore, the proposed development is not expected to have a significant impact on local air quality².

10 Mitigation

- 10.1 The Kent and Medway Air Quality Partnership (2015) Air Quality Planning Guidance⁷ provides standard mitigation for all developments. The standard mitigation measures are the same in both versions of the air quality guidance, Option A and Option B. As the development does not include parking spaces or heating systems, construction dust mitigation is the only relevant standard mitigation measure.
- 10.2 Mitigation of construction dust will be achieved by the use of the mitigation measures outlined in **Appendix D**.

11 Summary of Impacts and Conclusion

- 11.1 This air quality report assesses the potential changes in air quality due to the construction and operation of the proposed development and whether these potential changes would significantly alter air quality.
- 11.2 The assessment of dust soiling and human health impacts during the construction phase of the development results in the proposal of dust mitigation measures. The implementation of these will ensure that residual dust impacts during the construction phase are not significant.
- 11.3 Concentrations of NO₂ are likely to be below the short-term objective at the proposed development site, which is therefore considered suitable for its intended use with regard to air quality.
- 11.4 The proposed development is not expected to have a significant effect on local air quality.
- 11.5 There is, therefore, no reason for this application to be refused on the grounds of air quality.

APPENDICES

Appendix A: Location of the site and GBC monitoring



Appendix B: IAQM Dust Risk Assessment Methodology

The following section outlines criteria developed by the IAQM for the assessment of air quality impacts arising from construction and demolition activities⁸. The assessment procedure is divided into four steps and is summarised below:

Step 1: Screen the Need for a Detailed Assessment

An assessment will normally be required where there are human receptors within 250 m of the site boundary and/or within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s). Ecological receptors within 50 m of the site boundary or within 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s), are also identified at this stage. An ecological receptor refers to any sensitive habitat affected by dust soiling. For locations with a statutory designation, such as a Site of Specific Scientific Interest (SSSI), Special Area of Conservation (SACs) and Special Protection Areas (SPAs), consideration should be given as to whether the particular site is sensitive to dust. Some non-statutory sites may also be considered if appropriate.

Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is 'negligible' and any effects will not be significant.

Step 2: Assess the Risk of Dust Impacts

In step two, a site is allocated to a risk category on the basis of the scale and nature of the works (Step 2A) and the sensitivity of the area to dust impacts (Step 2B). These two factors are combined in Step 2C to determine the risk of dust impacts before the implementation of mitigation measures. The assigned risk categories may be different for each of the construction activities outlined by the IAQM (construction, demolition, earthworks and trackout). A site can be divided into zones, for example on a large site where there are differing distances to the nearest receptors.

Step 2A: Define the Potential Dust Emission Magnitude

Dust emission magnitude is based on the scale of the anticipated works and is classified as Small, Medium or Large. The IAQM guidance recommends that the dust emission magnitude is determined separately for demolition, earthworks, construction and trackout. **Table B1** describes the potential dust emission class criteria for each outlined activity.

Table B1: Criteria Used in the Determination of Dust Emission Magnitude

Activity	Criteria used to Determine Dust Emission Magnitude		
	Small	Medium	Large
Demolition	Total building volume <12,000 m ³ , construction materials with low potential for dust release.	Total building volume 12,000 m ³ – 75,000 m ³ , potential dusty construction material.	Total building volume >75,000 m ³ , potentially dusty construction material.
Earthworks	Total site area <18,000 m ² , soil type with large grain	Total site area 18,000 – 110,000 m ² , moderately dusty soil type	Total site area >110,000 m ² , potentially dusty soil type
Construction	Total building volume <12,000 m ³ .	Total building volume 12,000 – 75,000 m ³ .	Total building volume >75,000 m ³ .
Trackout	<20 outward HDV trips in any one day. Unpaved road length <50 m.	20–50 outward HDV trips in any one day. Unpaved road length 50–100 m.	>50 outward HDV trips in any one day. Unpaved road length >100 m.

Step 2B: Define the Sensitivity of the Area

The sensitivity of the area takes into account the following factors:

- the specific sensitivities of receptors in the area;
- the proximity and number of receptors;
- the local background PM₁₀ concentration; and
- site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of windblown dust.

The criteria detailed in **Table B2** is used to determine the sensitivity of the receptor in relation to dust soiling, health effects and ecological effects.

Table B2: Criteria for Determining Sensitivity of Receptors

Sensitivity of Receptor	Criteria for Determining Sensitivity		
	Dust Soiling Effects	Health Effects of PM ₁₀	Ecological Sites
High	Dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms	Residential properties, hospitals, schools and residential care homes	International or national designation <i>and</i> the features may be affected by dust soiling; or locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain
Medium	Parks, places of work	Office and shop workers not occupationally exposed to PM ₁₀	Presence of an important plant species where dust sensitivity is uncertain or locations with a national designation with features that may be affected by dust deposition
Low	Playing fields, farmland, footpaths, short-term car parks and roads	Public footpaths, playing fields, parks and shopping streets	Local designation where features may be affected by dust deposition

Table B3 and **Table B4** are then used to define the sensitivity of the area to dust soiling and human health effects. **Table B5** is used to define the sensitivity of the area to ecological impacts. This should be derived for each of construction, demolition, earthworks and trackout.

Table B3: Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from Source (m)*			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

*distances considered are to the dust source

Table B4: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM ₁₀ Concentrations	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
High	>32 µg/m ³	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32 µg/m ³	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28 µg/m ³	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24 µg/m ³	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32 µg/m ³	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	28-32 µg/m ³	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	24-28 µg/m ³	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	<24 µg/m ³	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	–	>1	Low	Low	Low	Low

Table B5: Sensitivity of the Area to Ecological Impacts^{a,b,c}

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

^a The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout and for each designated site. See STEP 2B, Box 8 and Box 9 of IAQM guidance.

^b Only the highest level of area sensitivity from the table needs to be considered.

^c For trackout, the distances should be measured from the side of the roads used by construction traffic. The impact declines with distance from the site.

The sensitivity of the area is then summarised.

Step 2C Define the Risks of Impacts

The dust emission magnitude from **Table B1** and sensitivity of the area and receptors from **Table B2**, **Table B3**, **Table B4** and **Table B5** are combined, and the risk of impacts from each activity (demolition, earthworks, construction and trackout) before mitigation is applied, is determined using the criteria detailed in **Table B6** to **Table B9**.

Table B6: Risk of Dust Impacts – Demolition

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

Table B7: Risk of Dust Impacts – Earthworks

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

Table B8: Risk of Dust Impacts – Construction

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

Table B9: Risk of Dust Impacts – Trackout

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

Step 3 Determine Site Specific Mitigation

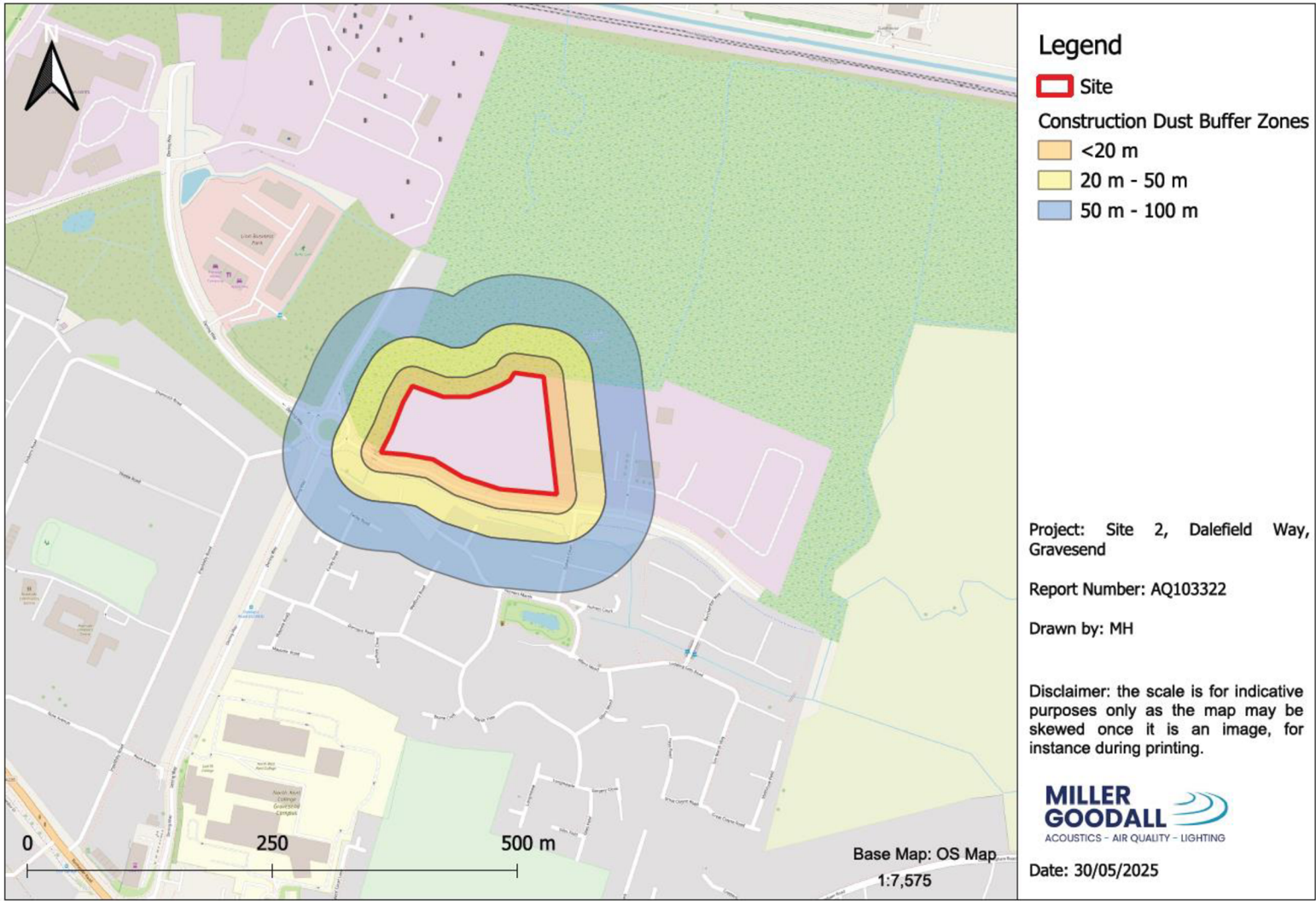
Step three of the IAQM guidance identifies appropriate site-specific mitigation. These measures are related to whether the site is a low, medium or high risk site.

Step 4 Determine Significance of Residual Effects

At step four the significance of residual effects is assessed. For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be 'not significant'.

There may be cases where, for example, there is inadequate access to water for dust suppression to be effective, and even with other mitigation measures in place there may be a significant effect. Therefore, it is important to consider the specific characteristics of the site and the surrounding area to ensure that a conclusion of no significant effect is robust.

Appendix C: Construction Dust Buffer Zones



Appendix D: IAQM Dust Assessment Mitigation

xx Highly Recommended

x Desirable

Measures relevant for earthworks and trackout

Mitigation Measure	Low Risk
Communications	
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.	xx
Display the head or regional office contact information.	xx
Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. In London additional measures may be required to ensure compliance with the Mayor of London's guidance. The DMP may include monitoring of dust deposition, dust flux, realtime PM ₁₀ continuous monitoring and/or visual inspections.	x
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.	xx
Make the complaints log available to the local authority when asked.	xx
Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.	xx
Monitoring	
Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of site boundary, with cleaning to be provided if necessary.	x
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.	xx
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.	xx

Mitigation Measure	Low Risk
Agree dust deposition, dust flux, or real-time PM ₁₀ 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.	xx
Preparing and maintaining the site	
Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	xx
Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	xx
Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.	x
Avoid site runoff of water or mud.	xx
Keep site fencing, barriers and scaffolding clean using wet methods.	x
Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.	x
Cover, seed or fence stockpiles to prevent wind whipping.	x
Operating vehicle/machinery and sustainable travel	
Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable.	xx
Ensure all vehicles switch off engines when stationary - no idling vehicles.	xx
Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable.	xx
Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).	x
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.	xx
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	xx
Use enclosed chutes and conveyors and covered skips.	xx
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	xx

Mitigation Measure	Low Risk
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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.

x

Waste management

Avoid bonfires and burning of waste materials.

xx

Measures specific to trackout

Mitigation Measure	Low Risk
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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.

x

Avoid dry sweeping of large areas.

x

Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.

x

Record all inspections of haul routes and any subsequent action in a site log book.

x

Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

x

Glossary of Terms

AADT Annual Average Daily Traffic flow

Air Quality Standard Pollutant standards relate to ambient pollutant concentrations in air, set on the basis of medical and scientific evidence of how each pollutant affects human health and the environment

Air Quality Objective Pollutant Objectives incorporate future dates by which a standard is to be achieved, taking into account economic considerations, practicability and technical feasibility

Annual Mean A mean pollutant concentration value in air which is calculated on a yearly basis, yielding one annual mean per calendar year. In the UK air quality regulations, the annual mean for a particular substance at a particular location for a particular calendar year is:

- (a) in the case of lead, the mean of the daily levels for that year;
- (b) in the case of nitrogen dioxide, the mean of the hourly means for that year;
- (c) in the case of PM₁₀, the mean of the 24-hour means for that year.

Annoyance (Dust) Loss of amenity due to dust deposition or visible dust plumes, often related to people making complaints, but not necessarily sufficient to be a legal nuisance.

AQAP Air Quality Action Plan

AQMA Air Quality Management Area

AQMP Air Quality Management Plan

AQO Air Quality Objective

AQS Air Quality Strategy for England, Scotland, Wales and Northern Ireland

Background Concentrations The term used to describe pollutant concentrations which exist in the ambient atmosphere, excluding local pollution sources such as roads and stacks

Construction Any activity involved with the provision of a new structure (or structures), its modification or refurbishment. A structure will include a residential dwelling, office building, retail outlet, road, etc.

Construction Impact Assessment An assessment of the impacts of demolition, earthworks, construction and trackout. In this Guidance, specifically the air quality impacts.

Defra Department for Environment, Food and Rural Affairs

Demolition Any activity involved with the removal of an existing structure (or structures). This may also be referred to as de-construction, specifically when a building is to be removed a small part at a time.

Deposited Dust that is no longer in the air and which has settled onto a surface. Deposited dust is also sometimes called amenity dust or nuisance dust, with the term nuisance applied in the general sense rather than the specific legal definition.

DMP Dust Management Plan; a document that describes the site-specific methods to be used to control dust emissions.

Dust Solid particles that are suspended in air, or have settled out onto a surface after having been suspended in air. The terms dust and particulate matter (PM) are often used interchangeably, although in some contexts one term tends to be used in preference to the other. In this guidance the term 'dust' has been used to include the particles that give rise to soiling, and to other human health and ecological effects. Note: this is different to the definition given in BS 6069, where dust refers to particles up to 75 µm in diameter.

Earthworks Covers the processes of soil-stripping, ground-levelling, excavation and landscaping.

Effects The consequences of the changes in airborne concentration and/or dust deposition for a receptor. These might manifest as annoyance due to soiling, increased morbidity or mortality due to exposure to PM₁₀ or PM_{2.5} or plant dieback due to reduced photosynthesis. The term 'significant effect' has a specific meaning in EIA regulations. The opposite is an insignificant effect. In the context of construction impacts any effect will usually be adverse, however, professional judgement is required to determine whether this adverse effect is significant based in the evidence presented.

EPUK Environmental Protection UK

HDV Heavy Duty Vehicle

IAQM Institute of Air Quality Management

Impacts The changes in airborne concentrations and/or dust deposition. A scheme can have an 'impact' on airborne dust without having any 'effects', for instance if there are no receptors to experience the impact.

LAQM Local Air Quality Management

LDV Light Duty Vehicle

µg/m³ Microgrammes (of pollutant) per cubic metre of air. A measure of concentration in terms of mass per unit volume. A concentration of 1 µg/m³ means that one cubic metre of air contains one microgramme (millionth of a gramme) of pollutant

NO₂ Nitrogen Dioxide

NO_x A collective term used to represent the mixture of nitrogen oxides in the atmosphere, as nitric oxide (NO) and nitrogen dioxide (NO₂)

NPPF National Planning Policy Framework

Nuisance The term nuisance dust is often used in a general sense when describing amenity dust. However, this term also has specific meanings in environmental law:

Statutory nuisance, as defined in S79(1) of the Environmental Protection Act 1990 (as amended from time to time).

Private nuisance, arising from substantial interference with a person's enjoyment and use of his land.

Public nuisance, arising from an act or omission that obstructs, damages or inconveniences the right of the community.

Each of these applying in so far as the nuisance relates to the unacceptable effects of emissions. It is recognised that a significant loss of amenity may occur at lower levels of emission than would constitute a statutory nuisance.

Note: as nuisance has a specific meaning in environmental law, and to avoid confusion, it is recommended that the term is not used in a more general sense.

PM_{2.5} The fraction of particles with a mean aerodynamic diameter equal to, or less than, 2.5 µm. More strictly, particulate matter which passes through a size selective inlet as defined in the reference method for the sampling and measurement of PM_{2.5}, EN 14907, with a 50% efficiency cut-off at 2.5 µm aerodynamic diameter

PM₁₀ The fraction of particles with a mean aerodynamic diameter equal to, or less than, 10 µm. More strictly, particulate matter which passes through a size selective inlet as defined in the reference method for the sampling and measurement of PM₁₀, EN 12341, with a 50% efficiency cut-off at 10 µm aerodynamic diameter

Running Annual Mean A mean pollutant concentration value in air which is calculated on an hourly basis, yielding one running annual mean per hour. The running annual mean for a particular substance at a particular location for a particular hour is the mean of the hourly levels for that substance at that location for that hour and the preceding 8759 hours

Trackout The transport of dust and dirt from the construction/demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy duty vehicles (HDVs) leave the construction/demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site.

