



Straightforward Building Compliance

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**Sigma Homes Ltd**

**Land South of Hanlye, Cuckfield**

**Air Quality Assessment**

**DC4366-AR1v3**

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## **1.0 INTRODUCTION**

### **1.1 Introduction**

Sigma Homes Ltd has appointed C80 Solutions Ltd to carry out an air quality assessment for a proposed residential development at Land South of Hanlye Lane, Cuckfield, within the jurisdiction of Mid Sussex District Council (MSDC).

This report assesses air quality impacts associated with the proposed development. Potential sources of emissions are identified and assessed in the context of existing air quality and emission sources and the nature and location of receptors.

A glossary of common air quality terminology is provided in Appendix A.

### **1.2 Scope of Assessment**

The development would generate additional vehicle movements on the adjacent road network. The potential impacts of operational traffic have been assessed in accordance with current air quality planning guidance published by the Institute of Air Quality management (IAQM)<sup>1</sup>.

Air quality at the Site has also been assessed to determine the suitability of the Site for the proposed residential end-use. The assessment has concentrated on nitrogen dioxide (NO<sub>2</sub>) and particulate matter with an aerodynamic diameter of less than 10 µm and 2.5 µm (PM<sub>10</sub> and PM<sub>2.5</sub>), the pollutants most associated with traffic emissions and which can be harmful and cause discomfort to humans.

An assessment of air quality impacts associated with construction activities has also been undertaken to determine measures for inclusion within any accompanying Construction Management Plan (CMP), should this be required.

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<sup>1</sup> IAQM, Land-use Planning and Development Control: Planning for Air Quality, January 2017



### **3.0 LEGISLATION, POLICY AND GUIDANCE**

#### **3.1 International Air Quality Policy**

##### **3.1.1 *European Directive on Ambient Air Quality and Cleaner Air for Europe***

The EU Directive 2008/50/EC<sup>2</sup> on ambient air quality and cleaner air for Europe (the CAFE directive) sets out the ambient air quality standards for a number of pollutants and the dates by which these objectives should be met. The Air Quality Standards (Amendment) Regulations 2016 amend the Air Quality Standards Regulations 2010<sup>3</sup>, which implements the requirements of the Directive into UK legislation. The Directive contains a series of limit values for the protection of human health and critical levels for the protection of vegetation. These limit values are legally binding, and the UK may incur infringement action if it does not meet the required objective limits within the agreed time limits. The UK is currently exceeding the objective limits for NO<sub>2</sub> and PM<sub>10</sub> within London and a number of other air quality zones within the UK.

#### **3.2 National Air Quality Policy**

##### **3.2.1 *The Air Quality Strategy for England***

The Air Quality Strategy for England (2023)<sup>4</sup>, is a strategic framework for local authorities and other partners and supersedes the Air Quality Strategy: Volume 1 in England only. This document sets out the actions that DEFRA expects local authorities to take in support of the long-term air quality targets.

The AQS sets out a framework for reducing hazards to health from air pollution and ensuring that international commitments are met in the UK. The AQS is designed to be an evolving process that is monitored and regularly reviewed.

The AQS sets standards and objectives for ten main air pollutants to protect health, vegetation, and ecosystems. These are benzene (C<sub>6</sub>H<sub>6</sub>), 1,3-butadiene (C<sub>4</sub>H<sub>6</sub>), carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO<sub>2</sub>), oxides of nitrogen (NO<sub>x</sub>), particulate matter (PM<sub>10</sub>, PM<sub>2.5</sub>), sulphur dioxide (SO<sub>2</sub>), ozone (O<sub>3</sub>) and polycyclic aromatic hydrocarbons (PAHs).

The air quality standards are long-term benchmarks for ambient pollutant concentrations which represent negligible or zero risk to health, based on medical and scientific evidence reviewed by the Expert Panel on Air Quality Standards (EPAQS) and the World Health Organisation (WHO). These are general concentration limits, above which sensitive members of the public (e.g. children, the elderly and the unwell) might experience adverse health effects.

The air quality objectives (AQOs) are medium-term policy-based targets set by the Government which take into account economic efficiency, practicability, technical feasibility and timescale. Some objectives are equal to the EPAQS recommended standards or WHO guideline limits, whereas others involve a margin of tolerance, i.e. a limited number of permitted exceedances of the standard over a given period.

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<sup>2</sup> Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe.

<sup>3</sup> Air Quality Regulations 2010 - Statutory Instrument 2010 No. 1001.

<sup>4</sup> The Air Quality Strategy for England - August 2023.

For some pollutants there is both a long-term (annual mean) standard and a short-term standard. In the case of NO<sub>2</sub>, the short-term standard is for a 1-hour averaging period, whereas for PM<sub>10</sub> it is for a 24-hour averaging period. These periods reflect the varying impacts on health of differing exposures to pollutants (e.g. temporary exposure on the pavement adjacent to a busy road, compared with the exposure of residential properties adjacent to a road).

Of the pollutants included in the AQS, NO<sub>2</sub> and PM<sub>10</sub> would be particularly relevant to this project as these are the primary pollutants associated with vehicle emissions, the main source of pollutants in the vicinity of the Site.

The current statutory standards and objectives for NO<sub>2</sub> and PM<sub>10</sub> in relation to human health are set out in Table 3.1.

In relation to PM<sub>2.5</sub> the 2019 Clean Air Strategy<sup>5</sup> includes a commitment to set ‘*new, ambitious, long-term targets to reduce people’s exposure to PM<sub>2.5</sub>*’ which the Environment Act 2021<sup>6</sup> commits the Secretary of State to setting. As discussed in Local Air Quality Management Technical Guidance 2022 (LAQM.TG(22))<sup>7</sup> issued by DEFRA, local authorities are expected to work towards reducing PM<sub>2.5</sub> in their area, setting this out as the current objectives within England for PM<sub>2.5</sub>. Historically, limit values were established via the EU Directive with both a Stage 1 and Stage 2 limit value identified. For the purposes of this assessment the Stage 2 limit value for PM<sub>2.5</sub> (as provided in Table 3.1) is considered to be appropriate to use for assessing impacts of development proposals.

**Table 3.1**  
**Relevant Objectives set out in the Air Quality Strategy**

| Pollutant                               | Concentrations                                                       | Measured As  | Date to be Achieved By       |
|-----------------------------------------|----------------------------------------------------------------------|--------------|------------------------------|
| Nitrogen Dioxide (NO <sub>2</sub> )     | 200 µg/m <sup>3</sup> not to be exceeded more than 18 times per year | 1 hour mean  | 31 December 2005             |
|                                         | 40 µg/m <sup>3</sup>                                                 | Annual mean  |                              |
| Particulate Matter (PM <sub>10</sub> )  | 50 µg/m <sup>3</sup> not to be exceeded more than 35 times per year  | 24-hour mean | 31 December 2004             |
|                                         | 40 µg/m <sup>3</sup>                                                 | Annual mean  |                              |
| Particulate Matter (PM <sub>2.5</sub> ) | Stage 1 – 25 µg/m <sup>3</sup>                                       | Annual mean  | 1 <sup>st</sup> January 2020 |
|                                         | Stage 2 – 20 µg/m <sup>3</sup>                                       | -            | -                            |

The statutory standards and objectives apply to external air where there is relevant exposure to the public over the associated averaging periods within each objective. Guidance is provided within Local Air Quality Management Technical Guidance 2022 (LAQM.TG(22)) issued by DEFRA for Local Authorities on where the objectives apply, as detailed in Table 3.2. The objectives do not apply in workplace locations, to internal air or where people are unlikely to be regularly exposed (i.e. centre of roadways).

<sup>5</sup> DEFRA (2019) Clean Air Strategy. London: HMSO

<sup>6</sup> Secretary of State, The Environment Act 2021 HMSO

<sup>7</sup> DEFRA (2022) Local Air Quality Management. Technical Guidance (LAQM.TG(22))

**Table 3.2**  
**Locations Where Air Quality Objectives Apply**

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

### **3.2.2 Local Air Quality Management – The Environment Act 1995**

Local authorities are seen to play a particularly important role. Section 82 of the Environment Act 1995 requires every local authority to conduct a review of the air quality from time to time within the authority's area. The DEFFA technical guidance, LAQM.TG(22), continues with the streamlined approach to the Local Air Quality Management (LAQM) regime, whereby every authority has to undertake and submit a single Annual Status Report/Annual Progress Report within its area, to identify whether the objectives have been or will be achieved at relevant locations by the applicable date. If the objectives are not being met, the authority must declare an Air Quality Management Area (section 83 of the Act) and prepare an action plan (section 84) which identifies measures that will be introduced in pursuit of the objectives.

### **3.2.3 National Air Quality Plan for NO<sub>2</sub> in the UK**

The National Air Quality Plan<sup>8</sup> was written as a joint venture between the DEFRA and the Department for Transport (DfT) and aims to tackle roadside concentrations of NO<sub>2</sub> in the UK. It includes a number of measures such as those aimed at investing in Ultra Low Emission Vehicles (ULEVs) charging infrastructure, public transport and grants to help local authorities in improving air quality.

The plan requires all local authorities (LAs) in England with areas expected not to meet the Limit Values by 2020 (known as ‘air quality hotspots’) to develop plans to bring concentrations within these values in “the shortest time possible”. These plans are to be reviewed by the government and suggestions included in the plan include actions such as utilising retrofitting technologies, changing road layout and encouraging public transport and ULEV use. Where these approaches are not considered sufficient, the LA may need to consider implementation of a Clean Air Zone (CAZ) which places restrictions on vehicle access to an area and may include charging certain (or all) vehicles or restrictions on the type of vehicle allowed to access an area.

### **3.2.4 Road to Zero Strategy**

The Road to Zero strategy<sup>9</sup> sets out the government’s plans to encourage zero emissions vehicles. These include the aim that by 2040 all new cars and vans will have zero tailpipe emissions and by 2050 almost every car will have zero emissions. Measures within the Strategy are aimed at encouraging the uptake of the cleanest vehicles and supporting electric charging infrastructure.

### **3.2.5 Clean Air Strategy**

The Clean Air Strategy sets out policies to lower national emissions of pollutants in order to reduce background pollution and human exposure. It aims to create a strong framework to tackle air pollution and to reduce the number of people living in locations with PM<sub>2.5</sub> concentrations exceeding 10 µg/m<sup>3</sup> by 50% by 2025.

## **3.3 Planning Policy**

### **3.3.1 National Planning Policy**

#### **National Planning Policy Framework**

The National Planning Policy Framework (NPPF)<sup>10</sup> sets out the Government's planning policies for England and how these are expected to be applied. At the heart of the NPPF is a presumption in favour of sustainable development. It requires Local Plans to be consistent with the principles and policies set out in the NPPF with the objective of contributing to the achievement of sustainable development.

The NPPF states that the planning system has three overarching objectives in achieving sustainable development including a requirement to *‘protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.’*

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<sup>8</sup> DEFRA and DfT. (2017). UK plan for tackling roadside nitrogen dioxide concentrations. London: HMSO

<sup>9</sup> HM Government. (2018). Road to Zero Strategy. London: HMSO

<sup>10</sup> Ministry of Housing, Communities and Local Government: National Planning Policy Framework (December 2023).

Under Section 15: Conserving and Enhancing the Natural Environment, the NPPF (paragraph 180) requires that *'planning policies and decisions should contribute to and enhance the natural and local environment by ...preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible help to improve local environmental conditions such as air and water quality.'*

In dealing specifically with air quality the NPPF (paragraph 192) states that *'planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.'*

Paragraph 194 states that *'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'*.

### **3.3.2 Local Planning Policy**

#### **Mid Sussex District Plan (2018)**

The Mid Sussex District Plan<sup>11</sup>, adopted in March 2018, provides a framework for new development, employment growth, infrastructure, and measures to ensure the protection of the countryside. A review of the document has identified the following policy relevant to this assessment:

#### *'DP29 Noise, Air and Light Pollution*

*The environment, including nationally designated environmental sites, nationally protected landscapes, areas of nature conservation or geological interest, wildlife habitats, and the quality of people's life will be protected from unacceptable levels of noise, light and air pollution by only permitting development where:*

*[...]*

*Air pollution:*

- *It does not cause unacceptable levels of air pollution;*
- *Development on land adjacent to an existing use which generates air pollution or odour would not cause any adverse effects on the proposed development or can be mitigated to reduce exposure to poor air quality to recognised and acceptable levels;*
- *Development proposals (where appropriate) are consistent with Air Quality Management Plans.*

*[...]*

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<sup>11</sup> Mid Sussex District Council (2018) Mid Sussex District Plan 2014-2031.

### **3.3.3 Draft Mid Sussex District Plan 2021-2039 (2023)**

In accordance with National Policy, legislation, and a commitment in the adopted District Plan, MSDC have commenced a review of the District Plan, with the Draft Mid Sussex District Plan<sup>12</sup> published for consultation between January-February 2024.

A review of this document has identified the following policies relevant to this assessment:

*'DPS6: Health and Wellbeing*

*To enable and support healthy lifestyles and address health and wellbeing needs in Mid Sussex, all new development must be designed to achieve healthy, inclusive and safe places by embedding the principles of the 20-minute neighbourhood and 'local living'.*

*In order to maximise opportunities to enable healthy lifestyles, all new development must address all of the following (where applicable for the type of development proposed):*

*[...]*

*9. Take opportunities to improve the factors that can contribute to poor health and social inequalities such as noise, air quality, crime, access to education and employment, local amenity, and access to open space and the countryside.*

*[...]*

*'DPN6: Pollution*

*Development must not cause or be adversely affected by pollution or hazards, including air, noise, vibration, light, water, soil, odour, dust or other pollutants, which significantly adversely impact on people, including health and quality of life, and the natural environment, including nature conservation sites. Mitigation measures may need to be implemented for development that is likely to increase levels of pollution or hazards, taking into account any cumulative impacts.*

*[...]*

*Pollution prevention practices must be adopted during construction activities. Where relevant, development proposals should produce a Construction Environment Management Plan identifying how general and site-specific risks will be managed to avoid environmental harm.*

*Development proposals will need to take into account the Council's published guidance'.*

*'DPN9: Air Quality*

*People's health and quality of life and the natural environment will be protected from unacceptable levels of poor air quality.*

*The use of active and sustainable travel measures and green infrastructure to reduce pollution concentrations and exposure is encouraged.*

*Development proposals will need to take into account the Council's air quality guidance.*

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<sup>12</sup> Mid Sussex District Council (2023) Mid Sussex District Plan 2021-2039 Submission Draft (Regulation 19).

*The Council will require applicants to demonstrate that there is not an unacceptable impact on air quality. The development must minimise any air quality impacts, including cumulative impacts from committed developments, both during the construction process and lifetime of the completed development, either through a redesign of the development proposal or, where this is not possible or sufficient, through appropriate mitigation.*

*Where sensitive development is proposed in areas of existing poor air quality and/or where major development is proposed, including the development types set out in the Council's current guidance (Air Quality and Emissions Mitigation Guidance for Sussex (2021 or as updated)) an air quality assessment will be required.*

*Development proposals that are likely to have an impact on local air quality, including those in or within relevant proximity to existing or candidate Air Quality Management Areas (AQMAs) or designated nature conservation areas sensitive to changes in air quality, will need to demonstrate that measures and/or mitigation are incorporated into the design to minimise any impacts associated with air quality.*

*Mitigation measures will need to demonstrate how the proposal would make a positive contribution towards the aims of the Council's Air Quality Action Plan where it is relevant and be consistent with the Council's current guidance as stated above.*

*Mitigation measures will be secured either through a negotiation on a scheme, or via the use of planning condition and/or planning obligation depending on the scale and nature of the development and its associated impacts on air quality.'*

These policies have been considered within this assessment.

### **3.4 Air Quality Guidance**

#### **3.4.1 DEFRA Technical Guidance, LAQM.TG(22)**

LAQM.TG(22) sets out detailed guidance on how air quality should be assessed and monitored by local authorities. The document provides useful guidance on how air quality from specific sources should be screened and the approaches that should be used to undertake detailed assessment where potentially significant emissions are identified, including details on model verification and consideration of monitoring data for use in assessments.

#### **3.4.2 IAQM Land-Use Planning and Development Control: Planning for Air Quality**

The Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK) have published joint guidance on the assessment of air quality impacts for planning purposes<sup>13</sup>. This includes information on when an air quality assessment is required, what should be included in an assessment and criteria for assessing the significance of any impacts.

#### **3.4.3 IAQM Guidance on the Assessment of Dust from Demolition and Construction**

Guidance produced by the IAQM on assessing impacts from construction and demolition activities (2024) includes a methodology for identifying the risk magnitude of potential dust sources associated with demolition, construction, earthworks and trackout. This is then used to identify the level of mitigation necessary in order for the impacts to be not significant.

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<sup>13</sup> EPUK & IAQM (2017) Land Use Planning & Development Control: Planning for Air Quality, January 2017

#### **3.4.4 Air Quality and Emissions Mitigation Guidance for Sussex (2021)**

The Air Quality and Emissions Mitigation Guidance for Sussex document<sup>14</sup>, was updated by Sussex Air Quality Partnership in April 2021. This partnership comprises 15 local authorities, one of which is Mid Sussex District Council in which the Site is located. This document provides advice for developers and their consultants on how to assess and mitigate the impact that new developments may have on local air quality, and therefore, has been considered within this assessment.

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<sup>14</sup> Sussex Air Quality Partnership (2020) Air Quality and Emissions Mitigation Guidance for Sussex.

## **4.0 METHODOLOGY**

### **4.1 Baseline Assessment**

A baseline assessment of air quality in the vicinity of the Site has been carried out through a review of monitoring data available within the MSDC air quality review and assessment reports, predominantly the MSDC 2023 Air Quality Annual Status Report (ASR)<sup>15</sup>. Data has also been obtained from the UK Air Information Resource (UK-AIR) background pollution maps.

### **4.2 Construction Phase**

During construction of the proposed development, lorries will require access to the site to deliver and remove materials; earthmoving plant and other mobile machinery may also work on site including generators and cranes. These machines produce exhaust emissions; of particular concern are emissions of NO<sub>2</sub> and PM<sub>10</sub>.

Based on the development proposals it is anticipated that there would be no more than 4-5 additional Heavy-Duty Vehicles (HDV) generated on any one road link on any given day during the construction phase.

The IAQM air quality planning guidance sets out criteria to determine when significant effects are likely to occur, and a more detailed assessment of traffic emissions is required. The criteria indicates that significant impacts on air quality are unlikely to occur where a development results in less than 25 HDV movements per day in locations within or adjacent to an AQMA and less than 100 HDV outside of an AQMA. It is therefore anticipated that construction traffic generated by the proposed development would result in a negligible impact on local NO<sub>2</sub> and PM<sub>10</sub> concentrations and has not been considered any further in this assessment.

#### **4.2.1 Construction/Fugitive Dust Emissions:**

Construction phase activities associated with the Proposed Development may result in the generation of fugitive dust emissions (i.e. dust emissions generated by site-specific activities that disperse beyond the construction site boundaries).

If transported beyond the site boundary, dust can have an adverse impact on local air quality. The IAQM has published a guidance document for the assessment of demolition and construction phase impacts. The guidance considers the potential for dust nuisance and impacts to human health and ecosystems to occur due to activities carried out during the following stages of construction:

- Demolition (removal of existing structures);
- Earthworks (soil-stripping, ground-levelling, excavation and landscaping);
- Construction (activities involved in the provision of a new structure); and
- Trackout (the transport of dust and dirt from the construction site onto the public road network where it may be deposited and then re-suspended by vehicles using the network).

A qualitative assessment of air quality impacts due to the release of fugitive dust and particulates (PM<sub>10</sub>) during the construction phase was undertaken in accordance with the methodology detailed in the IAQM guidance.

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<sup>15</sup> Mid Sussex District Council (2023) 2023 Air Quality Status Report, August 2023.

The assessment takes into account the nature and scale of the activities undertaken for each source and the sensitivity of the area to an increase in dust and PM<sub>10</sub> levels, thus enabling a level of risk to be assigned. Risks are described in terms of there being a low, medium, or high risk of dust impacts.

Once the level of risk has been ascertained, then site specific mitigation proportionate to the level of risk is identified, and the significance of residual effects determined.

A summary of the IAQM assessment methodology is provided in Appendix B.

#### **4.2.2 Selection of Receptors**

The IAQM assessment is undertaken where there are:

- Human receptors within 250m of the site boundary or within 50m of the route(s) used by construction vehicles on the public highway;
- Human receptors up to 250m from the site entrance(s);
- Ecological receptors within 50m of the site boundary, or within 50m of the route(s) used by construction vehicles on the public highway; and
- Ecological receptors up to 250m from the site entrance(s).

It is within these distances that the impacts of dust soiling and increased particulate matter in the ambient air will have the greatest impact on local air quality at sensitive receptors.

#### **4.2.3 Significance Criteria**

The IAQM assessment methodology recommends that significance criteria are only assigned to the identified risk of dust impacts occurring from a construction activity following the application of appropriate mitigation measures. For almost all construction activities, the application of effective mitigation should prevent any significant effects occurring to sensitive receptors and therefore the residual effects will normally be negligible.

### **4.3 Operational Assessment**

The air quality planning guidance published by IAQM sets out criteria for establishing when there is a risk of significant impacts on local air quality as a result of traffic generated by a proposed development. The guidance states that where the following criteria are exceeded a more detailed assessment is required:

- An increase in LGV of more than 100 vehicles per day within or adjacent to an AQMA, an increase of more than 500 per day elsewhere;
- An increase in HGV of more than 25 vehicles per day within or adjacent to an AQMA, an increase of more than 100 per day elsewhere.

The anticipated trip generation from the operational development has been assessed against the above criteria. Where these criteria are not exceeded, then a detailed assessment of operational impacts is not typically required.

## 5.0 BASELINE ASSESSMENT

### 5.1 Mid Sussex District Council Review and Assessment

Monitoring data and local background information on the Development and surrounding area have been taken from the most recently available MSDC Air Quality Annual Status Report dated August 2023.

MSDC currently has one declared Air Quality Management Area (AQMA), the Mid Sussex District Council AQMA No. 1, located approximately 10 km south of the Development.

### 5.2 Air Quality Monitoring

#### 5.2.1 Nitrogen Dioxide

MSDC undertook continuous monitoring of NO<sub>2</sub> concentrations at one site during a proportion of 2022 and passive (non-automatic) monitoring at 34 sites during 2022.

Passive monitoring is carried out using diffusion tubes, which, due to their relative in-expense, allow for a much greater spatial coverage than with automatic monitoring sites. Diffusion tubes are acknowledged as a less accurate method of monitoring ambient air pollutants than automatic monitors, with diffusion tubes over or under estimating concentrations by as much as 30%.

The closest location (MSAQ1) is located approximately 2 km east of the site. Details of the monitoring site and data recorded since 2018 are set out in Table 5.1.

To allow the results to be reliably compared with the AQOs, the data should be bias corrected using data collected from tubes co-located with continuous monitoring sites. The data provided in Table 5.1 below has been adjusted by MSDC using national bias adjustment factors obtained from the DEFRA LAQM website<sup>16</sup>.

**Table 5.1**  
**Diffusion Tube Annual Average NO<sub>2</sub> Concentrations (µg/m<sup>3</sup>)**

| Site                                                                                                                                                                                                                                                                                                                                                                                         | Classification | 2018 | 2019 | Year 2020 <sup>1</sup> | 2021 <sup>1</sup> | 2022 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------|------|------------------------|-------------------|------|
| MSAQ1 - South Road Haywards Heath                                                                                                                                                                                                                                                                                                                                                            | R              | 20.1 | 19.3 | 12.7                   | 14.8              | 14.4 |
| R – Roadside<br><sup>1</sup> data for 2020 & 2021 has been included for consistency purposes only. Due to travel restrictions as a result of the COVID -19 pandemic, pollution levels during these years were significantly suppressed. Data from these years is therefore not considered representative of normal conditions and 2019 data has been used to inform the baseline assessment. |                |      |      |                        |                   |      |

The data set out in Table 5.1 shows annual mean NO<sub>2</sub> concentrations below the objective limit of 40 µg/m<sup>3</sup> during 2019. In general, MSDC monitoring data indicates a slight downward trend in concentrations over the period presented. As there were no exceedances of the AQO at the closest monitoring location to the Site, it is anticipated that pollutant concentrations would be similar at the Site and therefore, it is considered that there is no risk of the proposed development exposing sensitive receptors to elevated pollutant concentrations.

<sup>16</sup> <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/national-bias/>

Guidance set out in LAQM.TG(22) indicates that where annual mean NO<sub>2</sub> concentrations are found to exceed 60 µg/m<sup>3</sup> there is a risk that the 1-hour objective is also being exceeded. Based on the data set out in Table 5.1 it is unlikely that concentrations are exceeding the 1-hour objective at the monitoring site.

### 5.2.2 Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>)

There are no automatic monitoring stations which record PM<sub>10</sub> and PM<sub>2.5</sub> concentrations located in the vicinity of the Site.

### 5.3 DEFRA Background Maps

Additional information on estimated background pollutant concentrations has been obtained from the DEFRA background maps provided on UK-AIR, the Air Quality Information Resource<sup>17</sup>.

Estimated air pollution concentrations for NO<sub>2</sub> PM<sub>10</sub> and PM<sub>2.5</sub> have been extracted from the 2018 based background pollution maps for the UK for the current assessment year of 2024. These maps are available in 1 km x 1 km grid squares. Concentrations have been taken from the grid square representing the Site.

The annual mean for each pollutant is provided in Table 5.2.

**Table 5.2**  
**Annual Mean Background Air Pollution Concentrations at the Development Site**

| OS Grid Reference | NO <sub>2</sub> (µg/m <sup>3</sup> ) | NO <sub>x</sub> (µg/m <sup>3</sup> ) | 2024 PM <sub>10</sub> (µg/m <sup>3</sup> ) | PM <sub>2.5</sub> (µg/m <sup>3</sup> ) |
|-------------------|--------------------------------------|--------------------------------------|--------------------------------------------|----------------------------------------|
| 531500, 125500    | 7.2                                  | 9.2                                  | 12.9                                       | 8.4                                    |

As shown in Table 5.2, there were no exceedances of the annual mean AQOs for NO<sub>2</sub>, PM<sub>10</sub> or PM<sub>2.5</sub> in 2024. For PM<sub>2.5</sub>, the predicted background concentration was also below the target exposure level of 10µg/m<sup>3</sup>, implemented at the end of January 2023 under the Environment Act 2021. Therefore, there is no predicted risk of the proposed development exposing future occupants to elevated air pollutant concentrations.

Furthermore, guidance set out in LAQM.TG22 indicates that where annual mean NO<sub>2</sub> concentrations exceed 60µg/m<sup>3</sup> there is a risk that the 1-hour objective is also being exceeded. Based on the data outlined in Table 5.2, the NO<sub>2</sub> background concentration for the Site location was significantly below 60µg/m<sup>3</sup> and therefore, it is unlikely that concentrations will exceed the 1-hour objective at the Site.

### 5.4 Site Suitability

The proposed development is set to introduce high sensitivity receptors, in the form of residential dwellings. Due to the presence of residential users of the Site the annual mean and 1-hour objective limits are both considered to apply.

The annual mean objective limits for NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> are therefore considered relevant to the Site.

<sup>17</sup> Defra (undated) UK Air Information Resource - Background Mapping Data for Local Authorities - 2018 [Online] Available at: <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018>.

As presented in Table 5.1, monitored annual mean NO<sub>2</sub> concentrations in the vicinity of the Site are well below 40 µg/m<sup>3</sup>. It can therefore be concluded that concentrations at the Site are likely to be below 40 µg/m<sup>3</sup>. Annual mean NO<sub>2</sub> concentrations at the Site are therefore expected to be meeting the objective limit for this pollutant.

As presented in Table 5.2, the background NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations in the vicinity of the Site are considerably below the relevant AQOs and target value, where applicable. Given the low concentrations of these pollutants, even allowing for a reasonable traffic contribution, it can be concluded that pollutant concentrations at the Site will be below the relevant annual mean objectives. Annual mean NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations at the Site are therefore expected to be meeting the objective limits for these pollutant.

The short-term objective limits such as the 1-hour NO<sub>2</sub> objective are also considered relevant to the Site. Exposure at the Site has also been considered in relation to the 1-hour NO<sub>2</sub> objective but not in relation to the PM objective limits.

As presented in Table 5.1 the annual mean NO<sub>2</sub> concentrations in the vicinity of the Site are well below 60 µg/m<sup>3</sup>. It can therefore be concluded that concentrations at the Site are also below 60 µg/m<sup>3</sup>. Short-term NO<sub>2</sub> concentrations at the Site are therefore expected to be meeting the 1-hour objective limit for this pollutant.

The development would not introduce new residential use into a location of poor air quality, as such, the impact of the proposals in terms of new exposure is therefore **negligible**.

## 6.0 ASSESSMENT OF IMPACTS

### 6.1 Construction Impacts

#### 6.1.1 Site and Surroundings

A summary of the proposed development is provided in Section 2 of this report.

The total area of the site being developed covers approximately 55,000 m<sup>2</sup> and there are residential properties located to the east and west of the Site within 250m. An assessment of construction related impacts in relation to human receptors has therefore been undertaken.

Dust emissions from construction activities are unlikely to result in significant impacts on ecologically sensitive receptors beyond 50m from the site boundary. A review of data held on the DEFRA MAGIC website<sup>18</sup> shows no sites designated as important for wildlife within 50m of the Site, therefore impacts on ecological receptors have not been considered any further within this assessment.

As discussed in Section 5, the PM<sub>10</sub> concentrations, taken from the DEFRA background maps, in the vicinity of the Site are expected to be below the relevant objective limits (Table 5.2). The data indicates background concentrations <13µg/m<sup>3</sup>. Based on professional judgment, it is anticipated that PM<sub>10</sub> concentrations at the Site and at adjacent properties are unlikely to be much higher than background, therefore PM<sub>10</sub> concentrations are expected to be below 24µg/m<sup>3</sup>.

The precise behaviour of the dust, its residence time in the atmosphere, and the distance it may travel before being deposited would depend upon a number of factors. These include wind direction and strength, local topography, and the presence of intervening structures (buildings, etc.) that may intercept dust before it reaches sensitive locations. Furthermore, dust would be naturally suppressed by rainfall.

#### 6.1.2 Risk Assessment of Dust Impacts

##### *Defining the Dust Emission Magnitude*

With reference to the criteria detailed in Appendix B, the dust emission magnitude for each of the category's demolition, earthworks, construction and trackout have been determined. These have been summarised in Table 6.1

**Table 6.1**  
**Dust Emission Magnitude**

| Activity     | Criteria                                                                                                                                                    | Dust Emission Magnitude |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Demolition   | There are no buildings to be demolished                                                                                                                     | N/A                     |
| Earthworks   | Building site area between 18,000m <sup>2</sup> - 110,000m <sup>2</sup> , it is anticipated that there would be 5-10 HGV operating on site at any one time. | Medium                  |
| Construction | It is assumed that the building volume is between 12,000 – 75,000m <sup>3</sup> , main construction materials brick and concrete.                           | Medium                  |
| Trackout     | Unpaved road length >100m.                                                                                                                                  | Large                   |

<sup>18</sup> DEFRA (2024) MAGIC [Online] Available at: <https://magic.DEFRA.gov.uk/magicmap.aspx>.

### ***Sensitivity of Surrounding Area***

Using the criteria set out in Tables B2 to B4 in Appendix B, the sensitivity of the surrounding area to impacts from dust emissions has been determined and are set out in Table 6.2.

### ***Dust Soiling***

There are residential properties located adjacent to the Site Boundary to the east and west. Given the proximity and number of sensitive residential receptors adjacent to the Site, the overall sensitivity of the surrounding area is considered to be **'High'**.

### ***PM<sub>10</sub> Effects***

As previously discussed, annual mean PM<sub>10</sub> concentrations in the vicinity of the Site are expected to be below 24 µg/m<sup>3</sup>. Based on the proximity of sensitive receptors to the Site boundary and the local concentrations of PM<sub>10</sub> the sensitivity of the surrounding area is considered to be **'Low'** with regards human health impacts.

**Table 6.2**  
**Sensitivity of Receptors**

| Potential Impact |                                             | Sensitivity at Site          |
|------------------|---------------------------------------------|------------------------------|
| Dust Soiling     | Receptor Sensitivity                        | High                         |
|                  | Number of Receptors                         | 10-100 receptors within 20 m |
|                  | Sensitivity of the area                     | <b>High</b>                  |
| Human Health     | Receptor Sensitivity                        | High                         |
|                  | Annual mean PM <sub>10</sub> Concentrations | <24 µg/m <sup>3</sup>        |
|                  | Number of Receptors                         | 10-100 receptors within 20 m |
|                  | Sensitivity of the area                     | <b>Low</b>                   |

### ***Defining the Risk of Impacts***

The dust emission magnitude as set out in Table 6.1 is combined with the sensitivity of the area (Table 6.2) to determine the risk of both dust soiling and human health impacts, assuming no mitigation measures applied at site. The risk of impacts associated with each activity is provided in Table 6.3 below and has been used to identify site-specific mitigation measures, which are discussed in Section 8.1 and set out in Appendix C.

**Table 6.3**  
**Summary of Effects Without Mitigation**

| Source       | Dust Soiling | PM <sub>10</sub> Effect | Ecological |
|--------------|--------------|-------------------------|------------|
| Demolition   | N/A          | N/A                     | N/A        |
| Earthworks   | Medium Risk  | Low Risk                | N/A        |
| Construction | Medium Risk  | Low Risk                | N/A        |
| Trackout     | High Risk    | Low Risk                | N/A        |

## 6.2 Operational Impacts

Development trip generation has been undertaken by the transport consultants for the project, and it has been confirmed that the Development would generate an additional AADT of considerably less than 500. Additional information on traffic generation is detailed in the Transport Assessment to be submitted alongside the planning application.

As such, the IAQM screening criteria as set out in Section 4.3 will not be exceeded and impacts on local air quality across the main road network is therefore concluded as being **negligible** and further detailed assessment has been scoped out of the assessment.

Based on professional judgement and taking into account local monitoring showing NO<sub>2</sub> concentration comfortably meeting the relevant UK objective limits at locations where vehicle movements are significantly higher, the operational impact of the development is deemed to be **negligible**.

## 7.0 MITIGATION

### 7.1 Construction Phase

The control of dust emissions from construction site activities relies upon management provisions and mitigation techniques to reduce emissions of dust and limit dispersion. Where dust emission controls have been used effectively, large-scale operations have been successfully undertaken without impacts to nearby properties.

The proposed development has been identified as a **high-risk** site for dust soiling effects, based on the highest category detailed in Table 6.3. For human health, the Site has been identified as a **low-risk** site, based on the highest category set out in Table 6.3.

The developer should therefore implement appropriate dust and pollution control measures as set out within the IAQM guidance. A summary of these measures is set out in Appendix C. The proposed measures should be set out within a CMP and approved by MSDC prior to commencement of any work on site.

Following implementation of the measures recommended for inclusion within the CMP the impact of emissions during construction of the proposed development would be **negligible**.

### 7.2 Operational Phase

The assessment has shown that the operational development would have a **negligible** impact on local air quality. No mitigation of emissions has therefore been considered necessary.

## 8.0 CONCLUSIONS

Sigma Homes Ltd, has appointed C80 Solutions Ltd to carry out an air quality assessment for a proposed residential development at Land South of Hanlye Lane, Cuckfield, within the jurisdiction of MSDC.

It is inevitable that with any development, demolition and construction activities will cause some disturbance to those nearby. Dust arising from most construction activities tends to be of a coarse nature, which through dispersion by the wind can lead to soiling of property including windows, cars, external paintwork, and laundry. However, as well as giving rise to annoyance due to soiling of surfaces from dust emissions, there is evidence of major construction activities causing increases in long term PM<sub>10</sub> concentrations and in the number of days exceeding the short term PM<sub>10</sub> objective of 50 µgm<sup>-3</sup>.

The IAQM guidance on assessing impacts on air quality from construction activities and determining the likely significance has been used to determine the risk of impacts occurring during the construction of the development and to identify appropriate mitigation measures to be implemented on site to reduce dust emissions and associated impacts.

Due to the proximity and number of nearby residential receptors the Site is considered to have a **high risk** of impacts with regards to dust soiling and a **low risk** with regards to PM<sub>10</sub> concentrations. However, following the implementation of appropriate mitigation measures impacts associated with the construction of the development are likely to be **not significant**.

The baseline assessment has predicted a **negligible** impact in terms of exposure to NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations. Furthermore, a review of predicted trip generation from the site has found that there will be a **negligible** impact on local air quality as a result of the operational development.

Based on the above air quality does not pose a constraint to development of the site for residential use and the proposals meet the requirements of both national and local air quality planning policy.

## Appendix A – Glossary of Terminology

| Term                                         | Definition                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Air quality objective                        | Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances within a specific timescale (see also air quality standard).                                                                                                                                                 |
| Air quality standard                         | The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive sub groups (see also air quality objective).                                                        |
| Ambient air                                  | Outdoor air in the troposphere, excluding workplace air.                                                                                                                                                                                                                                                                                                             |
| Annual mean                                  | The average (mean) of the concentrations measured for each pollutant for one year. Usually this is for a calendar year, but some species are reported for the period April to March, known as a pollution year. This period avoids splitting winter season between 2 years, which is useful for pollutants that have higher concentrations during the winter months. |
| AQMA                                         | Air Quality Management Area.                                                                                                                                                                                                                                                                                                                                         |
| DEFRA                                        | Department for Environment, Food and Rural Affairs.                                                                                                                                                                                                                                                                                                                  |
| Exceedance                                   | A period of time where the concentrations of a pollutant is greater than, or equal to, the appropriate air quality standard.                                                                                                                                                                                                                                         |
| Fugitive emissions                           | Emissions arising from the passage of vehicles that do not arise from the exhaust system.                                                                                                                                                                                                                                                                            |
| LAQM                                         | Local Air Quality Management.                                                                                                                                                                                                                                                                                                                                        |
| MSDC                                         | Mid Sussex District Council                                                                                                                                                                                                                                                                                                                                          |
| NO                                           | Nitrogen monoxide, a.k.a. nitric oxide.                                                                                                                                                                                                                                                                                                                              |
| NO <sub>2</sub>                              | Nitrogen dioxide.                                                                                                                                                                                                                                                                                                                                                    |
| NO <sub>x</sub>                              | Nitrogen oxides.                                                                                                                                                                                                                                                                                                                                                     |
| O <sub>3</sub>                               | Ozone.                                                                                                                                                                                                                                                                                                                                                               |
| PM <sub>10</sub>                             | Particulate matter with an aerodynamic diameter of less than 10 micrometres.                                                                                                                                                                                                                                                                                         |
| µgm <sup>-3</sup> micrograms per cubic metre | A measure of concentration in terms of mass per unit volume. A concentration of 1µg/m <sup>3</sup> means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.                                                                                                                                                                      |

## Appendix B – IAQM Construction Dust Assessment Procedure

In order to assess the potential impacts, the activities on construction sites are divided into four categories. These are:

- demolition (removal of existing structures);
- earthworks (soil-stripping, ground-levelling, excavation and landscaping);
- construction (activities involved in the provision of a new structure); and
- trackout (the transport of dust and dirt from the construction site onto the public road network where it may be deposited and then re-suspended by vehicles using the network).

For each activity, the risk of dust annoyance, health and ecological impact is determined using three risk categories: low, medium and high risk. The risk category may be different for each of the four activities. The risk magnitude identified for each of the construction activities is then compared to the number of sensitive receptors in the near vicinity of the site in order to determine the risks posed by the construction activities to these receptors.

### ***Step 1: Screen the Need for an Assessment***

The first step is to screen the requirement for a more detailed assessment. An assessment is required where there is:

- a 'human receptor' within 250m of the boundary of the site or 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s); and/or
- an 'ecological receptor' within 50m of the boundary of the site; or 50m of the route(s) used by the construction vehicles on the public highway, up to 250m from the site entrance(s).

### ***Step 2A: Define the Potential Dust Emission Magnitude***

This is based on the scale of the anticipated works and the proximity of nearby receptors. The risk is classified as small, medium or large for each of the four categories.

Demolition: The potential dust emission classes for demolition are:

- Large: Total building volume  $>75,000\text{m}^3$ , potentially dusty construction material (e.g. Concrete), on site crushing and screening, demolition activities  $>12\text{m}$  above ground level;
- Medium: total building volume  $12,000\text{m}^3 - 75,000\text{m}^3$ , potentially dusty construction material, demolition activities 6-12m above ground level; and
- Small: total building volume  $<12,000\text{m}^3$ , construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities  $<6\text{m}$  above ground, demolition during wetter months.

Earthworks: This involves excavating material, haulage, tipping and stockpiling. The potential dust emission classes for earthworks are:

- Large: Total site area  $>110,000\text{m}^2$ , potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size),  $>10$  heavy earth moving vehicles active at any one time, formation of bunds  $>6\text{m}$  in height;

- Medium: Total site area 18,000 m<sup>2</sup> - 110,000m<sup>2</sup>, moderately dusty soil (e.g. silt), 5 - 10 heavy earth moving vehicles active at any one time, formation of bunds 3m - 6m in height; and
- Small: Total site area <18,000m<sup>2</sup>, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <3m in height.

Construction: The important issues here when determining the potential dust emission magnitude include the size of the building(s)/infrastructure, method of construction, construction materials, and duration of build. The categories are:

- Large: Total building volume >75,000m<sup>3</sup>, on site concrete batching, sandblasting;
- Medium: Total building volume 12,000m<sup>3</sup> - 75,000m<sup>3</sup>, potentially dusty construction material (e.g. concrete), on site concrete batching; and
- Small: Total building volume <12,000m<sup>3</sup>, construction material with low potential for dust release (e.g. metal cladding or timber).

Trackout: The risk of impacts occurring during trackout is predominantly dependent on the number of vehicles accessing the Site on a daily basis. However, vehicle size and speed, the duration of activities and local geology are also factors which are used to determine the emission class of the Site as a result of trackout. The categories are:

- Large: >50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100m;
- Medium: 20-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content, unpaved road length 50-100m; and
- Small: <20 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50m.

### ***Step 2B: Defining the Sensitivity of the Area***

The sensitivity of the area is defined for dust soiling, human health (PM<sub>10</sub>) and ecological receptors. 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;
- in the case of PM<sub>10</sub>, the local background concentration; and
- site specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

Table C1 is used to define the sensitivity of different types of receptors to dust soiling, health effects and ecological effects.

Based on the sensitivities assigned to the different receptors surrounding the site and numbers of receptors within certain distances of the site, a sensitivity classification can be defined for each. Tables C2 to C4 indicate the criteria used to determine the sensitivity of the area to dust soiling, human health and ecological impacts.

**Table C1**  
**Examples of Factors Defining Sensitivity of an Area**

| Sensitivity of Area | Dust Soiling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Human Receptors                                                                                                                                                                                                                                                                                                                                  | Ecological Receptors                                                                                                                                                                                                                                                                                                             |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High                | <p>Users can reasonably expect enjoyment of a high level of amenity. The appearance, aesthetics or value of their property would be diminished by soiling'. The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land.</p> <p>E.g. dwellings, museums and other important collections, medium and long term car parks and car showrooms.</p>                                                 | <p>10 - 100 dwellings within 20 m of site.</p> <p>Local PM<sub>10</sub> concentrations close to the objective (e.g. annual mean 36-40 µg/m<sup>3</sup>).</p> <p>E.g. residential properties, hospitals, schools and residential care homes.</p>                                                                                                  | <p>Locations with an international or national designation and the designated features may be affected by dust soiling. Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red List for Great Britain.</p> <p>E.g. A Special Area of Conservation (SAC).</p> |
| Medium              | <p>Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home.</p> <p>The appearance, aesthetics or value of their property could be diminished by soiling.</p> <p>The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land.</p> <p>E.g. parks and places of work</p>                                      | <p>Less than 10 receptors within 20m.</p> <p>Local PM<sub>10</sub> concentrations below the objective (e.g. annual mean 30-36 µg/m<sup>3</sup>).</p> <p>E.g. office and shop workers but will generally not include workers occupationally exposed to PM<sub>10</sub> as protection is covered by the Health and Safety at Work legislation.</p> | <p>Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown.</p> <p>Locations with a national designation where the features may be affected by dust deposition.</p> <p>E.g. A Site of Special Scientific Interest (SSSI) with dust sensitive features.</p>           |
| Low                 | <p>The enjoyment of amenity would not reasonably be expected.</p> <p>Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling.</p> <p>There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land.</p> <p>E.g. playing fields, farmland unless commercially sensitive horticultural, footpaths, short lived car parks and roads.</p> | <p>Locations where human exposure is transient.</p> <p>No receptors within 20m.</p> <p>Local PM<sub>10</sub> concentrations well below the objectives (less than 75%).</p> <p>E.g. public footpaths, playing fields, parks and shopping streets.</p>                                                                                             | <p>Locations with a local designation where the features may be affected by dust deposition.</p> <p>E.g. Local Nature Reserve with dust sensitive features.</p>                                                                                                                                                                  |

**Table C2**  
**Sensitivity of the Area to Dust Soiling on People and Property**

| Receptor Sensitivity | Number of Receptors | Distance from the 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  |

**Table C3**  
**Sensitivity of the Area to Human Health**

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

**Table C4**  
**Sensitivity of the Area to Ecological Impacts**

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

### ***Define the Risk of Impacts***

The final step is to combine the dust emission magnitude determined in step 2A with the sensitivity of the area determined in step 2B to determine the risk of impacts with no mitigation applied. Tables C5 to C7 indicate the method used to assign the level of risk for each construction activity. The identified level of risk is then used to determine measures for inclusion within a site-specific Construction Environmental Management Plan (CEMP) aimed at reducing dust emissions and hence reducing the impact of the construction phase on nearby receptors. The mitigation measures are drawn from detailed mitigation set out within the IAQM guidance document.

**Table C5**  
**Risk of Dust Impacts from Demolition**

| Sensitivity of Area | Large       | Medium      | Small       |
|---------------------|-------------|-------------|-------------|
| High                | High Risk   | Medium Risk | Medium Risk |
| Medium              | High Risk   | Medium Risk | Low Risk    |
| Low                 | Medium Risk | Low Risk    | Negligible  |

**Table C6**  
**Risk of Dust Impacts from Earthworks/Construction**

| Sensitivity of Area | Large       | Medium      | Small      |
|---------------------|-------------|-------------|------------|
| High                | High Risk   | Medium Risk | Low Risk   |
| Medium              | Medium Risk | Medium Risk | Low Risk   |
| Low                 | Low Risk    | Low Risk    | Negligible |

**Table C7**  
**Risk of Dust Impacts from Trackout**

| Sensitivity of Area | Large       | Medium      | Small      |
|---------------------|-------------|-------------|------------|
| High                | High Risk   | Medium Risk | Low Risk   |
| Medium              | Medium Risk | Medium Risk | Low Risk   |
| Low                 | Low Risk    | Low Risk    | Negligible |

## Appendix C – Construction Mitigation Measures

It is recommended that the 'highly recommended' measures set out below are incorporated into a CMP and approved by MSDC prior to commencement of any work on site:

- develop and implement a stakeholder communications plan that includes community engagement before work commences on site;
- display the name and contact details of the person accountable for air quality and dust issues on the site boundary (i.e. the environment manager/engineer or site manager);
- display the head or regional office contact information on the site boundary;
- record all dust and air quality complaints, identify cause, take appropriate measures to reduce emissions in a timely manner and record the measures taken;
- make the complaints log available to the local authority when asked;
- record any exceptional incidents that cause dust and/or air emissions, either on- or off- site and the action taken to resolve the situation in the log book;
- carry out regular site inspections to monitor compliance with the CMP, record inspection results and make inspection log available to MSDC when asked;
- increase frequency of site inspection 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 periods of dry or windy conditions;
- plan 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;
- fully enclose site or specific operations where there is a high potential for dust production and the activities are being undertaken 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 being re-used on site, cover as detailed below;
- cover, seed or fence stockpiles to prevent wind whipping;
- ensure all vehicles switch off engines when stationary - no idling vehicles;
- avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable;

- produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials;
- only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction e.g. suitable local exhaust ventilation systems;
- ensure an adequate water supply on site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate;
- use enclosed chutes and 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;
- avoid bonfires and burning of waste materials;
- avoid scabbling where possible;
- ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery;
- use water-assisted dust sweepers on the access and local roads, to remove, as necessary, any material tracked out of the site;
- avoid dry sweeping of large areas;
- ensure vehicles entering and leaving the site are covered to prevent the escape of materials during transport;
- record all inspections of haul routes and any subsequent action in a site log book;
- implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud);
- ensure there is adequate area of hard surfaced road between the wheel wash facility and the site exit where ever site size and layout permit.