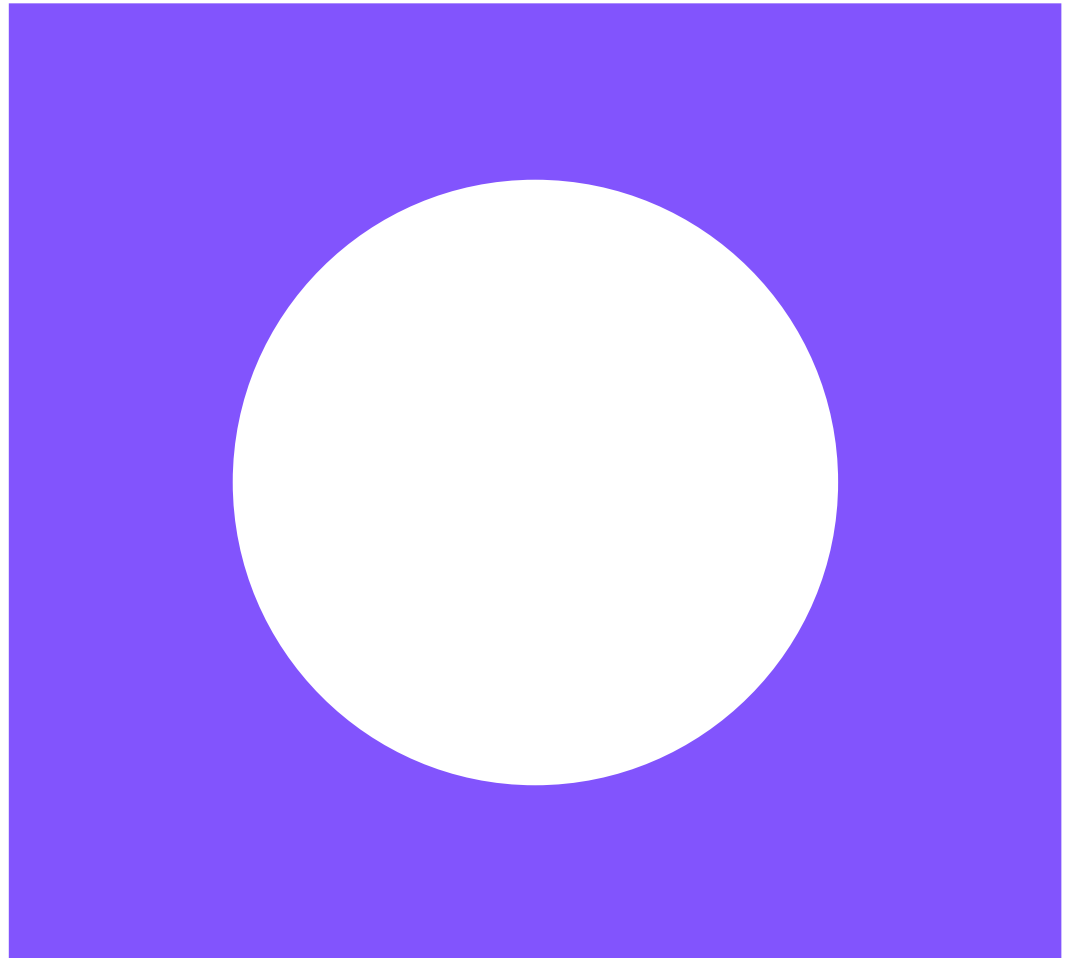




# **QVH CDCs - East Grinstead**

Air Quality Assessment

January 2025

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Mott MacDonald  
10 Fleet Place  
London EC4M 7RB  
United Kingdom

T +44 (0)20 7651 0300  
mottmac.com

Queen Victoria Hospital  
Holtye Road  
East Grinstead  
RH19 3DZ

# **QVH CDCs - East Grinstead**

## **Air Quality Assessment**

January 2025

# Issue and Revision Record

| Revision | Date         | Originator       | Checker         | Approver  | Description              |
|----------|--------------|------------------|-----------------|-----------|--------------------------|
| PO1      | January 2025 | T. Malik-Agrawal | A. Lithgow-Dick | J Brookes | First draft for comments |
|          |              |                  |                 |           |                          |
|          |              |                  |                 |           |                          |
|          |              |                  |                 |           |                          |
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|          |              |                  |                 |           |                          |

**Document reference:** 100120806-MM-ZZ-EG-RP-EN-0006

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# 1 Introduction

## 1.1 Overview

Mott MacDonald has been appointed by Queen Victoria Hospital NHS Trust to provide an air quality assessment to support the planning application for a new building at the Queen Victoria Hospital (QVH) site in East Grinstead (hereafter referred to as the 'proposed development').

The NHS Trust wish to expand their range of community and primary care services, including the ownership and operation of Community Diagnostic Centres (CDC). The proposed development consists of a single-story building of a traditional type construction, that is designed in a style that fits into the proposed environment. The proposed site for the CDC is on the green at the entrance to the hospital site in front and the right of the Existing Jubilee Building.

## 1.2 Objectives

This report provides an assessment of the following key effects associated with the construction and operation phase of the proposed development:

- Nuisance, health effects and/or loss of amenity caused by construction dust on sensitive receptors;
- Potential changes in traffic during construction due to movements associated with construction activities; and
- Changes in pollutant concentrations caused by additional vehicles associated with the proposed development.

A qualitative assessment has also been undertaken using local and national air quality monitoring data and by considering the location of the proposed development in relation to existing emission sources to assess the operational site suitability.

### 1.2.1 Scope of assessment

#### 1.2.1.1 Construction phase

During the construction phase, the proposed development would involve potentially dust generating activities, such as earth moving. This assessment has been undertaken in accordance with the best practice guidance published by the Institute of Air Quality Management (IAQM) '*Guidance on the assessment of dust from demolition and construction*' (2024)<sup>1</sup>.

Construction of the proposed development also has the potential to cause changes in traffic due to movements associated with construction activities and introduce emissions from construction plant. This assessment has been undertaken in accordance with the best practice guidance published by the Environmental Protection UK (EPUK) and IAQM '*Land use planning and development Control: Planning for Air Quality*' (2017)<sup>2</sup>.

---

<sup>1</sup> Institute of Air Quality Management (2024) '*Guidance on the assessment of dust from demolition and construction*'.

<sup>2</sup> Environmental Protection UK and Institute of Air Quality Management (2017), '*Land-Use Planning and Development Control: Planning for Air Quality*'

#### 1.2.1.2 Operational phase

The proposed development will be powered by electricity from the grid, with a dedicated substation. There are also back-up generators for emergency use only, which are critical to business and may be subject to the environmental permit covered by the Environmental Permitting (England and Wales) Regulations 2016<sup>3</sup>, as amended.

The proposed development has the potential to generate additional traffic emissions during operation. Consideration of the operational assessment is discussed further in Section 3.3. Review of traffic changes associated with the proposed development has been carried out in accordance with the EPUK and IAQM's guidance<sup>2</sup>.

### 1.3 Proposed development location

The proposed development is at a roadside<sup>4</sup> setting, located at Queen Victoria Hospital, Holtye Road, East Grinstead, West Sussex, RH19 3DZ. To the west, the site adjoins an access road leading to the QVH car park, with multiple healthcare facilities of various uses and construction types situated on the remainder of the site towards the north and northwest. The wider surrounding areas include further car parks, walkways, public open (green) spaces and smaller parks to the northwest of the proposed development. The proposed development is bound by residential properties to the east and south.

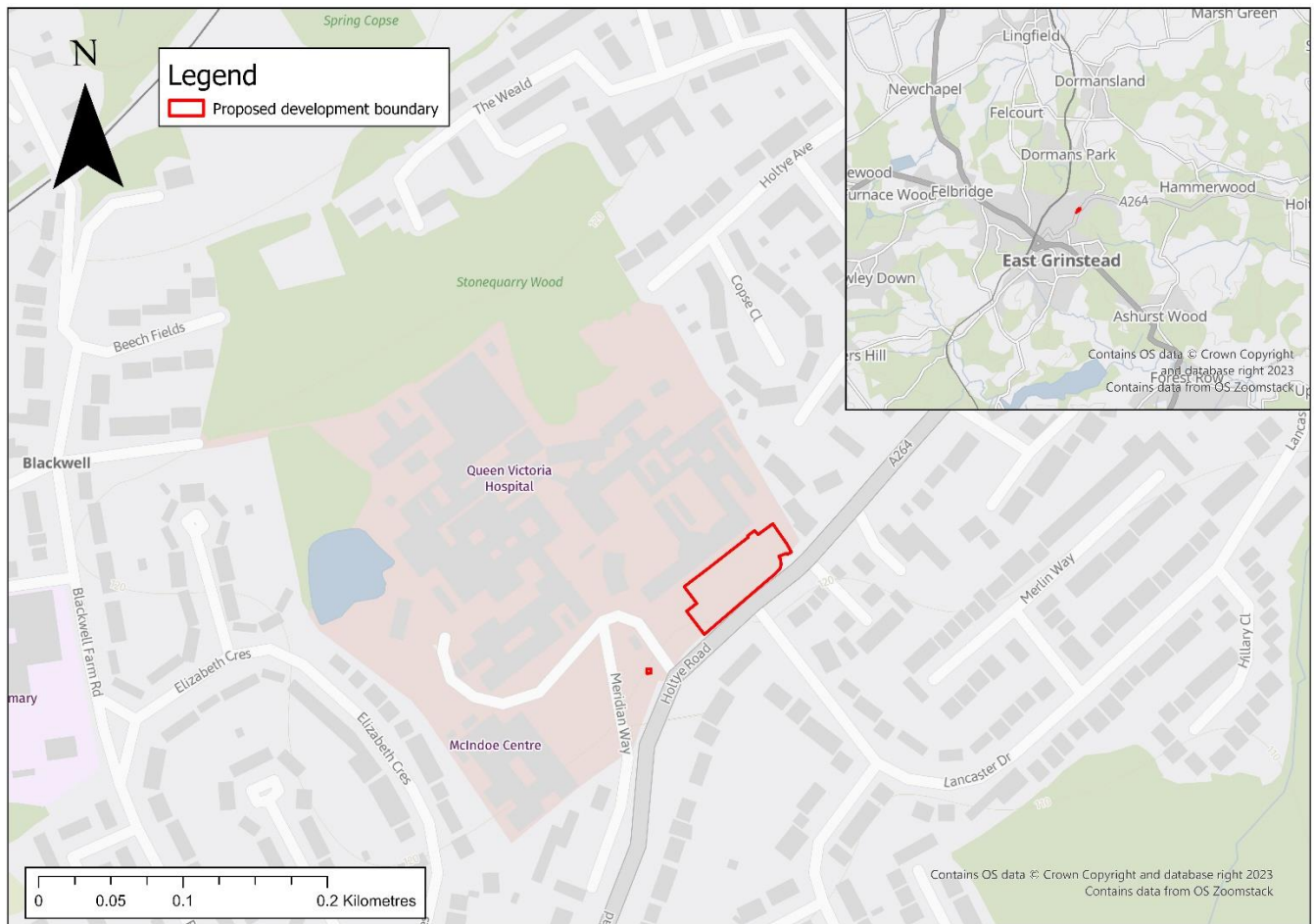
The proposed development is located within Mid Sussex District Council's (MSDC) administrative area. The closest Air Quality Management Area (AQMA) is located approximately 10km to the west. This AQMA is too far to be influenced by the proposed development and is therefore not considered further. The location of the proposed development is displayed in Figure 1.1.

---

<sup>3</sup> Statutory Instrument. (2016) The Environmental Permitting (England and Wales) Regulations 2016, as amended N° 1154

<sup>4</sup> A site sampling typically within one to five metres of the kerb of a busy road (although distance can be up to 15m from the kerb in some cases)

**Figure 1.1: Proposed development location**



Source: Mott MacDonald

## 1.4 Key pollutants

The assessment considers concentrations of oxides of nitrogen (NO<sub>x</sub>) and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) as these are the key pollutants of concern associated with road traffic in the study area. A description of these pollutants is provided below.

### 1.4.1 Oxides of nitrogen

Oxides of Nitrogen (NO<sub>x</sub>) is a collective term used to describe a mixture of nitric oxide (NO) and NO<sub>2</sub>. These are primarily formed from nitrogen in the atmosphere and nitrogen in fossil fuels via high temperature combustion. The main sources in the UK are road traffic and power generation.

During the process of combustion, atmospheric and fuel nitrogen is partially oxidised via a series of complex reactions to NO. The process is dependent on the temperature, pressure, oxygen concentration and residence time of the combustion gases in the combustion zone. Most NO<sub>x</sub> exhausting from a combustion process is in the form of NO, which is a colourless and tasteless gas. It is readily oxidised to NO<sub>2</sub>, a more harmful form of NO<sub>x</sub>, by chemical reaction with ozone and other chemicals in the atmosphere.

### 1.4.2 Particulates

'Dust' is a generic term which usually refers to particulate matter in the size range 1-75 microns in diameter<sup>5</sup>. Dust can arise from numerous construction activities such as concrete-batching, piling, sand blasting, wind erosion on material stockpiles and earth-moving activities. It can be mechanically transported either by wind or through the movement of vehicles onto the public highway (transport of debris on vehicle wheels, or uncovered loads).

Particulate matter is formed of solid and liquid particles, both organic and inorganic, that are present in the atmosphere. PM<sub>10</sub> is defined as particulate matter with a diameter of 10 microns (µm) or less. PM<sub>2.5</sub> is defined as particulate matter with a diameter of 2.5 microns or less. Exposure to high concentrations of particulate matter smaller than the PM<sub>10</sub> fraction can cause harmful cardiovascular and respiratory effects in humans.

Primary sources are numerous; anthropogenic sources include power stations, other industrial processes, road transport, domestic coal burning, and trans-boundary pollution and natural sources include erosion of natural materials, oceans (sea salt) and dust storms. Secondary particulate matter originates as other pollutants which are re-formed into aerosols in the atmosphere. Secondary particulates are significant contributors to the overall atmospheric loading of particulates. In urban areas, road traffic is generally the greatest source of fine particulate matter, although localised effects are also associated with construction and demolition activity.

---

<sup>5</sup> Building Research Establishment (2003). The 'Control of Dust from Construction and Demolition Activities'.

## 2 Legislation and policy

### 2.1 Overview

This section summarises the relevant international and national legislation, policy and planning guidance in relation to air quality. In addition, local planning policy guidance has been reviewed in order to identify air quality policy implications related to the proposed development.

### 2.2 Legislation

#### 2.2.1 England

The Air Quality Standards Regulations 2010<sup>6</sup>, Air Quality Standards (amendment) Regulations 2016<sup>7</sup>, Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019<sup>8</sup> and Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020<sup>9</sup> implement Directive 2008/50/EC on ambient air quality<sup>10</sup>.

These define limit values and times by which they are to be achieved for the purpose of protecting human health and the environment by avoiding, reducing or preventing harmful concentrations of air pollutants.

The limit values apply everywhere, with the exception of:

- Any locations situated within areas where members of the public do not have access and there is no fixed habitation
- In accordance with Article 2(1), on factory premises or at industrial installations to which all relevant provisions concerning health and safety at work apply, and
- On the carriageway of roads; and on the central reservations of roads except where there is normally pedestrian access to the central reservation.

The Department for Environment Food and Rural Affairs (Defra) assesses and reports on the compliance with the limit values for each of the 43 zones and agglomerations across the UK. Zones and/or agglomerations achieve compliance when everywhere within the zone and/or agglomeration (excepting locations provided in the Directive) does not exceed the relevant limit value.

Part IV of the Environment Act 1995<sup>11</sup> (as amended in Schedule 11 of the Environment Act 2021<sup>12</sup>) requires that every local authority shall periodically carry out a review of air quality within its area, including predictions of likely future air quality. The air quality objectives specifically for use by local authorities in carrying out their air quality management duties are set out in the Air Quality (England) Regulations 2000<sup>13</sup> and the Air Quality (England) (Amendment)

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<sup>6</sup> Statutory Instrument. (2010), *The Air Quality Standards Regulations*, No. 1001.

<sup>7</sup> Statutory Instrument. (2016) *The Air Quality Standards (Amendment) Regulations*, No. 1184.

<sup>8</sup> Statutory Instrument. (2019) *Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations*

<sup>9</sup> Statutory Instrument. (2020) *Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020*, No. 1313.

<sup>10</sup> European Union. (April 2008) *Directive on ambient air quality and cleaner Air for Europe, Directive 2008/50/EC* Official Journal, vol. 152, pp. 0001-0044

<sup>11</sup> Department for Environment Food and Rural Affairs. (2003) *Part IV of the Environment Act 1995 Local Air Quality Management*

<sup>12</sup> Statutory Instrument. (2021) Chapter 30, Schedule 11 *Local Air Quality Management Framework of Environment Act 2021*

<sup>13</sup> Statutory Instrument. (2000) *Air Quality (England) Regulations*, No. 928

Regulations 2002<sup>14</sup>. In most cases, the air quality objectives are set at the same pollutant concentrations as the limit values transposed into UK law although compliance dates differ.

As part of the review of air quality, the local authority must assess whether air quality objectives are being achieved or are likely to be achieved within the relevant periods and identify the relevant sources of emissions it considers responsible for the failure to achieve the objectives. Any parts of a local authority's area where the objectives are not being achieved or are not likely to be achieved within the relevant period must be identified and declared as an AQMA. Once such a declaration has been made, local authorities are under a duty to prepare an Action Plan which sets out measures to pursue the achievement of the air quality objectives within the AQMA.

### 2.2.2 Statutory nuisance

Section 79(1)(d) of the Environmental Protection Act 1990<sup>15</sup> defines one type of 'statutory nuisance' as '*any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance*'. Where a local authority is satisfied that a statutory nuisance exists, or is likely to occur or recur, it must serve an abatement notice. Failure to comply with an abatement notice is an offence. Best practicable means is a widely-used defence by operators, if employed to prevent or to counteract the effects of the nuisance.

## 2.3 Policy

### 2.3.1 UK Air Quality Strategy

The Environment Act requires the UK Government to produce a national Air Quality Strategy (AQS). The AQS establishes the UK framework for air quality improvements. The measures agreed at the national and international level are the foundations on which the strategy is based. The first AQS, first adopted in 1997<sup>16</sup> and its subsequent iterations, have now been superseded as of the 14<sup>th</sup> January 2019 with the Clean Air Strategy 2019 (CAS)<sup>17</sup>.

The CAS does not set legally binding objectives, the CAS instead has targets for reducing total UK emissions of nitrogen oxides (NO<sub>x</sub>) and fine particulate matter (PM<sub>2.5</sub>) from sectors such as road transport, domestic sources and construction plant (non-road mobile machinery (NRMM)).

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Further to this, the UK Government has since revised the AQS in 2023. This revision replaces the 2007 strategy and compliments the CAS. The 2023 revision sets out the actions the

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<sup>14</sup> Statutory Instrument. (2002) Air Quality (England) (Amendment) Regulations, No. 3043.

<sup>15</sup> Parliament of the United Kingdom (1990) Environmental Protection Act 1990

<sup>16</sup> Department for Environment Food and Rural Affairs. (March 1997), 'The United Kingdom National Air Quality Strategy', Cm 3587, Department for Environment Food and Rural Affairs.

<sup>17</sup> Department for Environment Food and Rural Affairs. (January 2019), 'The Clean Air Strategy'

<sup>18</sup> Department for Environment Food and Rural Affairs. (March 1997), 'The United Kingdom National Air Quality Strategy', Cm 3587, Department for Environment Food and Rural Affairs.

<sup>19</sup> Department for Environment Food and Rural Affairs. (January 2019), 'The Clean Air Strategy'

government expects local authorities in England to take in support of achieving the Government's long-term air quality goals, including their two new long-term PM<sub>2.5</sub> targets, as set out in The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023<sup>20</sup>, which are as follows:

- an annual mean concentration target for PM<sub>2.5</sub> of 10µg/m<sup>3</sup> across England by 2040
- a population exposure reduction target of 35% by 2040 compared to a 2018 baseline.

The Environmental Improvement Plan 2023 for England, which is discussed further in Section 2.3.2.3, sets interim targets to be met by the end of January 2028. These targets are not legal thresholds but have been included for reference. They are:

- the highest annual mean concentration in the most recent full calendar year must not exceed 12 µg/m<sup>3</sup> of PM<sub>2.5</sub>
- compared to 2018, the reduction in population exposure to PM<sub>2.5</sub> in the most recent full calendar year must be 22% or greater

## 2.3.2 National planning policy

### 2.3.2.1 National Planning Policy Framework

The revised National Planning Policy Framework<sup>21</sup> was published in December 2023 and sets out the Government's planning policies for England. With regard to air quality, it states 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 quality...'*

And:

*'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.'*

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<sup>20</sup> His Majesty's Government (2023) The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023, No.96 [online] available at: <https://www.legislation.gov.uk/uksi/2023/96/contents/made> (Last accessed July 2023)

<sup>21</sup> Ministry of Housing, Communities and Local Government (December 2023). National Planning Policy Framework

### 2.3.2.2 National Planning Practice Guidance

On 6 March 2014, the Department for Communities and Local Government (DCLG) published a national planning practice guidance web-based resource<sup>22</sup> which was updated on 1st November 2019.

The National Planning Practice Guidance includes a dedicated section on air quality. It notes that, for new planning applications, the local planning authority may require information on:

- 'the 'baseline' local air quality';
- 'whether the Scheme could significantly change air quality during the construction and operational phases (and the consequences of this for public health and biodiversity) and
- 'whether occupiers or users of the development could experience poor living conditions or health due to poor air quality.'

It also states the following in relation to determining whether air quality is relevant to a planning decision:

*'Whether air quality is relevant to a planning decision will depend on the Scheme and its location. Concerns could arise if the development is likely to have an adverse effect on air quality in areas where it is already known to be poor, particularly if it could affect the implementation of air quality strategies and action plans and/or breach legal obligations (including those relating to the conservation of habitats and species). Air quality may also be a material consideration if the Scheme would be particularly sensitive to poor air quality in its vicinity.'*<sup>23</sup>

### 2.3.2.3 25 Year Environmental Plan

The Department for Environment, Food & Rural Affairs (Defra) 'A Green Future: Our 25 Year Plan to Improve the Environment' (25 Year Environment Plan) (2018)<sup>24</sup> is a policy paper published on 11 January 2018 setting out what Government will do to improve the environment, including restoring and safeguarding wildlife habitats. The first revision of the 25 Year Environment Plan 'Environmental Improvement Plan 2023' was published on 31 January 2023 and sets the two interim targets presented in Section 2.3.1 for PM<sub>2.5</sub> annual mean concentrations and population exposure.

The 25 Year Environment Plan sets out aims to achieve clean air by:

- 'Meeting legally binding targets to reduce emissions of five damaging air pollutants; this should halve the effects of air pollution on health by 2030'.
- "Ending the sale of new conventional petrol and diesel cars and vans by [2030]" (The original deadline of 2040 has been brought forward).
- "Maintaining the continuous improvement in industrial emissions by building on existing good practice and the successful regulatory framework'.

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<sup>22</sup> National Planning Practice Guidance web-based resource. Available at: <https://www.gov.uk/government/collections/planning-practice-guidance>

<sup>23</sup> National Planning Practice Guidance 'Air Quality Section'. Available at: <https://www.gov.uk/guidance/air-quality--3> (published 6 March 2014).

<sup>24</sup> HM Government (2018) A Green Future: Our 25 Year Plan to Improve the Environment [online]. Available at: 25 Year Environment Plan - GOV.UK ([www.gov.uk](http://www.gov.uk)) (Last accessed August 2023).

## 2.3.3 Local policy

### 2.3.3.1 Mid Sussex District Plan

The Mid Sussex District Plan<sup>25</sup> was adopted in March 2018 to be used when considering planning applications. It covers a period up to 2031 and replaces majority of the Mid Sussex Local Plan which was adopted in 2004. The main policy of relevance is Policy DP29: Noise, Air and Light Pollution, which states that:

*'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.'*

## 2.4 Summary

Air quality objectives and limit values of relevance to the proposed development are summarised in Table 2.1.

**Table 2.1: Relevant Air Quality Objectives and Limit Values**

| Pollutant                              | Averaging Period | Concentration         | Allowance | Attainment Date                    |                                  |
|----------------------------------------|------------------|-----------------------|-----------|------------------------------------|----------------------------------|
|                                        |                  |                       |           | Air Quality Objectives             | Limit Values                     |
| Nitrogen dioxide (NO <sub>2</sub> )    | Annual           | 40 µg/m <sup>3</sup>  | -         | 31 December 2005 <sup>(a)</sup>    | 1 January 2010 <sup>(b)(c)</sup> |
|                                        | 1 Hour           | 200 µg/m <sup>3</sup> | 18        | 31 December 2005 <sup>(a)</sup>    | 1 January 2010 <sup>(b)(c)</sup> |
| Particulates (PM <sub>10</sub> )       | Annual           | 40 µg/m <sup>3</sup>  | -         | 31 December 2004 <sup>(a)(c)</sup> | 1 January 2005 <sup>(b)</sup>    |
|                                        | 24 Hour          | 50 µg/m <sup>3</sup>  | 35        | 31 December 2004 <sup>(a)(c)</sup> | 1 January 2005 <sup>(b)</sup>    |
| Fine particulates (PM <sub>2.5</sub> ) | Annual           | 20 µg/m <sup>3</sup>  | -         | -                                  | 1 January 2020 <sup>(b)(c)</sup> |

Notes: <sup>(a)</sup> Air Quality (England) Regulations 2000 as amended

<sup>(b)</sup> EU Directive 2008/50/EEC on ambient air quality and cleaner air for Europe, as transposed into UK Law

<sup>(c)</sup> Air Quality Strategy 2023

Table 2.2 provides details of where the respective objectives should and should not apply and therefore the types of receptors that are relevant to the assessment of air quality. As noted below, the annual, 24 hour and one-hour objectives apply at hospitals.

**Table 2.2: Locations where the Air Quality Objectives apply**

| Averaging Period | Objectives should apply at:                                           | Objectives should not apply at:                                                                             |
|------------------|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| Annual           | All locations where members of the public might be regularly exposed. | Building façades of offices or other places of work where members of the public do not have regular access. |

<sup>25</sup> Mid Sussex District Council (2018) Mid Sussex District Plan. Available at: [Mid Sussex District Plan 2014-2031](#)

| Averaging Period | Objectives should apply at:                                                                                                                                                                                                                                                                                                                                                                                                                        | Objectives should not apply at:                                                                                                                                                                                                                    |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | Building façades of residential properties, schools, hospitals, care homes, etc.                                                                                                                                                                                                                                                                                                                                                                   | Hotels, unless people live there as their permanent residence.<br>Gardens of residential properties.<br>Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short-term. |
| 24-Hour          | 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           | All locations where the annual mean and 24-hour mean objectives apply.<br>Kerbside sites (for example, pavements of busy shopping streets).<br>Those parts of car parks, bus stations and railway stations, etc., which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more.<br>Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer. | Kerbside sites where the public would not be expected to have regular access.                                                                                                                                                                      |

Source: Defra TG22<sup>26</sup>.

<sup>26</sup> Department for Environment, Food and Rural Affairs and Devolved Administrations (August 2022). Local Air Quality Management – Technical Guidance LAQM.TG22

## 3 Methodology

### 3.1 Overview

This section provides the approach taken to consider the air quality effects of the construction and operation phase of the proposed development, key elements of which include model choice, traffic data, emission factors and dealing with uncertainty.

### 3.2 Construction phase

#### 3.2.1 Construction dust assessment

Guidance from the IAQM<sup>1</sup> recommends splitting the construction activities into four separate source categories and determining the dust risk associated with each of these individually. This assessment has determined the risk of each of the following source categories:

- Demolition
- Earthworks
- Construction
- Trackout (the transport of dust and dirt from the construction site onto the public road network by vehicles).

The risk of each source for dust effects is described as 'negligible', 'low risk', 'medium risk' or 'high risk' depending on the nature and scale of the construction activities and the proximity of sensitive receptors to the construction activities or site boundary. The assessment is used to identify appropriate mitigation measures proportional to the level of risk, to reduce the effects such that they are not significant.

The assessment considers three separate effects from dust:

- Annoyance due to dust soiling
- Harm to ecological receptors
- The risk of health effects due to an increase in exposure to PM<sub>10</sub>.

Step 1 of the assessment applies screening criteria to the proposed development which states that an assessment will normally be required where there is:

- A 'human receptor' within
  - 250m of the boundary of the site
  - 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s)
- An 'ecological receptor' within
  - 50m of the boundary of the site
  - 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s)

No further assessment is required if there are no receptors within the defined boundaries.

To assess the likely dust risk, firstly the overall dust emission magnitude ('small', 'medium' or 'large') from each of the dust sources identified (demolition, earthworks, construction and trackout) is established in accordance with the criteria outlined in Table A.1 in Appendix A.

The sensitivity of receptors is then defined (as high, medium or low) for each dust effect (dust soiling, human health and ecosystem impacts) in accordance with the criteria presented within Table A.2 in Appendix A.

The sensitivity of the surrounding area is determined for each activity using the matrices in Table A.3, Table A.4 and Table A.5 in Appendix A. The sensitivity of the area is based on the distance of the source to the closest receptors, the receptor sensitivity, and in the case of PM<sub>10</sub> effects, the local background concentration. The highest level of area sensitivity defined for each dust effect has been used in this assessment.

The final step of the assessment combines the dust emission magnitude and the sensitivity of the area, using the matrices presented within Table A.6 to Table A.9 in Appendix A to determine the dust risk categories for each activity for dust soiling and health effects.

The dust risk category defined for each dust source and effect is then used to determine appropriate site-specific mitigation measures to be adopted. It should be noted that, in line with the recommendations of IAQM guidance, significance is only assigned to construction effects following mitigation.

### **3.2.2 Construction phase plant emissions**

Construction requires the use of different equipment such as excavators and on-site generators. All construction plants have an energy demand with some as a direct emission to air from exhausts. Dust guidance from the IAQM<sup>1</sup> notes that effects from exhaust will likely not be significant. Given the nature of the site plant, effects of plant emissions on local air quality are considered of negligible significance relative to the surrounding road traffic contributions on the local road network. Construction plant emissions have therefore not been assessed further. However, mitigation measures to reduce the impacts on local air quality are presented in Section 6.2.1.

### **3.2.3 Construction phase traffic emissions**

EPUK and IAQM<sup>2</sup> guidance indicates that an assessment of traffic emissions is only likely to be required for large, long term construction sites that will generate an additional annual average flow of greater than 100 heavy duty vehicles (HDVs) per day or greater than 500 light duty vehicles (LDVs) per day. Due to the nature of the proposed development, it is not anticipated that the LDV or HDV flows will exceed these thresholds during the construction phase and is therefore not considered further.

## **3.3 Operational phase**

### **3.3.1 Overview**

This section provides the approach taken to consider the air quality effects of the operation phase of the proposed development.

### **3.3.2 Traffic data for use in assessment**

Traffic data used within this assessment has been provided by the proposed development's Traffic and Transport consultant and is derived from a conservative approach of traffic survey data of visitor movements. Each movement assumes a separate person attending an appointment and it also assumed that approximately 80% of visitors travel by car. It is predicted that there will be 240 car movements for visitors (two-way)<sup>27</sup> and a further 35 (two-way)<sup>28</sup> for staff members. There is expected to be minimal HDV movements as well. On this basis, traffic

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<sup>27</sup> Two-way refers to 120 car movements to and 120 car movements from the proposed development

<sup>28</sup> Two-way refers to 17 car movements to and 17 car movements from the proposed development

is not expected to greatly impact air quality, therefore the operation phase has not been considered any further.

# 4 Baseline

## 4.1 Overview

Information on air quality in the UK can be obtained from a variety of sources including local authorities, national network monitoring sites and other published sources. For the purposes of this assessment, data has been obtained from Defra<sup>29</sup> and MSDC<sup>30</sup>.

The most recent full year of monitoring data available for the monitoring sites operated by MSDC is 2023. The monitoring data for 2020 and 2021 however is unlikely to be representative of ‘normal’ conditions at the monitoring sites, due to the effects associated with the coronavirus (Covid-19) pandemic during those years when England was subject to periods of lockdowns and the influences this had on traffic. Therefore, only monitoring data for 2022 and 2023 has been considered. The Defra projected background concentration of current year 2024 has been used.

## 4.2 Local authority review and assessment

### 4.2.1 Local authority monitoring

#### 4.2.1.1 Automatic monitoring

MSDC undertook automatic monitoring at one site within its administrative area in 2023. SAQ43 is a kerbside<sup>31</sup> location and monitors both NO<sub>2</sub> and PM<sub>10</sub> concentrations and is located 1.1km to the southwest of the proposed development. The concentrations of NO<sub>2</sub> and PM<sub>10</sub> monitored at MSAQ43 are presented below in Table 4.1 and the location is displayed in Figure 4.1.

There were no recorded exceedance of the annual or short-term NO<sub>2</sub> and PM<sub>10</sub> air quality objectives in 2022 or 2023.

**Table 4.1: Automatic monitoring concentrations**

| Site ID | Site Type | Valid data capture for monitoring period (%) | National Grid Reference |        | Pollutant Measured | Annual mean concentration (µg/m³) * |          |
|---------|-----------|----------------------------------------------|-------------------------|--------|--------------------|-------------------------------------|----------|
|         |           |                                              | X                       | Y      |                    | 2022                                | 2023     |
| MSAQ43  | Kerbside  | 99.5                                         | 539100                  | 138407 | NO <sub>2</sub>    | 24.3 (0)                            | 21.1 (0) |
|         |           | 99.5                                         |                         |        | PM <sub>10</sub>   | 18.8 (0)                            | 17.0 (1) |

Source: Mid Sussex District Council (2024) Annual Status Report 2024

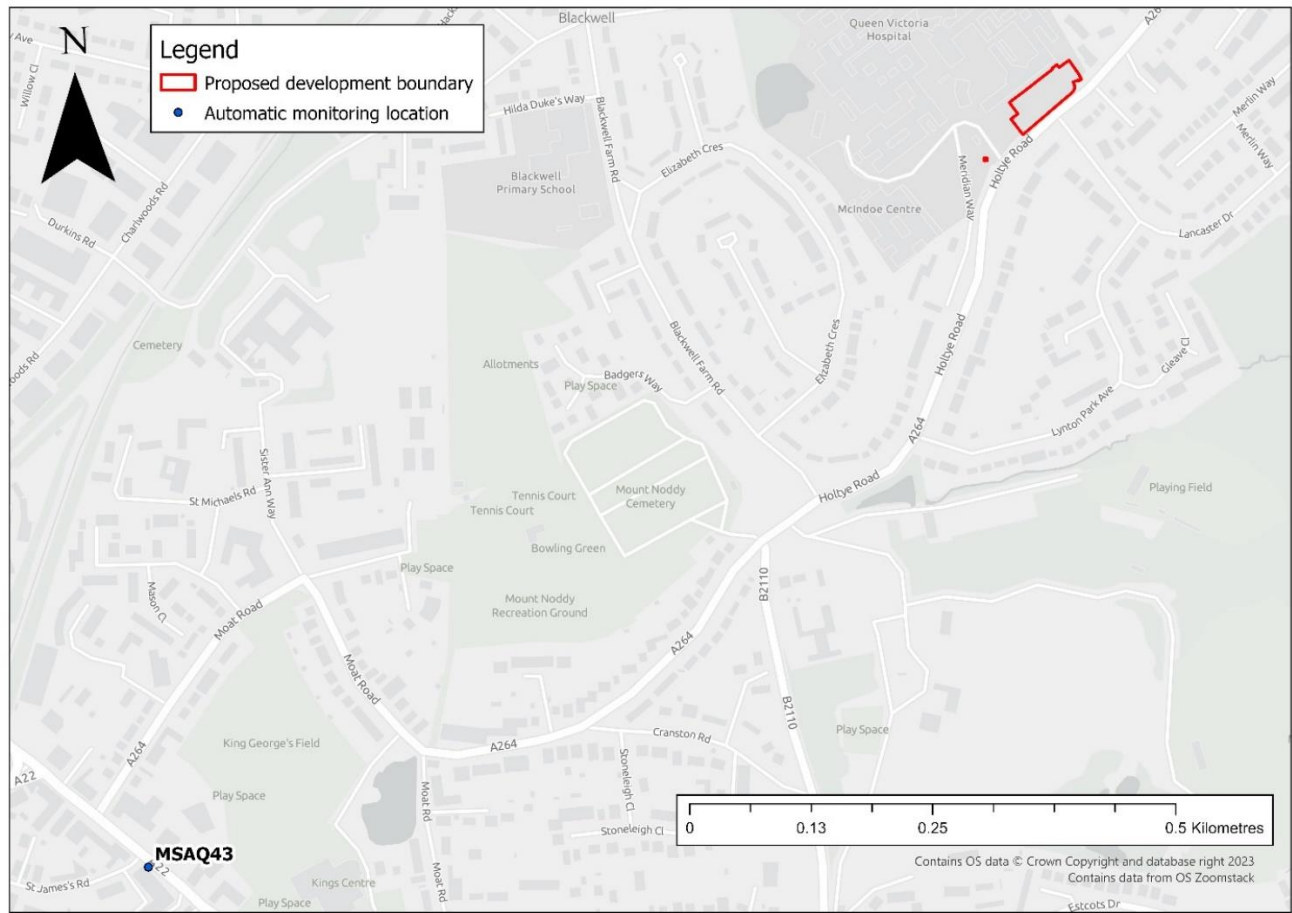
Note: (-) represents no monitoring data available  
(\* ) The value within ( ) indicates the number of hours (NO<sub>2</sub>) or days (PM<sub>10</sub>) above the short-term concentration (200µg/m³ for NO<sub>2</sub> and 50 µg/m³ for PM<sub>10</sub>)

<sup>29</sup> Department for Environment Food and Rural Affairs. Air Quality Information Resource (Air) Website. Available at: <http://uk-air.defra.gov.uk/>

<sup>30</sup> Mid Sussex District Council (2024). Annual Status Report 2024. Available at: [2024 Air Quality Annual Status Report \(ASR\)](#)

<sup>31</sup> A site sampling within one metre of the kerb of a busy road

Figure 4.1: Automatic monitoring location



Source: Mott MacDonald

4.2.1.2 Diffusion tube monitoring

MSDC undertook diffusion tube monitoring at 36 sites within its administrative area in 2023, in a mixture of roadside, kerbside, suburban<sup>32</sup>, and background<sup>33</sup> locations.

Seven of the closest sites to the proposed development are presented in Table 4.2 and in Figure 4.2 and are representative of concentrations along the A22 London Road. The concentrations recorded along the A22 London Road are expected to be higher than that found at the proposed development.

As shown in Table 4.2, there are no recorded exceedances of the annual mean NO<sub>2</sub> objective at any of the seven diffusion tube sites in 2022 or 2023.

Table 4.2: NO<sub>2</sub> Diffusion tube monitoring results

<sup>32</sup> A location type situated in a residential area on the outskirts of a town or city

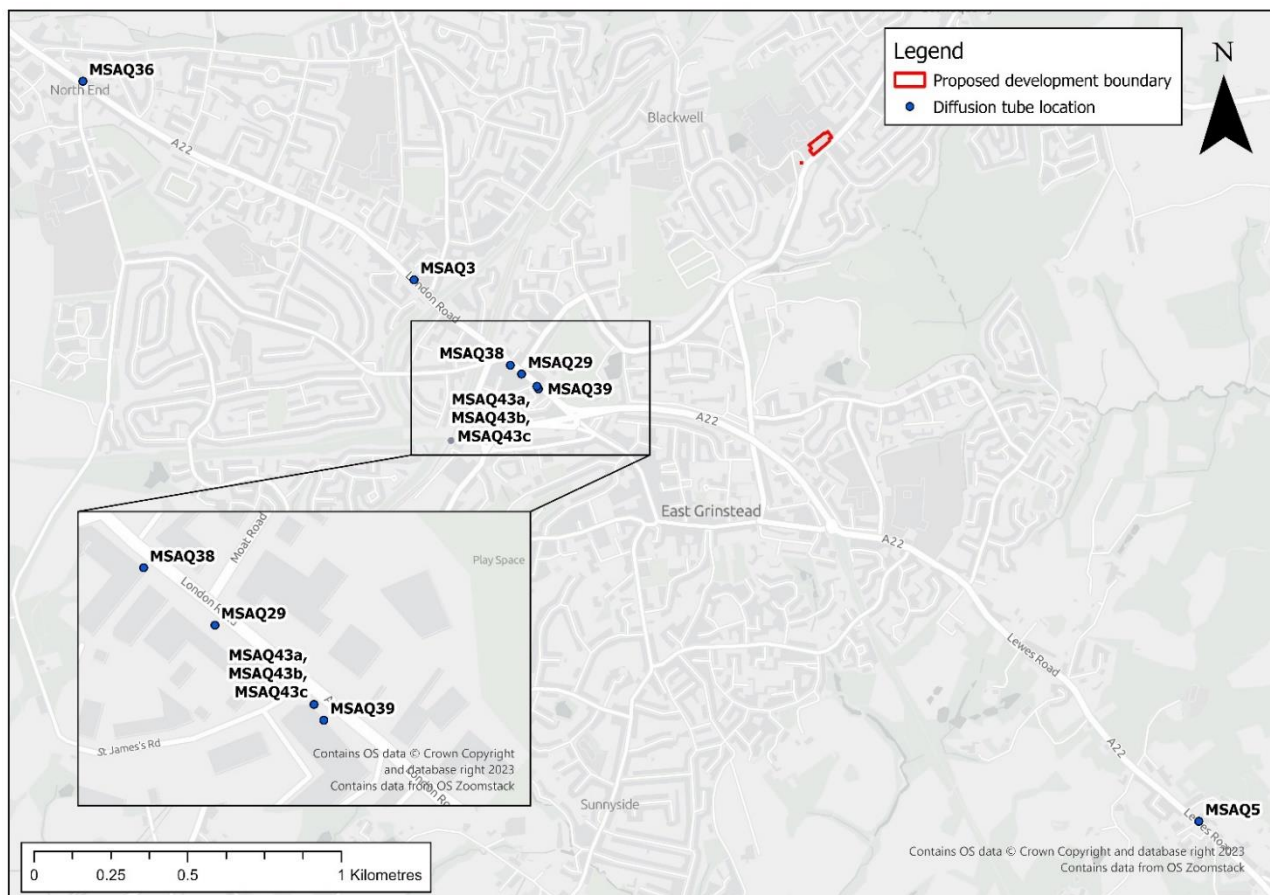
<sup>33</sup> An open countryside location, in an area of low population density distanced as far as possible from roads, populated and industrial areas

| Site ID                         | Site Type | Valid data capture for monitoring period (%) | Approx. distance from the proposed development (km) | National Grid Reference |        | Annual mean NO <sub>2</sub> concentration (µg/m <sup>3</sup> ) |      |
|---------------------------------|-----------|----------------------------------------------|-----------------------------------------------------|-------------------------|--------|----------------------------------------------------------------|------|
|                                 |           |                                              |                                                     | X                       | Y      | 2022                                                           | 2023 |
| MSAQ3                           | Kerbside  | 100                                          | 1.3                                                 | 538690                  | 138759 | 22.8                                                           | 19.7 |
| MSAQ5                           | Suburban  | 100                                          | 2.5                                                 | 541245                  | 136996 | 20.7                                                           | 17.8 |
| MSAQ29                          | Roadside  | 100                                          | 1.1                                                 | 539040                  | 138452 | 31.6                                                           | 29.6 |
| MSAQ36                          | Roadside  | 100                                          | 2.4                                                 | 537612                  | 139405 | 33.5                                                           | 29.8 |
| MSAQ38                          | Roadside  | 91.1                                         | 1.2                                                 | 539004                  | 138481 | 21.0                                                           | 17.0 |
| MSAQ39                          | Roadside  | 100                                          | 1.1                                                 | 539095                  | 138404 | 25.3                                                           | 21.3 |
| MSAQ43a,<br>MSAQ43b,<br>MSAQ43c | Roadside  | 100                                          | 1.1                                                 | 539090                  | 138412 | 27.4                                                           | 22.5 |

Source: Mid Sussex District Council (2024) Annual Status Report 2024

Note: (-) no monitoring data available  
Exceedances shown in **bold**

**Figure 4.2: Diffusion tube locations**



Source: Mott MacDonald

### 4.3 Defra projected background concentrations

Defra provides estimates of background pollution concentrations for NO<sub>x</sub>, NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> across the UK for each 1km grid square for every year from 2021 to 2040. Future year projections have been developed from the base year of the background maps, which is currently 2021. The maps include a breakdown of background concentrations by emission source, including road and industrial sources which have been calibrated against 2021 UK monitoring data.

The background concentrations for the grid squares containing the proposed development for the current year of 2025 in Table 4.3. The data shows background concentrations are all below the relevant EQS.

**Table 4.3: Defra projected background concentrations of NO<sub>x</sub>, NO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, for proposed development in 2025 (µg/m<sup>3</sup>)**

| 1km Grid Square Location (OS Grid Reference) |        | 2025 background concentration (µg/m <sup>3</sup> ) |                 |                  |                   |
|----------------------------------------------|--------|----------------------------------------------------|-----------------|------------------|-------------------|
| X                                            | Y      | NO <sub>2</sub>                                    | NO <sub>x</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> |
| 539500                                       | 139500 | 9.0                                                | 11.7            | 10.2             | 6.5               |
| 540500                                       | 139500 | 8.6                                                | 11.1            | 10.0             | 6.3               |

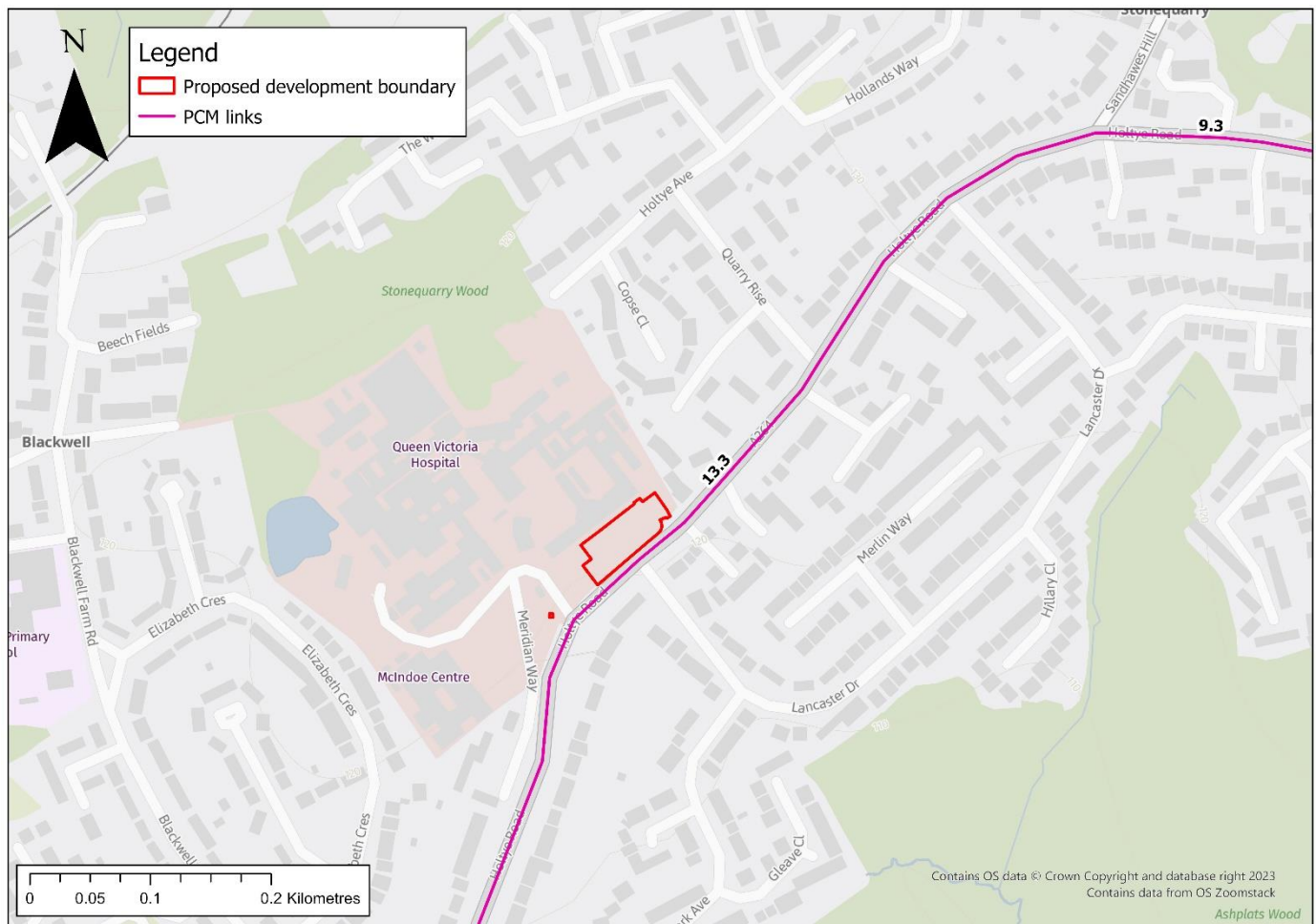
Source: <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2021>

## 4.4 Pollution climate model (PCM)

Defra uses the Pollution Climate Model (PCM) to report compliance with the limit values transposed into UK law from the Air Quality Directive<sup>34</sup>. PCM projections of NO<sub>2</sub> concentrations are available for all years from 2018 to 2030 from the base year of 2018. In general, predicted NO<sub>2</sub> concentrations decline into the future, mainly in response to cleaner vehicles and technologies, and actions in Air Quality Action Plans by local and combined authorities. The most recent PCM model results were published in 2021, and the projections represent the projected concentrations assuming no further action beyond the air quality measures that were committed by the reference year (2018).

The PCM link that is closest to the proposed development is located on the A264 Holtze Road, as shown in Figure 4.3: The largest annual mean NO<sub>2</sub> PCM model prediction in the area is 13.3µg/m<sup>3</sup> (Census ID: 802026857). This is far below the annual mean limit value of 40µg/m<sup>3</sup> for NO<sub>2</sub>.

**Figure 4.3: PCM links**



Source: Mott MacDonald

<sup>34</sup> European Union. (April 2008) Directive on Ambient Air Quality and cleaner Air for Europe, Directive 2008/50/EC Official Journal, vol. 152, pp. 0001-0044

# 5 Potential impacts

## 5.1 Construction phase

### 5.1.1 Construction dust emissions

The magnitude and sensitivity descriptors that have been applied to assess the overall effect of the construction phase are presented in Appendix A. Table 5.1 presents a summary of the dust emission magnitude assigned to each construction activity based on these descriptors.

There are no ecological designated sites within 50m of potential dust sources of the proposed development or from roads to be used by construction traffic. The nearest ecological designation is Mills Rocks of Special Scientific Interest (SSSI) located approximately 2.3 km southeast of the proposed development. Therefore, ecological designations are not considered further.

**Table 5.1: Dust emission magnitude**

| Activity     | Dust emission magnitude | Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Demolition   | Small                   | There is no demolition of buildings associated with the proposed development as it is located on a greenfield site with no existing buildings. However, there will be removal of some mature trees and hedges. The height of these activities is expected to be less than 6m above ground level with low dust raising potential. As such, the dust emission magnitude from demolition activities is small.                                                               |
| Earthworks   | Small                   | The total area of the proposed development is approximately 2,500m <sup>2</sup> . The soil type is Ardingly Sandstone Member, a fine to medium grained sandstone which is rich in quartz and quartzite pebbles which is not easily erodible. The bund height is expected to be less than 3 metres (m) and the number of heavy earth moving vehicles at one time is expected to be less than 5. As such, the dust emission magnitude from earthworks activities is small. |
| Construction | Small                   | The total volume of construction is approximately 4,000m <sup>3</sup> . The construction materials that are expected to be used consist of steel frames, brick work, timber and glazed panels. There will be no on site crushing and screening of materials, sandblasting, piling or on-site concrete bashing. As such, the dust emission magnitude from construction activities is small.                                                                               |
| Trackout     | Small                   | The total number of HDVs leaving the site per day is not expected to exceed 20 and the unpaved road length is less than 50m. The likely haulage route used by construction vehicles is expected to be via the A264 Holtye Road, south of proposed development (principal route would be expected to be via A22). As such, the dust emission magnitude from trackout is small.                                                                                            |

Table 5.2 presents the sensitivity of the receptors to effects caused by construction activities and is based on the criteria presented in Table A.2 to Table A.5 in Appendix A. Figure 5.1 and Figure 5.2 present the dust assessment buffers.

**Table 5.2: Area sensitivity**

| Activity     | Dust soiling |                                                                                                                                                                                                                                                              | Health effects of PM <sub>10</sub> |                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | Sensitivity  | Comment                                                                                                                                                                                                                                                      | Sensitivity                        | Comment                                                                                                                                                                                                                                                                                                                                                                                                     |
| Demolition   | Medium       | There are between 1 to 10 high sensitivity receptors (residential properties and a hospital) within 20m of the proposed development. These are located on the A264 Holtye Road.                                                                              | Low                                | The background annual mean PM <sub>10</sub> concentrations are less than 24µg/m <sup>3</sup> (see Table 4.3)). There are between 1 to 10 high sensitivity receptors (residential properties and a hospital) within 20m of the proposed development. These are located on the A264 Holtye Road.                                                                                                              |
| Earthworks   | Medium       |                                                                                                                                                                                                                                                              | Low                                |                                                                                                                                                                                                                                                                                                                                                                                                             |
| Construction | Medium       |                                                                                                                                                                                                                                                              | Low                                |                                                                                                                                                                                                                                                                                                                                                                                                             |
| Trackout     | High         | There are between 10 to 100 high sensitivity receptors within 20m (residential properties and a hospital) from the side of potential routes used for construction traffic (up to 250m from potential site exits). These are located on the A264 Holtye Road. | Low                                | As above, the background annual mean PM <sub>10</sub> concentrations are less than 24µg/m <sup>3</sup> . There are between 10 to 100 high sensitivity receptors to health effects of PM <sub>10</sub> within 20m (residential properties and a hospital) from the side of potential routes used for construction traffic (up to 250m from potential site exits). These are located on the A264 Holtye Road. |

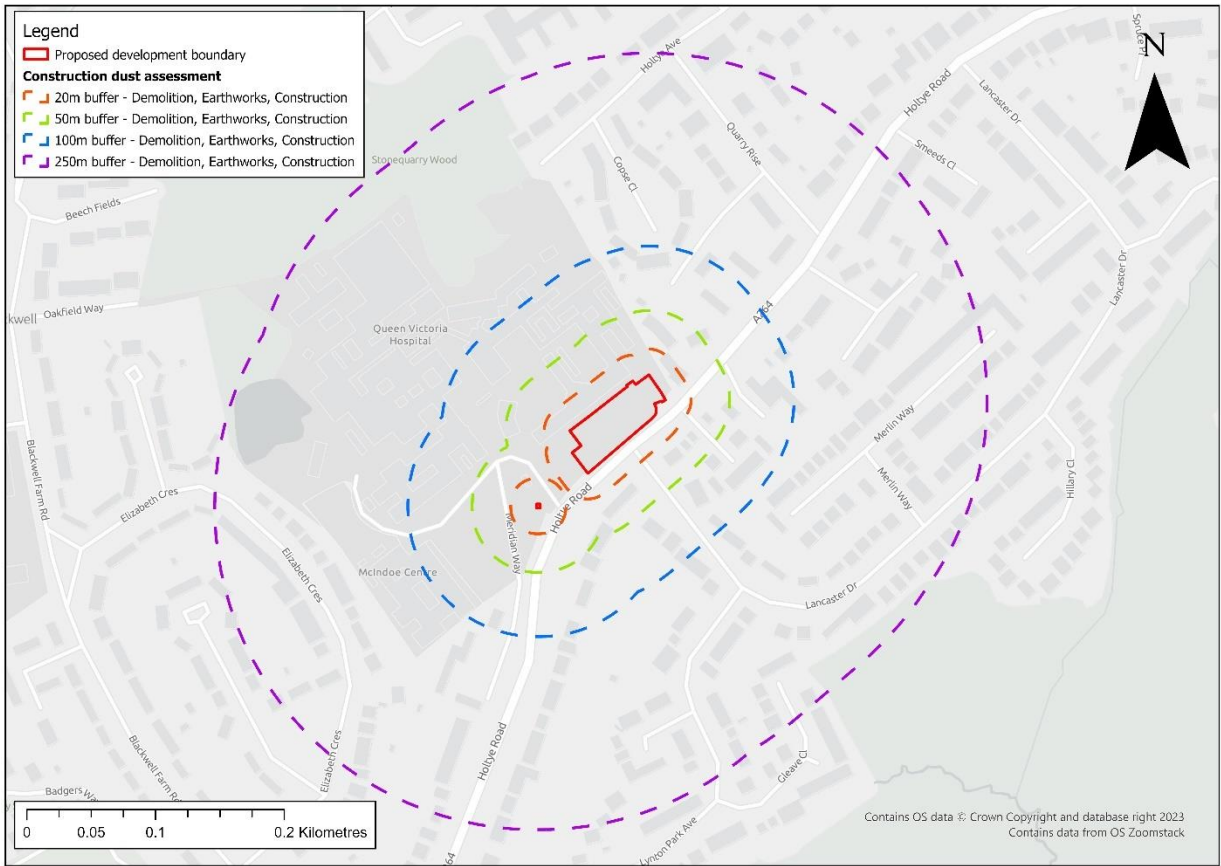
The overall risk of dust soiling effects and PM<sub>10</sub> effects are presented in Table 5.3. Risk is based on the criteria presented in Table A.6 to Table A.9 in Appendix A.

**Table 5.3: Summary of the risk of construction effects**

| Activity     | Dust soiling effects | PM <sub>10</sub> effects |
|--------------|----------------------|--------------------------|
| Demolition   | Low                  | Negligible               |
| Earthworks   | Low                  | Negligible               |
| Construction | Low                  | Negligible               |
| Trackout     | Low                  | Negligible               |

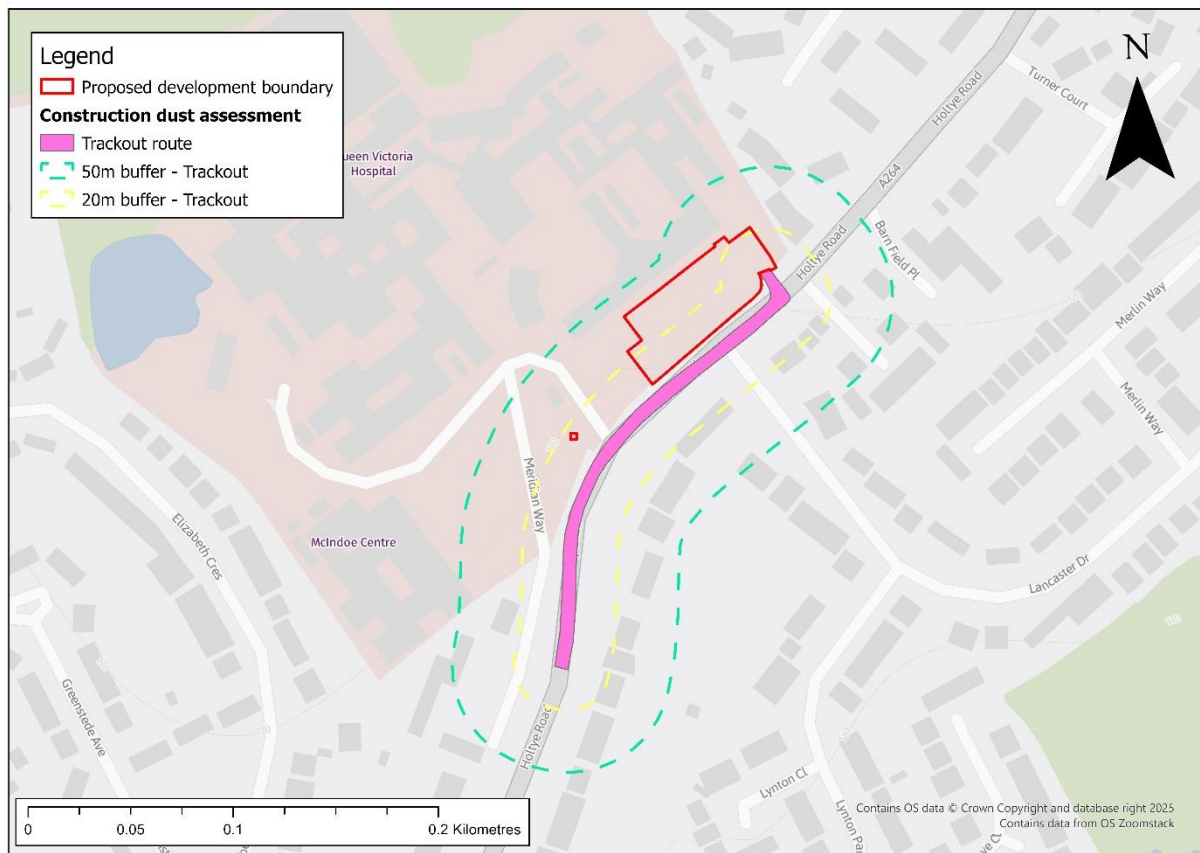
Dust soiling effects are 'Low' and PM<sub>10</sub> effects are 'Negligible' without mitigation. Mitigation measures appropriate for the proposed development are presented in Section 6. These measures will be presented in the Construction Environmental Management Plan (CEMP) which accompanies the application.

**Figure 5.1: Construction dust assessment buffers (demolition, earthworks and construction)**



Source: Mott MacDonald

**Figure 5.2: Construction dust assessment buffers (trackout)**



Source: Mott MacDonald

## 5.2 Operational phase

### 5.2.1 Site suitability

The baseline assessment indicates there was no recorded exceedances of the short-term or long-term  $\text{NO}_2$  and  $\text{PM}_{10}$  objective in 2022 or 2023.  $\text{PM}_{2.5}$  concentrations are also assumed to be below the objective as  $\text{PM}_{2.5}$  is a constituent of  $\text{PM}_{10}$  and the  $\text{PM}_{10}$  monitoring shows concentrations of less than  $20\mu\text{g}/\text{m}^3$  (the standard for  $\text{PM}_{2.5}$ ).

The Defra predicted pollutant concentrations covering the proposed development site are well below annual  $\text{NO}_2$ ,  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$  air quality standards. As such, it is unlikely that the emissions from the nearby roads would lead to an exceedance of the relevant standards.

Ambient pollutant concentrations of  $\text{NO}_2$ ,  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$  are generally predicted to decrease into the future, due to uptake of cleaner vehicles and technologies; as such it is considered that air quality conditions at the proposed development and surrounding area would improve and continue to meet the air quality objectives in future years.

As such, it can be concluded that the site is suitable for the introduction of new sensitive receptors at the proposed development.

# 6 Mitigation

## 6.1 Overview

This section presents the proposed mitigation to reduce the potential effects predicted in the preceding sections of this report.

## 6.2 Construction phase

### 6.2.1 Construction dust mitigation

During the construction phase, construction activities associated with the proposed development are predicted to have at worst, a 'Negligible to 'Low' risk of dust soiling effects and human health from construction activities with no mitigation in place.

Best practice mitigation measures for the proposed development as outlined in IAQM<sup>1</sup> guidance are presented below, based on the dust risk levels presented in Table 5.3.

### 6.2.2 Mitigation for the proposed development

Mitigation measures that should be applied to the proposed development are listed below.

- Site Management
  - Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
  - Display the head or regional office contact information.
  - Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
  - Make the complaints log available to the local authority when asked.
  - Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the logbook.
- 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 within 100m of site boundary, with cleaning to be provided if necessary.
  - Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.
  - Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- 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.
  - Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
  - Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
  - Avoid site runoff of water or mud.

- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping
- Operating vehicle/machinery and sustainable travel
  - Ensure all vehicles switch off engines when stationary - no idling vehicles.
  - Avoid the use of diesel- or petrol- powered generators and use mains electricity or battery powered equipment where practicable.
  - Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
- Operations
  - Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
  - Ensure an adequate water supply on the site for effective dust/particulate matter suppression/ mitigation, using non-potable water where possible 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.
- Waste management
  - No bonfires and burning of waste materials.
- Construction
  - Avoid scabbling (roughness of concrete surfaces) if possible.
  - Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Trackout
  - Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
  - Avoid dry sweeping of large areas.
  - Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
  - 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 prior to leaving the site where reasonably practicable).

## 7 Conclusions

This report provides an assessment of the following key effects associated with the construction and operational phase of the proposed development:

- Nuisance, health effects and/or loss of amenity caused by construction dust on sensitive receptors;
- Potential changes in traffic during construction due to movements associated with construction activities;
- Changes in pollutant concentrations caused by additional vehicles associated with the operational phase of the proposed development; and
- The location of the proposed development in relation to existing emission sources to assess the operational site suitability.

A qualitative assessment of the construction dust effects predicted that the level of risk of dust creating nuisance and/or loss of amenity and PM<sub>10</sub> leading to adverse health effects (without mitigation) is predicted to range from 'negligible' to 'low' risk. However, following the appropriate mitigation measures listed in Section 6.2, dust effects are considered to be negligible. Mitigation measure presented within this report, should be included within the proposed Scheme CEMP.

The review of the existing, representative monitoring in the area, indicates that exceedances of the relevant NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> standards are unlikely at the proposed development. The Defra projected background concentrations for NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> are also all far below the air quality standards. Therefore, the site is considered suitable for the introduction of proposed users with regard to air quality.

The proposed development is not considered to conflict with any national, regional or local planning policy.

# Appendices

|    |                   |    |
|----|-------------------|----|
| A. | Construction dust | 27 |
|----|-------------------|----|

# A. Construction dust

**Table A.1: Determination of dust raising magnitude**

| Source       | Large                                                                                                                                                                                                                                             | Medium                                                                                                                                                                                                | Small                                                                                                                                                                                                            |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Demolition   | Total building volume > 75,000m <sup>3</sup> , potentially dusty construction material (e.g. concrete), on site crushing and screening, demolition activities > 12m above ground                                                                  | Total building volume 12,000m <sup>3</sup> - 75,000m <sup>3</sup> , potentially dusty construction material, demolition activities 6-12m above ground level                                           | Total building volume <12,000m <sup>3</sup> , construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6m above ground, demolition during wetter months |
| Earthworks   | Total site area >110,000m <sup>2</sup> , potentially dusty soil type (e.g. clay, which will be prone to suspension when dry to due small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >6m in height | Total site area 18,000m <sup>2</sup> – 110,000m <sup>2</sup> , moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 3m – 6m in height, | 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, earthworks during wetter months    |
| Construction | Total building volume >75,000m <sup>3</sup> , piling, on site concrete batching; sandblasting                                                                                                                                                     | Total building volume 12,000m <sup>3</sup> – 75,000m <sup>3</sup> , potentially dusty construction material (e.g. concrete), piling, on site concrete batching                                        | Total building volume <12,000m <sup>3</sup> , construction material with low potential for dust release (e.g. metal cladding or timber)                                                                          |
| Track out    | >50 HDV (>3.5t) trips in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100m                                                                                                                      | 20-50 HDV (>3.5t) trips in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50m – 100m                                                                    | <20 HDV (>3.5t) trips in any one day, surface material with low potential for dust release, unpaved road length <50m                                                                                             |

Source: IAQM (2024)

**Table A.2: Receptor Sensitivity**

| Source                                                            | High                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Medium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Low                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sensitivities of people to dust soiling effects                   | <p>Users can reasonably expect an enjoyment of a high level of amenity; or</p> <p>The appearance, aesthetics or value of their property would be diminished by soiling; and 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>Indicative examples include dwellings, museums and other culturally important collections, medium and long term car parks (See note B) and car showrooms.</p>              | <p>Users would expect a to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or</p> <p>The appearance, aesthetics or value of their property could be diminished by soiling; or</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>Indicative examples include parks and places of work.</p>                     | <p>The enjoyment of amenity would not reasonably be expected (See note A); or</p> <p>Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or</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>Indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks (See note B) and roads.</p> |
| Sensitivities of people to the health effects of PM <sub>10</sub> | <p>Locations where members of the public are exposed over a time period relevant to the air quality objective for PM<sub>10</sub> (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day - See note C)</p> <p>Indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.</p>                     | <p>Locations where the people exposed are workers (See note D), and exposure is over a time period relevant to the air quality objective for PM<sub>10</sub> (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).</p> <p>Indicative examples include office and shop workers, but will generally not include workers occupationally exposed to PM<sub>10</sub>, as protection is covered by Health and Safety at Work legislation.</p> | <p>Locations where human exposure is transient (See note E)</p> <p>Indicative examples include public footpaths, playing fields, parks and shopping streets.</p>                                                                                                                                                                                                                                                                                                                                                                                                        |
| Sensitivities of receptors to ecological effects (See note F)     | <p>Locations with an international or national designation and the designated features may be affected by dust soiling; or</p> <p>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 (See note G).</p> <p>Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.</p> | <p>Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or</p> <ul style="list-style-type: none"> <li>• Locations with a national designation where the features may be affected by dust deposition.</li> <li>• Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.</li> </ul>                                                                                                                                    | <p>Locations with a local designation where the features may be affected by dust deposition.</p> <p>Indicative example is a local Nature Reserve with dust sensitive features.</p>                                                                                                                                                                                                                                                                                                                                                                                      |

Source: IAQM (2024)

A The public's expectations will vary depending on the existing dust deposition in the area

B Car parks can have a range of sensitivities depending on the duration and frequency that people would be expected to park their cars there, and the level of amenity they could reasonably expect whilst doing so. Car parks associated with work place or residential parking might have a high level of sensitivity compared to car parks used less frequently and for shorter durations, such as those associated with shopping. Cases should be examined on their own merits.

C This follows Defra guidance as set out in LAQM.TG(22).

- D

Notwithstanding the fact that the air quality objectives and limit values do not apply to people in the workplace, such people can be affected to exposure of PM<sub>10</sub>. However, they are considered to be less sensitive than the general public as a whole because those most sensitive to the effects of air pollution, such as young children are not normally workers. For this reason, workers have been included in the medium sensitivity category.
- E

There are no standards that apply to short-term exposure, e.g. one or two hours, but there is still a risk of health effects, albeit less certain.
- F

A Habitat Regulation Assessment of the site may be required as part of the planning process, if the site lies close to an internationally designated site i.e. Special Conservation Areas (SACs), Special Protection Areas (SPAs) designated under the Habitats Directive (92/43/EEC) and RAMSAR sites.
- G

Cheffing C. M. & Farrell L. (Editors) (2005), The Vascular Plant. Red Data List for Great Britain, Joint Nature Conservation Committee.

Table A.3: Sensitivity of the area to dust soiling effects on people and property (see note A and B)

| 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  |

Source: IAQM (2024)

- A

The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout.
- B

Estimate the total number of receptors within the stated distance. Only the highest level of area sensitivity from the table needs to be considered. For example, if there are 7 high sensitivity receptors <20m of the source and 95 high sensitivity receptors between 20 and 50m, then the total of number of receptors <50m is 102. The sensitivity of the area in this case would be high.
- 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, and it is only necessary to consider trackout impacts up to 50 m from the edge of the road.

**Table A.4: Sensitivity of the area to human health effects (see note A and B)**

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

Source: IAQM (2024)

Note: A The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout.

- B Estimate the total within the stated distance (e.g. the total within 250m and not the number between 100 and 250m), noting that only the highest level of area sensitivity from the table needs to be considered. For example, if there are 7 high sensitivity receptors <20 m of the source and 95 high sensitivity receptors between 20 and 50m, then the total of number of receptors <50m is 102. If the annual mean PM<sub>10</sub> concentration is 29µg/m³, the sensitivity of the area would be high.
- C Most straightforwardly taken from the national background maps but should also take account of local sources. The values are based on 32µg/m³ being the annual mean concentration at which an exceedance of the 24-hour objective is likely in England, Wales and Northern Ireland. In Scotland there is an annual mean objective of 18µg/m³.
- D In the case of high sensitivity receptors with high occupancy (such as schools or hospitals) approximate the number of people likely to be present. In the case of residential dwellings, just include the number of properties.
- E 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, and it is only necessary to consider trackout impacts up to 50 m from the edge of the road.

**Table A.5: Sensitivity of the area to ecological effects (see note A and B)**

| Receptor Sensitivity | Distance from the source (m) (see note C) |        |
|----------------------|-------------------------------------------|--------|
|                      | <20                                       | <50    |
| High                 | High                                      | Medium |
| Medium               | Medium                                    | Low    |
| Low                  | Low                                       | Low    |

Source: IAQM (2024)

- A The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout.
- 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 up to 250m from the site entrance.

**Table A.6: Risk of dust effects - Demolition**

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

Source: IAQM (2024)

Table A.7: Risk of dust effects – Earthworks

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

Source: IAQM (2024)

Table A.8: Risk of dust effects - Construction

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

Source: IAQM (2024)

Table A.9: Risk of dust effects – Trackout

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

Source: IAQM (2024)