

**BLOOR HOMES LIMITED**

**LAND SOUTH OF MADDOXFORD LANE**

**AIR QUALITY ASSESSMENT**

**REPORT REF.**

**2501890\_A-ACE-XX-00-RP-C-0801\_B**

**FEBRUARY 2026**

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## **Document Control Sheet**

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## Statement of Competence

The following authors of this report are Members of the Institute of Air Quality Management (IAQM) and possess the requisite qualifications, expertise, and experience to conduct robust air quality assessments and analyses in accordance with regulatory standards and best practices.

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## **1 Introduction**

1.1 Ardent Consulting Engineers (hereafter referred to as "Ardent") has been commissioned by Bloor Homes to undertake an Air Quality Assessment (AQA) for a Proposed Development on Land south of Maddoxford Lane, Boorley Green (hereafter referred to as 'the Site').

1.2 The Proposed Development is described as follows:

*"Outline planning application with all matters reserved (except the main points of access) for the demolition of a residential dwelling (Use Class C3), removal of a mobile home, and demolition of existing buildings associated with a motor vehicle storage and motor vehicle body parts and scrap material business and the construction of up to 280 dwellings (Use Class C3), including affordable dwellings, and associated provision of informal and formal public open space, together with associated highways, landscape, earth works and level changes, foul and surface water drainage facilities, utilities provision and other associated and necessary infrastructure works"*

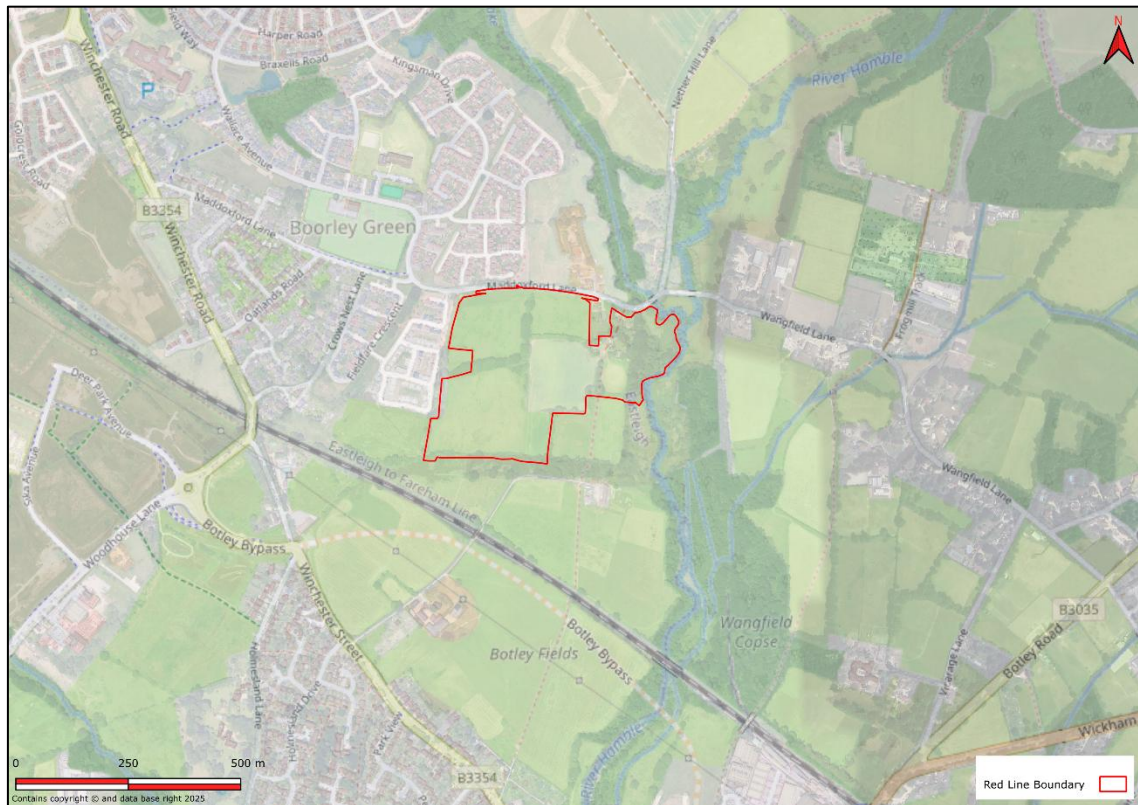
### **Site Location and Context**

1.3 The Site is located south of Maddoxford Lane and is centred on National Grid Reference (NGR) 451437 (x), 114182 (y).

1.4 The Site is located within the administrative boundary of Eastleigh Borough Council (EBC). However, the Site is located on the boundary of Winchester City Council (WCC).

1.5 The Site is set within suburban surroundings, predominantly consisting of residential properties and agricultural land. The Site is currently bound to the west by existing residential properties. The River Hamble runs along the eastern boundary of the Site and Maddoxford Lane is located to the north of the Site.

1.6 The Site is shown below in shown in Figure 1-1:



**Figure 1-1: Site Location**

- 1.7 The Proposed Development has the potential to cause impacts, including fugitive dust emissions associated with construction works and road traffic exhaust emissions from vehicles travelling to and from the Site during the operation phase. Energy plant installed to provide heating and hot water during operation could also affect local air quality.
- 1.8 An AQA was therefore undertaken to determine baseline conditions and consider potential impacts and effects associated with the Proposed Development, in air quality terms, as detailed in the following report.

## **2 Approach**

### **Screening and Scoping**

- 2.1 Screening identifies if an AQA is needed by evaluating potential emissions and their likely impacts. This involves considering the type and scale of the project and its proximity to sensitive receptors (e.g., residential areas, schools, hospitals).
- 2.2 Scoping then defines the scope of the assessment, including the pollutants to be considered, the geographical area to be covered, and the receptors to be included.
- 2.3 The relevant screening assessment is provided below, followed by the scope of assessment determined to be required to appropriately assess the potential air quality impacts and effects of the Proposed Development.

#### Screening

#### *Construction Phase*

#### Fugitive Dust Emissions: Impact

- 2.4 The construction phase of the Proposed Development has the potential for fugitive dust emissions to occur owing to construction phase activities, such as demolition, earthworks, construction and trackout activities.
- 2.5 The potential for impacts at sensitive locations of relevant exposure depends significantly on local meteorology during the undertaking of dust generating activities, with the most significant effects likely to occur during dry and windy conditions.
- 2.6 The desk-study undertaken to inform the baseline (see Section 4) identifies several sensitive receptors within 250m of the red line boundary of the Site. As such, further assessment of potential dust impacts has been undertaken (see Appendix A for the construction phase methodology).

Construction Traffic Emissions: Impact

- 2.7 The Institute of Air Quality Management (IAQM) advise that from experience of assessing exhaust emissions from site traffic, it is unlikely that any significant adverse impacts on local air quality would be caused and in the vast majority of cases, quantitative assessment is not needed. As such, effects of construction traffic emissions have been screened out.

*Operation Phase*

Road Traffic Emissions: Impact (Human Health)

- 2.8 The Proposed Development has been screened against the following indicative criteria for requiring an AQA as detailed in the EPUK & IAQM 'Land use Planning & Development Control: Planning for Air Quality, V1.2' guidance:

**Table 2-1: IAQM Indicative Criteria for Requiring Detailed Assessment**

| Criteria                                                                                                                                                                                                                               | Evaluation |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| A change in Light-Duty Vehicle traffic flows of more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an Air Quality Management Area (AQMA), or more than 500 AADT elsewhere on local roads with relevant receptors. | Yes        |
| A change in Heavy-Duty Vehicle (HDV) flows of more than 25 AADT within or adjacent to an AQMA, or more than 100 AADT elsewhere on local roads with relevant receptors.                                                                 | No         |
| A change in the alignment of roads by 5m or more and the road is within an AQMA.                                                                                                                                                       | No         |
| Introduction of a new junction or remove an existing junction that cause traffic to significantly change vehicle accelerate/decelerate, e.g., traffic lights, or roundabouts, near to relevant receptors.                              | No         |
| Introduce or change a bus station, where bus flows will change by more than 25 AADT within or adjacent to an AQMA, or more than 100 AADT elsewhere.                                                                                    | No         |
| Has an underground car park with an extraction system within 20 m of a relevant receptor. Coupled with the car park having more than 100 movements per day (total in and out).                                                         | No         |

| Criteria                                                                                                                                                                                                                                               | Evaluation |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Has one or more substantial combustion processes, including combustion plant associated with standby emergency generators (typically associated with centralised energy centres) and shipping, where there is a risk of impacts at relevant receptors. | No         |

2.9 The Transport Consultants for the Proposed Development, ACE, have confirmed that the Proposed Development will increase two-way AADT movements which exceed the EPUK & IAQM screening criteria above, on a number of road links in the Site locale.

2.10 Therefore, detailed modelling of operational traffic impacts has been carried out using the ADMS-Roads dispersion model. Further details of the modelling data inputs, the scenarios assessed (including details of a cumulative impact sensitivity test) and results processing is provided in Appendix B.

2.11 It should be noted that the Proposed Development will not increase two-way AADT movements which exceed the EPUK & IAQM screening criteria in the High Street Botley AQMA. Therefore, modelling has not been undertaken to assess impacts within the AQMA. The AQMA is discussed further in Section 4.

2.12 The magnitude of impacts has been determined using the criteria set out within the EPUK & IAQM air quality planning guidance, as set out in Table 2-2.

**Table 2-2: IAQM Impact Descriptors for Individual receptors**

| Annual Mean Concentration | % Change <sup>a</sup> |            |          |             |
|---------------------------|-----------------------|------------|----------|-------------|
|                           | 1 <sup>b</sup>        | 2-5        | 6-10     | >10         |
| ≤ 75%                     | Negligible            | Negligible | Slight   | Moderate    |
| ≤ 76% - ≤ 95%             | Negligible            | Slight     | Moderate | Moderate    |
| ≤ 96% - ≤ 102%            | Slight                | Moderate   | Moderate | Substantial |

| Annual Mean Concentration | % Change <sup>a</sup> |             |             |             |
|---------------------------|-----------------------|-------------|-------------|-------------|
|                           | 1 <sup>b</sup>        | 2-5         | 6-10        | >10         |
| ≤ 103% - ≤ 110%           | Moderate              | Moderate    | Substantial | Substantial |
| ≥ 110%                    | Moderate              | Substantial | Substantial | Substantial |

<sup>a</sup> In relation to an AQAL

2.13 When considered at individual receptors, moderate or substantial impacts may be considered significant and Negligible or slight impacts not significant. Consideration of the overall effect on air quality needs to incorporate consideration of impacts as a whole, including the extent to which receptors represent sensitive locations and whether this wider impact is significant or not.

2.14 The assessment of overall significance is therefore made based on professional judgement, considering factors such as:

- The number of properties affected by different levels of impacts;
- The magnitude of any changes and descriptors (as identified in stages 1 and 2);
- Whether a new exceedance of an Air Quality Assessment Level ((AQAL) – see Table 3-1) is predicted to arise, or an existing exceedance is removed, or an existing exceedance is substantially increased or reduced;
- The level of uncertainty, including the extent to which worst-case assumptions have been made; and
- The extent of any exceedance of an AQAL.

2.15 Additional factors are also included in the assessment of significance, including the spatial extent of adverse impacts, in accordance with EPUK & IAQM guidance, which states:

*"An individual property exposed to a moderately adverse impact might not be considered a significant, but many hundreds of properties exposed to a slight adverse impact could be."*

Road Traffic Emissions: Impact (Sensitive Ecology)

2.16 There are several ecological receptors within the Site locale, including

- Solent and Southampton Water RAMSAR;
- Moorgreen Meadows Site of Special Scientific Interest (SSSI);
- Upper Hamble Estuary and Woods SSSI;
- River Itchen SSSI.

2.17 The requirement for further assessment has first been considered against a screening threshold of 200m from a road (the Affected Road Network (ARN)), in accordance with IAQM guidance, which states if there are no qualifying features sensitive to air pollution within 200m of a road, then no further assessment is required.

2.18 The closest points of the Solent and Southampton Water RAMSAR to the Site, Upper Hamble Estuary and Woods SSSI and River Itchen SSSI are greater than 200m from any road likely to receive additional traffic as a result of the Proposed Development (excluding arterial roads), and on this basis, no further assessment has been undertaken, as a screening conclusion of no likely significant effect on these sites can be reached.

2.19 It is noted that Moorgreen Meadows SSSI, which is approximately 180m north of Tollbay / Botley Road roundabout, is within 200m of the road. However, while the traffic data used for the assessment does not extend to cover Tollbar Way north of the relevant junction, additional traffic from the Proposed Development is not expected to route north along Tollbar Way adjacent to the SSSI.

2.20 The transport consultants at ACE have also confirmed that the Proposed Development will not lead to an AADT increase of more than 1,000 AADT, either alone or in-combination in this location.

2.21 Trip generation on Botley Road on the approach to the roundabout is 67 AADT (88 AADT cumulatively), which would decline further following distribution onto Tollbar Way and would not pass the SSSI. Therefore, further detailed assessment has been screened out.

Road Traffic Emissions: Exposure / Site Sensitivity

2.22 The Proposed Development will introduce new receptors which are sensitive to the long-term and short-term nitrogen dioxide (NO<sub>2</sub>) and Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>) AQALs. As such, detailed consideration has been given to potential exposure at the Site in the Do Something scenario.

2.23 With regard to the exposure assessment, professional judgement has been applied to determine whether exposure to air pollution is significant or not, based on the following criteria:

- Annual mean concentrations within 10% below or exceeding relevant AQAL = significant exposure;
- Annual mean concentrations more than 10% below relevant AQAL = not significant.

2.24 The 10% threshold around an AQAL is generally considered to be the range at which a 'risk of exceedance' is present, according to LAQM.TG (22).

Combustion Plant Emissions: Impacts

2.25 No combustion plant is incorporated into the design of the Proposed Development. Therefore, no further consideration of combustion plant emissions is required.

## **Consultation**

- 2.26 As part of pre-application engagement, EBC confirmed the requirement for an air quality assessment to cover the elements detailed in this chapter of the AQA, and scoped in below:

## **Scope**

### Scoped In

- 2.27 The following elements have been included with the scope of the AQA due to the screening assessment identifying a risk of potential effects requiring further assessment:

1. Construction Phase
  - a. Construction Activities (Impacts)
    - i. Dust, PM<sub>10</sub>
2. Operation Phase
  - a. Operation Traffic Emissions (Impacts)
    - i. Human Health
      - A. NO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>
    - ii. Road traffic emissions (Exposure)
      - B. NO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>

### Scoped Out

- 2.28 The following elements have been excluded from the detailed scope of the AQA based on the outcome of the screening assessment:
1. Construction Phase
    - a. Construction Traffic Emissions (Impacts)
    - b. Combustion Plant Emissions (Impacts)
      - i. NO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>

2. Operation Phase

a. Operation Traffic Emissions (Impacts)

i. Ecology

A. Oxides of nitrogen (NO<sub>x</sub>), Ammonia (NH<sub>3</sub>), nitrogen deposition, acid deposition

### **3 Policy, Legislation and Guidance**

- 3.1 To inform the assessment the following Policy, Legislation, and Guidance have been considered:

#### **Policy**

National Planning Policy

*National Planning Policy Framework*

- 3.2 The National Planning Policy Framework (NPPF) 2024 sets out the Government's planning policies for England and how these are expected to be applied. The purpose of the planning system is to contribute to the achievement of sustainable development. To ensure this, the NPPF recognises 3 overarching objectives, including the following of relevance to air quality:

*"Chapter 2 Achieving sustainable development*

*Para. 8*

*c) an environmental objective - 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."*

- 3.3 Chapter 15 of the NPPF details objectives in relation to conserving and enhancing the natural environment. It states that:

*"Chapter 15 Conserving and enhancing the natural environment*

*Para. 187*

*Planning policies and decisions should contribute to and enhance the natural and local environment by:*

*[...]*

*preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of 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;"*

- 3.4 The NPPF specifically recognises air quality as part of delivering sustainable development and states that:

*"Ground conditions and pollution*

*Para. 198*

*Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*

*..."*

"Para. 199

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

- 3.5 The implications of the NPPF have been considered throughout this assessment.

Local Planning Policy

*Eastleigh Local Plan 2016-2036*

- 3.6 The Eastleigh Borough Local Plan 2016-2036 was adopted on 25 April 2022. It sets out the policies and plans to guide future development to 2036. It is used to determine planning applications in the Borough.

- 3.7 Policy DM8 (Pollution) is relevant for air quality, and states:

*"Development will not be permitted if it is likely to cause loss of amenity or impact on public health or other unacceptable environmental impacts through:*

*a. air pollution (including odours or particulate emissions);*

*..."*

### *Local Air Quality Management*

- 3.8 Under Section 82 of the Environment Act (1995) (Part IV), as amended by the Environment Act (2021), local authorities (Councils) are required to periodically review and assess air quality within their area of jurisdiction under the system of Local Air Quality Management (LAQM).
- 3.9 This Review and Assessment of air quality involves comparing present and likely future pollutant concentrations against the AQALs. If it is predicted that levels at locations of relevant exposure, as summarised in Table 3-2, are likely to be exceeded, the Council is required to declare an AQMA. For each AQMA the Council is required to produce an Air Quality Action Plan (AQAP), the objective of which is to reduce pollutant concentrations in pursuit of compliance with the AQALs.

### **Legislation**

- 3.10 There are 2 sets of air quality legislation which include ambient air quality thresholds for the protection of public health that apply in England, these include legally binding limit values originally set by the European Union (EU) Directive on ambient air quality and cleaner air for Europe (2008/50/EC) (which were transposed into UK law through the Air Quality Standards Regulations 2010), and regulations implementing national air quality objectives as set out in the Air Quality Strategy (AQS) 2023 for England which local authorities are required to work towards achieving.
- 3.11 The AQS sets out the government's policies and framework for improving air quality in the UK with the aim of meeting the requirements of the 2008/50/EC Directive. The AQS also outlines the Limit Values, Target Values, Standards, Objectives, Critical Levels, and Exposure Reduction Targets for the protection of human health and the environment.
- 3.12 The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 also brought forward a new target level for PM<sub>2.5</sub>.

3.13 The relevant Limit Values, Target Values, Standards, Objectives, Critical Levels and Exposure Reduction Targets are collectively termed AQALs throughout this report.

**Table 3-1: Air Quality Assessment Levels (AQALs)**

| Pollutant         | AQAL                                       |                                                                                                                              |
|-------------------|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
|                   | Concentration ( $\mu\text{g}/\text{m}^3$ ) | Averaging Period                                                                                                             |
| NO <sub>2</sub>   | 40                                         | Annual mean                                                                                                                  |
|                   | 200                                        | 1-hour mean, not to be exceeded on more than 18 occasions per annum                                                          |
| PM <sub>10</sub>  | 40                                         | Annual mean                                                                                                                  |
|                   | 50                                         | 24-hour mean, not to be exceeded on more than 35 occasions per annum                                                         |
| PM <sub>2.5</sub> | 20                                         | Annual mean                                                                                                                  |
|                   | 10                                         | Annual Mean Interim Target (to be met across England by 2030)                                                                |
|                   | 10                                         | Annual Mean Concentration Target (AMCT) - To be met across England by 2040                                                   |
|                   | -                                          | Population Exposure Reduction Target (PERT) - 35% reduction in population exposure by 2040 (compared to a base year of 2018) |

3.14 With specific reference to the AMIT for PM<sub>2.5</sub>, it should be noted that that the date for compliance is 2030. The applicable PM<sub>2.5</sub> AQAL for the purposes of this assessment is therefore the current AQAL of 20 $\mu\text{g}/\text{m}^3$ .

3.15 In line with the Defra "*PM<sub>2.5</sub> Interim Planning Guidance on the consideration of the Environment Act PM<sub>2.5</sub> targets in planning decisions*" the operation phase assessment will also aim to consider the 2040 AMCT for PM<sub>2.5</sub>, identify key sources of PM<sub>2.5</sub> air pollution from the Proposed Development, and outline the measures proposed to minimise emissions of PM<sub>2.5</sub> and its precursors as far as is reasonably practicable.

## **Guidance**

National Guidance

*National Planning Practice Guidance*

3.16 Reference ID 32 (Air Quality) of the National Planning Practice Guidance (NPPG), which was updated in November 2019, provides guiding principles on how planning can take account of the impact of new development on air quality. The NPPG summarises the importance of air quality in planning and the key legislation relating to it.

*Defra Technical Guidance*

3.17 Table 3-2 summarises the advice provided in Defra's Local Air Quality Management Technical Guidance 2022 (LAQM.TG(22)) on where the AQALs for pollutants considered within this report apply.

**Table 3-2: Examples of Where the Air Quality Objectives Apply**

| <b>Averaging Period</b> | <b>Objective Should Apply At</b>                                                                                                                              | <b>Objective Should Not Apply At</b>                                                                                                                                                                                                                                                                                                                                          |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Annual mean             | All locations where members of the public might be regularly exposed.<br><br>Building façades of residential properties, schools, hospitals, care homes, etc. | Building façades of offices or other places of work where members of the public do not have regular access.<br><br>Hotels, unless people live there as their permanent residence.<br><br>Gardens of residential properties.<br><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 mean            | All locations where the annual mean objective would apply, together with hotels.                                                                              | Kerbside sites (as opposed to locations at the building façade), or any other location where public                                                                                                                                                                                                                                                                           |

| Averaging Period | Objective Should Apply At                                                                                                                                                                                                                                                                                                                                                                                                                                         | Objective Should Not Apply At                                                 |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
|                  | Gardens of residential properties.                                                                                                                                                                                                                                                                                                                                                                                                                                | exposure is expected to be short term.                                        |
| 1-hour mean      | <p>All locations where the annual mean and 24 and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets).</p> <p>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.</p> <p>Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer.</p> | Kerbside sites where the public would not be expected to have regular access. |

*Non-statutory guidance*

3.18 The following guidance documents have been reviewed / followed / referred to in preparing this AQAs:

- The EPUK & IAQM 'Land use Planning & Development Control: Planning for Air Quality', (2017 V1.2);
- The IAQM's 'Assessment of dust from demolition and construction' (2024 V2.2;

## **4 Baseline Conditions**

- 4.1 Existing air quality conditions in the vicinity of the Site, including identification of relevant sensitive receptors, have been reviewed to provide a baseline for the assessment, as shown below.

### **Sensitive Receptors**

#### **Construction Phase**

- 4.2 The approximate number of receptors sensitive to potential dust impacts during demolition, earthworks and construction has been estimated from a desk top study of the area up to 250m from Site. This is summarised in Table 4-1.

**Table 4-1: Demolition, Earthworks and Construction - Dust Sensitive Receptors**

| <b>Distance from Site Boundary (m)</b> | <b>Approximate No. of Human Receptors</b> | <b>Approximate No. of Ecological Receptors</b> |
|----------------------------------------|-------------------------------------------|------------------------------------------------|
| <20                                    | 0 - 10                                    | 0                                              |
| <50                                    | 10 - 100                                  | 0                                              |
| <100                                   | 10 - 100                                  | 0                                              |
| <250                                   | >100                                      | 0                                              |

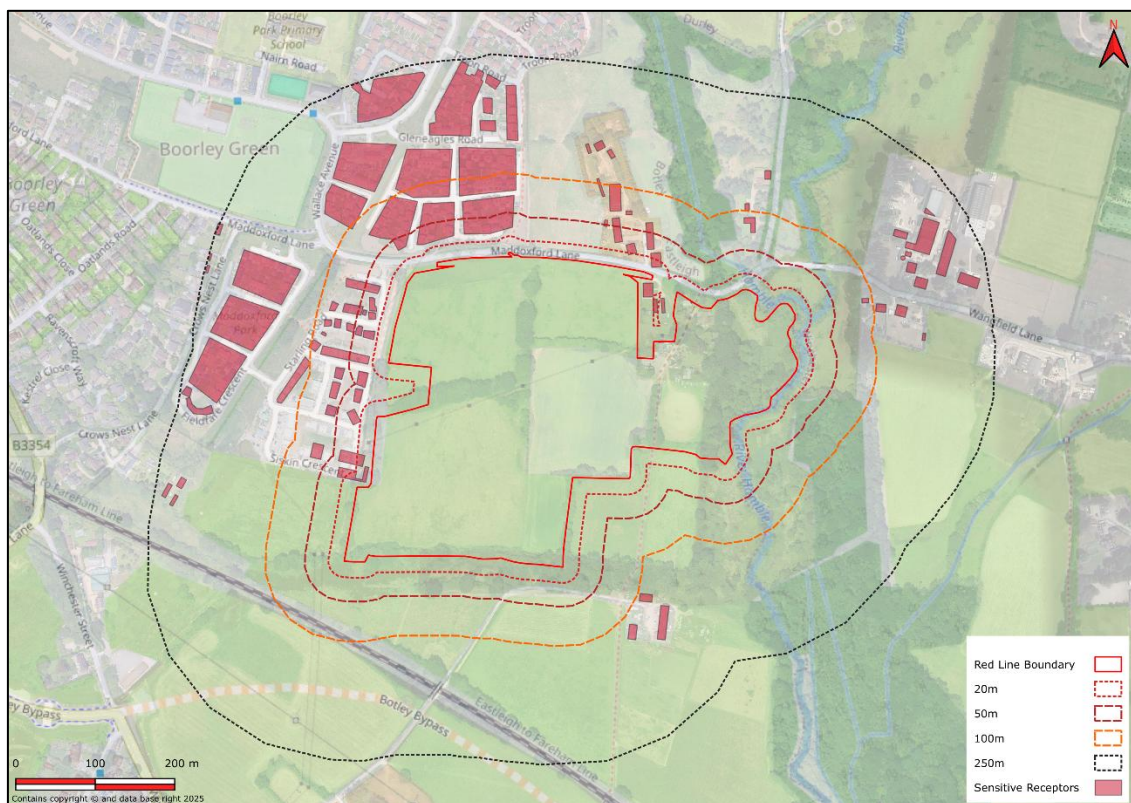
- 4.3 The approximate number of receptors sensitive to potential dust impacts from trackout were identified from a desk top study of the area up to 50m from the road network within 250m of the Site access. These are summarised in Table 4-2.

**Table 4-2: Trackout - Dust Sensitive Receptors**

| <b>Distance from Road up to 250m from the Site Boundary Entrance (m)</b> | <b>Approximate No. of Human Receptors</b> | <b>Approximate No. of Ecological Receptors</b> |
|--------------------------------------------------------------------------|-------------------------------------------|------------------------------------------------|
| <20                                                                      | 10-100                                    | 0                                              |

| Distance from Road up to 250m from the Site Boundary Entrance (m) | Approximate No. of Human Receptors | Approximate No. of Ecological Receptors |
|-------------------------------------------------------------------|------------------------------------|-----------------------------------------|
| <50                                                               | 10 – 100                           | 0                                       |

4.4 Figure 4-1 below shows the identified receptors:



**Figure 4-1: Construction Phase Receptors**

#### Operation Phase

##### Human Health

- 4.5 Relevant sensitive locations are those where members of the public will be regularly present over the averaging period of the relevant AQALs. Sensitive locations considered primarily focuses on existing residential properties across the study area.

4.6 The following sensitive receptors were identified within the study area and included within the operation phase assessment:

**Table 4-3: Operation Phase Receptors (Human)**

| Receptor | Description          | Coordinates |        | Height (m) |
|----------|----------------------|-------------|--------|------------|
|          |                      | X           | Y      |            |
| AQ01     | Residential Dwelling | 451274      | 114418 | 1.5        |
| AQ02     | Residential Dwelling | 451185      | 114484 | 1.5        |
| AQ03     | Residential Dwelling | 451208      | 114551 | 1.5        |
| AQ04     | Residential Dwelling | 451049      | 114452 | 1.5        |
| AQ05     | Residential Dwelling | 451228      | 114576 | 1.5        |
| AQ07     | Residential Dwelling | 451043      | 114624 | 1.5        |
| AQ08     | Residential Dwelling | 450861      | 114692 | 1.5        |
| AQ09     | Residential Dwelling | 450981      | 114473 | 1.5        |
| AQ10     | Residential Dwelling | 450941      | 114466 | 1.5        |
| AQ11     | Residential Dwelling | 450774      | 114322 | 1.5        |
| AQ12     | Residential Dwelling | 450788      | 114311 | 1.5        |
| AQ13     | Residential Dwelling | 450843      | 114560 | 1.5        |
| AQ14     | Residential Dwelling | 450753      | 114583 | 1.5        |
| AQ15     | Residential Dwelling | 450658      | 114622 | 1.5        |
| AQ16     | Residential Dwelling | 450624      | 114614 | 1.5        |

| Receptor | Description          | Coordinates |        | Height (m) |
|----------|----------------------|-------------|--------|------------|
|          |                      | X           | Y      |            |
| AQ17     | Residential Dwelling | 450559      | 114683 | 1.5        |
| AQ18     | Residential Dwelling | 450440      | 114954 | 1.5        |
| AQ19     | Residential Dwelling | 450455      | 115039 | 1.5        |
| AQ20     | Residential Dwelling | 450769      | 114289 | 1.5        |
| AQ21     | Residential Dwelling | 450347      | 113661 | 1.5        |
| AQ22     | Residential Dwelling | 449935      | 113267 | 1.5        |
| AQ23     | Residential Dwelling | 449944      | 113177 | 1.5        |
| AQ24     | Residential Dwelling | 449923      | 113186 | 1.5        |
| AQ25     | Residential Dwelling | 449893      | 113282 | 1.5        |
| AQ26     | Residential Dwelling | 449806      | 113148 | 1.5        |
| AQ27     | Residential Dwelling | 449766      | 113298 | 1.5        |
| AQ28     | Residential Dwelling | 449748      | 113341 | 1.5        |
| AQ29     | Residential Dwelling | 449583      | 113465 | 1.5        |
| AQ30     | Residential Dwelling | 449436      | 113667 | 1.5        |
| AQ31     | Residential Dwelling | 449374      | 113768 | 1.5        |
| AQ32     | Residential Dwelling | 449337      | 113808 | 1.5        |
| AQ33     | Residential Dwelling | 449293      | 113781 | 1.5        |

| Receptor | Description          | Coordinates |        | Height (m) |
|----------|----------------------|-------------|--------|------------|
|          |                      | X           | Y      |            |
| AQ34     | Residential Dwelling | 449285      | 113838 | 1.5        |
| AQ35     | Residential Dwelling | 449134      | 113949 | 1.5        |
| AQ36     | Residential Dwelling | 449099      | 113885 | 1.5        |



**Figure 4-2: Sensitive Human Receptors**

## **Local Air Quality Management**

### *Air Quality Management Areas*

- 4.7 There are currently four declared Air Quality Management Areas (AQMA) in EBC, all of which have been declared as a result of exceedances of the annual mean NO<sub>2</sub> AQAL. The 'High Street Botley' AQMA, the nearest AQMA to the Site, was declared in 2011 and is located approximately 1km to the south of the Site.
- 4.8 In their 2025 Annual Status Report (ASR), EBC show that compliance with the AQAL has been consistent for over 6 years in the AQMA, and:

*"Revocation of AQMA No.4 is currently planned for 2026, subject to continued passive monitoring data from newest worse-case scenario location and Cabinet's approval".*

## **Local Emission Sources**

- 4.9 Emissions from road traffic travelling on Maddoxford Lane are considered to be the primary source of emissions in the Site locale.
- 4.10 A desk-based review of data from the National Atmospheric Emissions Inventory (NAEI) has been undertaken to identify large point sources, combustion plant releases and industrial installations in the vicinity of the Site.
- 4.11 A railway line running northwest to southeast connecting Botley Train Station to Hedge End Train Station is located approximately 250 m to the south of the Site. The railway line (Eastleigh to Fareham) is not listed within Defra's LAQM.TG(22) Table 7-2 of 'Rail Lines with a Heavy Traffic of Diesel Passenger Trains' and therefore does not require further consideration.

### **UK-AIR Modelled Background Concentrations**

- 4.12 Predictions of background pollutant concentrations on a 1km-by-1km grid basis have been produced by Defra for the entire of the UK to assist local authorities in their Review and Assessment of air quality.
- 4.13 The Site is in grid square 451500 (x), 114500 (y). Annual mean background data for this location was obtained from the Defra website for 2024 (the baseline year), 2025 (the year of assessment), and 2030 (the assessed development opening year) and is summarised in Table 4-4.

**Table 4-4: Background Pollution Concentrations**

| <b>Pollutant</b>  | <b>Predicted Background Concentration (µg/m³)</b> |             |             |
|-------------------|---------------------------------------------------|-------------|-------------|
|                   | <b>2024</b>                                       | <b>2025</b> | <b>2030</b> |
| NO <sub>2</sub>   | 9.2                                               | 8.9         | 7.5         |
| PM <sub>10</sub>  | 11.2                                              | 11.1        | 10.6        |
| PM <sub>2.5</sub> | 6.7                                               | 6.7         | 6.3         |

- 4.14 As shown in Table 4-4, predicted background concentrations are below the relevant AQALs, including the AMIT for PM<sub>2.5</sub> (which is not applicable until 2030) at the Site.
- 4.15 Concentrations of all pollutants are predicted to decline incrementally each year. These reductions are principally due to the forecast effect of the roll out of cleaner vehicles and strategies to reduce emissions across all sectors.

### **Local Air Quality Monitoring**

- 4.16 EBC undertakes air quality monitoring as part of their duties under Local Air Quality Management. Data have been obtained from the latest available EBC Air Quality Status Report, published in 2025 and contained data up to the end of 2024.

Automatic (continuous) monitoring

4.17 EBC did not undertake automatic (continuous) monitoring within the Site locale in 2024. Therefore, no representative monitoring data are available for review.

Passive (Diffuse) monitoring

4.18 EBC's network of passive (diffuse) NO<sub>2</sub> monitoring includes 6 monitoring locations within approximately 2km of the Site for baseline review, as detailed below.

**Table 4-5: Diffusion tube monitoring**

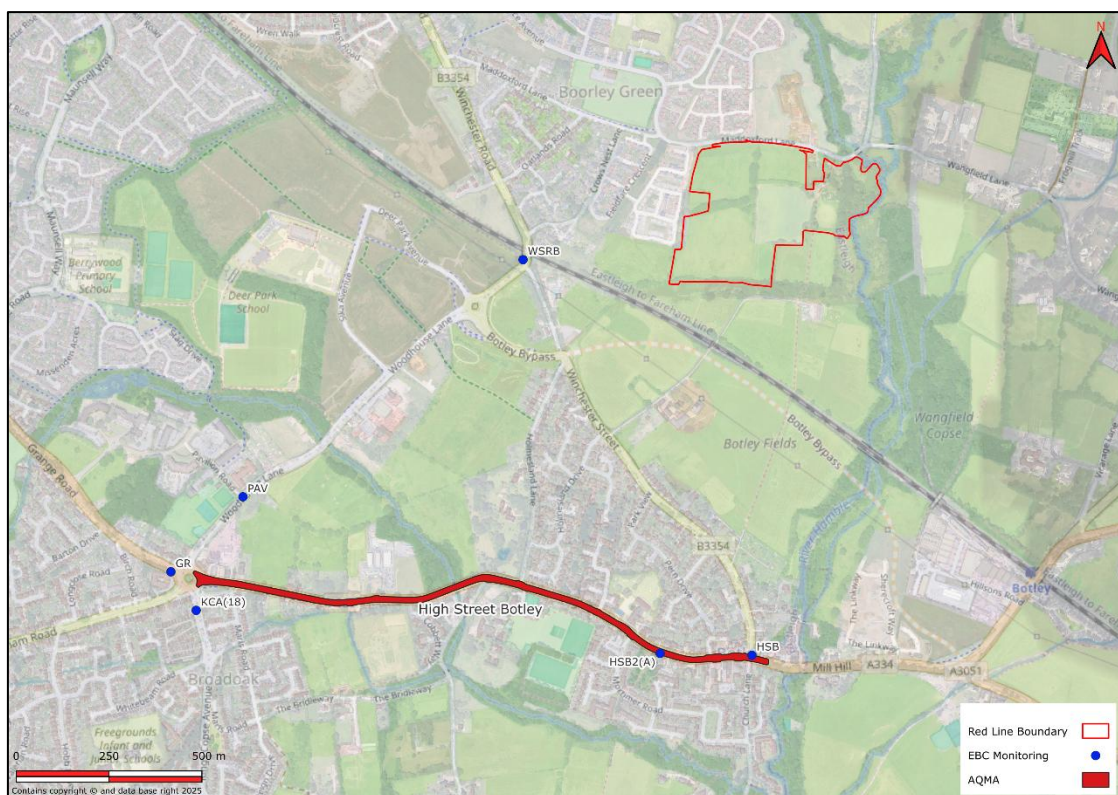
| Site     | Distance to Site (Km) | Monitor Type | Monitored NO <sub>2</sub> Concentration (µg/m <sup>3</sup> ) |      |      |      |      |
|----------|-----------------------|--------------|--------------------------------------------------------------|------|------|------|------|
|          |                       |              | 2020                                                         | 2021 | 2022 | 2023 | 2024 |
| WSRB     | 0.4                   | Roadside     | -                                                            | -    | -    | 11.8 | 11.4 |
| HSB2 (A) | 1.0                   | Roadside     | 22.6                                                         | 24.7 | 25.3 | 22.6 | 20.3 |
| HSB      | 1.0                   | Roadside     | 26.4                                                         | 28.6 | 28.4 | 25.8 | 24.3 |
| PAV      | 1.5                   | Roadside     | -                                                            | -    | 16.4 | 11.2 | 11.9 |
| GR       | 1.7                   | Roadside     | 23.3                                                         | 24.0 | 23.5 | 21.5 | 20.6 |
| KCA      | 1.7                   | Roadside     | 24.5                                                         | 26.3 | 25.1 | 23.0 | 22.0 |

4.19 The data in Table 4-5 show that there have been no exceedances of the annual mean NO<sub>2</sub> AQAL in the study area between 2020 and 2024, including with the High Street Botley AQMA, which is a known area of existing poor air quality.

4.20 Based solely on proximity, data from diffusion tube WSRB would be considered most representative of baseline conditions reasonably expected at the Site and is comparable to background concentrations.

4.21 It is noted that:

*"...the Council's Pollution Control Team installed a new diffusion tube monitoring site in September 2024 to capture worst-case exposure conditions along High Street, Botley and nearer to receptors. The results of the monitoring will be assessed in the next ASR to include at least a 12-month period".*



**Figure 4-3: EBC Monitoring**

## **5 Predicted Impacts**

### **Construction Phase**

- 5.1 The following sections present the operation phase assessment. Reference should be made to Appendix A for full details of the methodology followed to undertake the assessment.

#### Potential Dust Emission Magnitude

- 5.2 Table 5-1 presents a summary of the potential dust emission magnitude for each stage of construction:

**Table 5-1: Potential Dust Emission Magnitude**

| <b>Workstage</b> | <b>Description of Works</b>                                                                                                                                                                                                                                                                                                                                                                               | <b>Potential Dust Emission Magnitude</b> |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| Demolition       | Minor demolitions works are expected as part the construction phase, as there are a small number of existing buildings/structures within the Site.<br><br>The following descriptors are likely to be met:<br><br>Total building volume <12,000 m <sup>3</sup> , construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6 m above ground level. | Small                                    |
| Earthworks       | The total area of the Site is estimated to exceed 110,000 m <sup>2</sup> . There are assumed to be 5-10 heavy earth moving vehicles likely to be active at any one time during earthworks. Formation of bunds is likely to be required.                                                                                                                                                                   | Large                                    |
| Construction     | The total volume of new structures associated with the Proposed Development is estimated to exceed 75,000 m <sup>3</sup> .<br><br>The construction materials required would likely include traditional materials including concrete and brickwork. Onsite concrete batching or sandblasting is not expected to occur.                                                                                     | Large                                    |
| Trackout         | The maximum number of outward HDV movements which leave the Site after moving over unpaved ground, where they will accumulate mud and dirt that can be tracked out onto the public                                                                                                                                                                                                                        | Medium                                   |

---

| Workstage | Description of Works                                                                                              | Potential Dust Emission Magnitude |
|-----------|-------------------------------------------------------------------------------------------------------------------|-----------------------------------|
|           | highway, is estimated to be between 20-50 HDV (>3.5t) outward movements in a single day during peak construction. |                                   |

#### Sensitivity of the Area

##### *Dust Deposition*

- 5.3 As shown in Section 4, there is estimated to be 1-10 sensitive receptors located within 20m of the Site boundary. Therefore, the overall sensitivity of the surrounding area to nuisance dust soiling effects during Demolition, Earthworks and construction is defined as 'Medium', in accordance with IAQM guidance.
- 5.4 With regard to trackout, the sensitivity is assessed where receptors are located within 50m from trackout routes up to 500m from the Site access. All potential trackout routes have been taken into account. There are estimated to be 10-100 sensitive receptors within 20m of trackout routes. As such, the sensitivity to dust soiling impacts from trackout is also defined as 'High'.

##### *Human Health (PM<sub>10</sub>)*

- 5.5 Background concentrations for PM<sub>10</sub> are likely to be similar to background PM<sub>10</sub> concentrations set out within Defra background maps, as shown in Table 4-4.
- 5.6 Taking into account the assumed background PM<sub>10</sub> concentrations and the number of sensitive receptors located within proximity of the Site, as identified in Section 4., the sensitivity of the surrounding area to human health impacts is considered to be 'Low'.

##### *Additional Factors*

- 5.7 Several additional factors have been considered when determining the sensitivity of the surrounding area. These are summarised in Table 5-2.

**Table 5-2: Additional Area Sensitivity Factors to Potential Dust Impacts**

| <b>Factor</b>                                                                                                                                                  | <b>Comment</b>                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Whether there is any history of dust generating activities in the area.                                                                                        | The desk top study did not indicate any dust generating activities in the local area.                                                                                                                                                                                                                                                                                                             |
| The likelihood of concurrent dust generating activity on nearby sites.                                                                                         | <p>A review of the EBC planning portal did not indicate any additional development proposals likely to result in concurrent dust generation in the vicinity of the Site.</p> <p>However, it is considered that there is a potential for cumulative dust impacts during construction of the forthcoming development to the north of Maddoxford Lane, if approved (pending formal application).</p> |
| Pre-existing screening between the source and the receptors.                                                                                                   | There is no pre-existing screening between the Site and surrounding receptors.                                                                                                                                                                                                                                                                                                                    |
| Conclusions drawn from analysing local meteorological data which accurately represent the area: and if relevant the season during which works will take place. | <p>The closest regionally representative meteorological measurement station to the Site is Southampton Airport.</p> <p>The wind rose for 2023, as shown in Appendix B, shows that the prevailing winds are from the south-west. As such, receptors downwind (i.e., east, north-east) of the Site are more at risk of frequent exposure to adverse dust impacts than those located upwind.</p>     |
| Conclusions drawn from local topography.                                                                                                                       | There are no significant topographical constraints to dust dispersion.                                                                                                                                                                                                                                                                                                                            |
| Duration of the potential impact, as a receptor may become more sensitive over time.                                                                           | The duration of the construction phase is likely to be c. 2-3 years.                                                                                                                                                                                                                                                                                                                              |
| Any known specific receptor sensitivities which go beyond the classifications given in the document.                                                           | No specific receptor sensitivities identified during the baseline assessment.                                                                                                                                                                                                                                                                                                                     |

*Summary of Area Sensitivity*

5.8 The sensitivity of the receiving environment to specific potential dust impacts is shown in Table 5-3.

**Table 5-3: Sensitivity of the Surrounding Area to Potential Dust Impacts**

| Potential Impact | Sensitivity of the Surrounding Area |            |              |          |
|------------------|-------------------------------------|------------|--------------|----------|
|                  | Demolition                          | Earthworks | Construction | Trackout |
| Dust Soiling     | Medium                              | Medium     | Medium       | High     |
| Human Health     | Low                                 | Low        | Low          | Low      |

*Summary of Potential Unmitigated Dust Risks*

5.9 A summary of the risk from each dust generating activity is provided in Table 5-4:

**Table 5-4: Summary of Potential Unmitigated Dust Risks**

| Potential Impact        |                | Risk       |             |              |             |                    |
|-------------------------|----------------|------------|-------------|--------------|-------------|--------------------|
|                         |                | Demolition | Earthworks  | Construction | Trackout    | Overall            |
| Magnitude / Sensitivity |                | Small      | Large       | Large        | Medium      | Large              |
| Dust Soiling            | Medium to High | Low Risk   | Medium Risk | Medium Risk  | Medium Risk | <b>Medium Risk</b> |
| Human Health            | Low            | Negligible | Low Risk    | Low Risk     | Low Risk    | <b>Low Risk</b>    |
| <b>Overall</b>          |                |            |             |              |             | <b>Medium Risk</b> |

5.10 Overall, the Proposed Development is considered to be Medium Risk for potential nuisance dust soiling effects and Low Risk for PM<sub>10</sub> health effects, and in the absence of mitigation.

## Operation Phase

5.11 The following sections present the operation phase assessment. Reference should be made to Appendix B for full details of the methodology followed to undertake the assessment).

### Road Traffic Emissions: Impact (Human Health)

5.12 Annual mean NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations predicted at the selected existing receptor locations (as set out in Table 4-3) under the 2030 Do Minimum and 2030 Do Something scenarios (as set out in Appendix B) are set out below.

### Nitrogen dioxide (NO<sub>2</sub>)

5.13 The data in Table 5-5 shows that modelled annual mean NO<sub>2</sub> concentrations are below the AQAL at all existing receptor locations:

**Table 5-5: Predicted Change in Annual Mean NO<sub>2</sub> Due to Development**

| Receptor | DM (µg/m <sup>3</sup> ) | DS (µg/m <sup>3</sup> ) | Change (µg/m <sup>3</sup> ) | DS % of AQAL | % Change of AQAL | Impact             |
|----------|-------------------------|-------------------------|-----------------------------|--------------|------------------|--------------------|
| AQ01     | 10.0                    | 10.0                    | <0.1                        | 25.0%        | 0.0              | Negligible Neutral |
| AQ02     | 10.0                    | 10.0                    | <0.1                        | 25.0%        | 0.0              | Negligible Neutral |
| AQ03     | 10.0                    | 10.0                    | <0.1                        | 25.0%        | 0.0              | Negligible Neutral |
| AQ04     | 10.0                    | 11.0                    | 1.0                         | 27.5%        | 2.5              | Negligible Adverse |
| AQ05     | 10.0                    | 10.0                    | <0.1                        | 25.0%        | 0.0              | Negligible Neutral |
| AQ07     | 10.0                    | 10.0                    | <0.1                        | 25.0%        | 0.0              | Negligible Neutral |
| AQ08     | 11.0                    | 11.0                    | <0.1                        | 27.5%        | 0.0              | Negligible Neutral |
| AQ09     | 11.0                    | 11.0                    | <0.1                        | 27.5%        | 0.0              | Negligible Neutral |

| Receptor | DM<br>(µg/m³) | DS<br>(µg/m³) | Change<br>(µg/m³) | DS % of<br>AQAL | % Change<br>of AQAL | Impact                |
|----------|---------------|---------------|-------------------|-----------------|---------------------|-----------------------|
| AQ10     | 11.0          | 11.0          | <0.1              | 27.5%           | 0.0                 | Negligible<br>Neutral |
| AQ11     | 11.0          | 11.0          | <0.1              | 27.5%           | 0.0                 | Negligible<br>Neutral |
| AQ12     | 11.0          | 11.0          | <0.1              | 27.5%           | 0.0                 | Negligible<br>Neutral |
| AQ13     | 11.0          | 11.0          | <0.1              | 27.5%           | 0.0                 | Negligible<br>Neutral |
| AQ14     | 11.0          | 11.0          | <0.1              | 27.5%           | 0.0                 | Negligible<br>Neutral |
| AQ15     | 11.0          | 11.0          | <0.1              | 27.5%           | 0.0                 | Negligible<br>Neutral |
| AQ16     | 12.0          | 12.0          | <0.1              | 30.0%           | 0.0                 | Negligible<br>Neutral |
| AQ17     | 11.0          | 11.0          | <0.1              | 27.5%           | 0.0                 | Negligible<br>Neutral |
| AQ18     | 12.0          | 12.0          | <0.1              | 30.0%           | 0.0                 | Negligible<br>Neutral |
| AQ19     | 11.0          | 11.0          | <0.1              | 27.5%           | 0.0                 | Negligible<br>Neutral |
| AQ20     | 12.0          | 12.0          | <0.1              | 30.0%           | 0.0                 | Negligible<br>Neutral |
| AQ21     | 12.0          | 13.0          | 1.0               | 32.5%           | 2.5                 | Negligible<br>Adverse |
| AQ22     | 17.0          | 17.0          | <0.1              | 42.5%           | 0.0                 | Negligible<br>Neutral |
| AQ23     | 15.0          | 15.0          | <0.1              | 37.5%           | 0.0                 | Negligible<br>Neutral |
| AQ24     | 16.0          | 16.0          | <0.1              | 40.0%           | 0.0                 | Negligible<br>Neutral |
| AQ25     | 15.0          | 15.0          | <0.1              | 37.5%           | 0.0                 | Negligible<br>Neutral |
| AQ26     | 13.0          | 13.0          | <0.1              | 32.5%           | 0.0                 | Negligible<br>Neutral |
| AQ27     | 14.0          | 14.0          | <0.1              | 35.0%           | 0.0                 | Negligible<br>Neutral |

| Receptor | DM<br>( $\mu\text{g}/\text{m}^3$ ) | DS<br>( $\mu\text{g}/\text{m}^3$ ) | Change<br>( $\mu\text{g}/\text{m}^3$ ) | DS % of<br>AQAL | % Change<br>of AQAL | Impact                |
|----------|------------------------------------|------------------------------------|----------------------------------------|-----------------|---------------------|-----------------------|
| AQ28     | 14.0                               | 14.0                               | <0.1                                   | 35.0%           | 0.0                 | Negligible<br>Neutral |
| AQ29     | 14.0                               | 14.0                               | <0.1                                   | 35.0%           | 0.0                 | Negligible<br>Neutral |
| AQ30     | 14.0                               | 14.0                               | <0.1                                   | 35.0%           | 0.0                 | Negligible<br>Neutral |
| AQ31     | 16.0                               | 16.0                               | <0.1                                   | 40.0%           | 0.0                 | Negligible<br>Neutral |
| AQ32     | 15.0                               | 16.0                               | 1.0                                    | 40.0%           | 2.5                 | Negligible<br>Adverse |
| AQ33     | 14.0                               | 14.0                               | <0.1                                   | 35.0%           | 0.0                 | Negligible<br>Neutral |
| AQ34     | 14.0                               | 14.0                               | <0.1                                   | 35.0%           | 0.0                 | Negligible<br>Neutral |
| AQ35     | 13.0                               | 13.0                               | <0.1                                   | 32.5%           | 0.0                 | Negligible<br>Neutral |
| AQ36     | 14.0                               | 14.0                               | <0.1                                   | 35.0%           | 0.0                 | Negligible<br>Neutral |

5.14 Traffic generated by the Proposed Development is predicted to increase annual mean  $\text{NO}_2$  concentrations by no more than  $1 \mu\text{g}/\text{m}^3$ , which equates to less than 2.5% of the AQAL and is classed as a Negligible impact based on the EPUK & IAQM criteria set out in Table 2-2.

5.15 Based on the predicted annual mean  $\text{NO}_2$  concentrations, the 1-hour objective is also unlikely to be exceeded at all the selected receptors and impacts on short term  $\text{NO}_2$  will also be Negligible.

5.16 On this basis, no significant effects in terms of  $\text{NO}_2$  have been identified.

#### *Particulate matter ( $\text{PM}_{10}$ )*

5.17 The data in Table 5-6 shows that modelled annual mean  $\text{PM}_{10}$  concentrations are below the AQAL at all the selected receptor locations:

**Table 5-6: Predicted Change in Annual Mean PM<sub>10</sub> Due to Development**

| <b>Receptor</b> | <b>DM<br/>(µg/m³)</b> | <b>DS<br/>(µg/m³)</b> | <b>Change<br/>(µg/m³)</b> | <b>DS % of<br/>AQAL</b> | <b>% Change<br/>of AQAL</b> | <b>Impact</b>         |
|-----------------|-----------------------|-----------------------|---------------------------|-------------------------|-----------------------------|-----------------------|
| AQ01            | 12.0                  | 12.0                  | <0.1                      | 30.0%                   | 0.0                         | Negligible<br>Neutral |
| AQ02            | 12.0                  | 12.0                  | <0.1                      | 30.0%                   | 0.0                         | Negligible<br>Neutral |
| AQ03            | 12.0                  | 12.0                  | <0.1                      | 30.0%                   | 0.0                         | Negligible<br>Neutral |
| AQ04            | 12.0                  | 13.0                  | 1.0                       | 32.5%                   | 2.5                         | Negligible<br>Adverse |
| AQ05            | 12.0                  | 12.0                  | <0.1                      | 30.0%                   | 0.0                         | Negligible<br>Neutral |
| AQ07            | 12.0                  | 12.0                  | <0.1                      | 30.0%                   | 0.0                         | Negligible<br>Neutral |
| AQ08            | 12.0                  | 12.0                  | <0.1                      | 30.0%                   | 0.0                         | Negligible<br>Neutral |
| AQ09            | 12.0                  | 13.0                  | 1.0                       | 32.5%                   | 2.5                         | Negligible<br>Adverse |
| AQ10            | 12.0                  | 12.0                  | <0.1                      | 30.0%                   | 0.0                         | Negligible<br>Neutral |
| AQ11            | 12.0                  | 13.0                  | 1.0                       | 32.5%                   | 2.5                         | Negligible<br>Adverse |
| AQ12            | 12.0                  | 13.0                  | 1.0                       | 32.5%                   | 2.5                         | Negligible<br>Adverse |
| AQ13            | 12.0                  | 12.0                  | <0.1                      | 30.0%                   | 0.0                         | Negligible<br>Neutral |
| AQ14            | 12.0                  | 12.0                  | <0.1                      | 30.0%                   | 0.0                         | Negligible<br>Neutral |
| AQ15            | 12.0                  | 12.0                  | <0.1                      | 30.0%                   | 0.0                         | Negligible<br>Neutral |
| AQ16            | 13.0                  | 13.0                  | <0.1                      | 32.5%                   | 0.0                         | Negligible<br>Neutral |
| AQ17            | 12.0                  | 12.0                  | <0.1                      | 30.0%                   | 0.0                         | Negligible<br>Neutral |
| AQ18            | 13.0                  | 13.0                  | <0.1                      | 32.5%                   | 0.0                         | Negligible<br>Neutral |

| Receptor | DM<br>( $\mu\text{g}/\text{m}^3$ ) | DS<br>( $\mu\text{g}/\text{m}^3$ ) | Change<br>( $\mu\text{g}/\text{m}^3$ ) | DS % of<br>AQAL | % Change<br>of AQAL | Impact                |
|----------|------------------------------------|------------------------------------|----------------------------------------|-----------------|---------------------|-----------------------|
| AQ19     | 13.0                               | 13.0                               | <0.1                                   | 32.5%           | 0.0                 | Negligible<br>Neutral |
| AQ20     | 13.0                               | 13.0                               | <0.1                                   | 32.5%           | 0.0                 | Negligible<br>Neutral |
| AQ21     | 13.0                               | 13.0                               | <0.1                                   | 32.5%           | 0.0                 | Negligible<br>Neutral |
| AQ22     | 15.0                               | 15.0                               | <0.1                                   | 37.5%           | 0.0                 | Negligible<br>Neutral |
| AQ23     | 14.0                               | 14.0                               | <0.1                                   | 35.0%           | 0.0                 | Negligible<br>Neutral |
| AQ24     | 14.0                               | 14.0                               | <0.1                                   | 35.0%           | 0.0                 | Negligible<br>Neutral |
| AQ25     | 14.0                               | 14.0                               | <0.1                                   | 35.0%           | 0.0                 | Negligible<br>Neutral |
| AQ26     | 13.0                               | 13.0                               | <0.1                                   | 32.5%           | 0.0                 | Negligible<br>Neutral |
| AQ27     | 13.0                               | 13.0                               | <0.1                                   | 32.5%           | 0.0                 | Negligible<br>Neutral |
| AQ28     | 13.0                               | 13.0                               | <0.1                                   | 32.5%           | 0.0                 | Negligible<br>Neutral |
| AQ29     | 13.0                               | 13.0                               | <0.1                                   | 32.5%           | 0.0                 | Negligible<br>Neutral |
| AQ30     | 13.0                               | 13.0                               | <0.1                                   | 32.5%           | 0.0                 | Negligible<br>Neutral |
| AQ31     | 14.0                               | 14.0                               | <0.1                                   | 35.0%           | 0.0                 | Negligible<br>Neutral |
| AQ32     | 14.0                               | 14.0                               | <0.1                                   | 35.0%           | 0.0                 | Negligible<br>Neutral |
| AQ33     | 13.0                               | 13.0                               | <0.1                                   | 32.5%           | 0.0                 | Negligible<br>Neutral |
| AQ34     | 13.0                               | 13.0                               | <0.1                                   | 32.5%           | 0.0                 | Negligible<br>Neutral |
| AQ35     | 13.0                               | 13.0                               | <0.1                                   | 32.5%           | 0.0                 | Negligible<br>Neutral |
| AQ36     | 13.0                               | 13.0                               | <0.1                                   | 32.5%           | 0.0                 | Negligible<br>Neutral |

5.18 Traffic generated by the Proposed Development is predicted to increase annual mean PM<sub>10</sub> concentrations by no more than 1 µg/m<sup>3</sup>, which equates to less than 2.5% of the AQAL and is classed as a Negligible impact based on the EPUK & IAQM criteria set out in Table 2-2.

5.19 With a similar approach to NO<sub>2</sub>, the LAQM.TG(22) recommends that where annual mean PM<sub>10</sub> concentrations fall below 32 µg/m<sup>3</sup> the 24-hour AQAL is unlikely to be exceeded. Based on predicted annual mean PM<sub>10</sub> concentrations the 24-hour AQAL is unlikely to be exceeded at any of the receptor locations and impacts on short term PM<sub>10</sub> will be Negligible.

5.20 On this basis, no significant effects in terms of PM<sub>10</sub> have been identified.

*Particulate matter (PM<sub>2.5</sub>)*

5.21 In the absence of guidance on how to assess the impact of PM<sub>2.5</sub> concentrations, the percentage change has not been assessed and total concentrations in the Do Something scenario are presented in the context of the relevant AQALs only.

**Table 5-7: Predicted Annual Mean PM<sub>2.5</sub> Concentrations**

| Receptor | DM (µg/m <sup>3</sup> ) | DS (µg/m <sup>3</sup> ) | Change (µg/m <sup>3</sup> ) |
|----------|-------------------------|-------------------------|-----------------------------|
| AQ01     | 7.0                     | 7.0                     | <0.1                        |
| AQ02     | 8.0                     | 8.0                     | <0.1                        |
| AQ03     | 8.0                     | 8.0                     | <0.1                        |
| AQ04     | 8.0                     | 8.0                     | <0.1                        |
| AQ05     | 7.0                     | 7.0                     | <0.1                        |
| AQ07     | 8.0                     | 8.0                     | <0.1                        |
| AQ08     | 8.0                     | 8.0                     | <0.1                        |

| Receptor | DM ( $\mu\text{g}/\text{m}^3$ ) | DS ( $\mu\text{g}/\text{m}^3$ ) | Change ( $\mu\text{g}/\text{m}^3$ ) |
|----------|---------------------------------|---------------------------------|-------------------------------------|
| AQ09     | 8.0                             | 8.0                             | <0.1                                |
| AQ10     | 7.0                             | 7.0                             | <0.1                                |
| AQ11     | 8.0                             | 8.0                             | <0.1                                |
| AQ12     | 8.0                             | 8.0                             | <0.1                                |
| AQ13     | 7.0                             | 7.0                             | <0.1                                |
| AQ14     | 7.0                             | 7.0                             | <0.1                                |
| AQ15     | 8.0                             | 8.0                             | <0.1                                |
| AQ16     | 8.0                             | 8.0                             | <0.1                                |
| AQ17     | 7.0                             | 8.0                             | 1.0                                 |
| AQ18     | 8.0                             | 8.0                             | <0.1                                |
| AQ19     | 8.0                             | 8.0                             | <0.1                                |
| AQ20     | 8.0                             | 8.0                             | <0.1                                |
| AQ21     | 8.0                             | 8.0                             | <0.1                                |
| AQ22     | 9.0                             | 9.0                             | <0.1                                |
| AQ23     | 8.0                             | 8.0                             | <0.1                                |
| AQ24     | 9.0                             | 9.0                             | <0.1                                |
| AQ25     | 8.0                             | 8.0                             | <0.1                                |
| AQ26     | 8.0                             | 8.0                             | <0.1                                |

| Receptor | DM ( $\mu\text{g}/\text{m}^3$ ) | DS ( $\mu\text{g}/\text{m}^3$ ) | Change ( $\mu\text{g}/\text{m}^3$ ) |
|----------|---------------------------------|---------------------------------|-------------------------------------|
| AQ27     | 8.0                             | 8.0                             | <0.1                                |
| AQ28     | 8.0                             | 8.0                             | <0.1                                |
| AQ29     | 8.0                             | 8.0                             | <0.1                                |
| AQ30     | 8.0                             | 8.0                             | <0.1                                |
| AQ31     | 9.0                             | 9.0                             | <0.1                                |
| AQ32     | 8.0                             | 8.0                             | <0.1                                |
| AQ33     | 8.0                             | 8.0                             | <0.1                                |
| AQ34     | 8.0                             | 8.0                             | <0.1                                |
| AQ35     | 8.0                             | 8.0                             | <0.1                                |
| AQ36     | 8.0                             | 8.0                             | <0.1                                |

5.22 The data in Table 5-7 shows that modelled annual mean  $\text{PM}_{2.5}$  concentrations are below the 2030 AMIT at all receptors. On this basis, no significant effects in terms of  $\text{PM}_{2.5}$  have been identified.

#### *Sensitivity Test*

5.23 The results of the operation phase sensitivity test, which evaluates the cumulative effect of both the Proposed Development in combination with the forthcoming development to the north of Maddoxford Lane, are presented in Appendix C, and are summarised below:

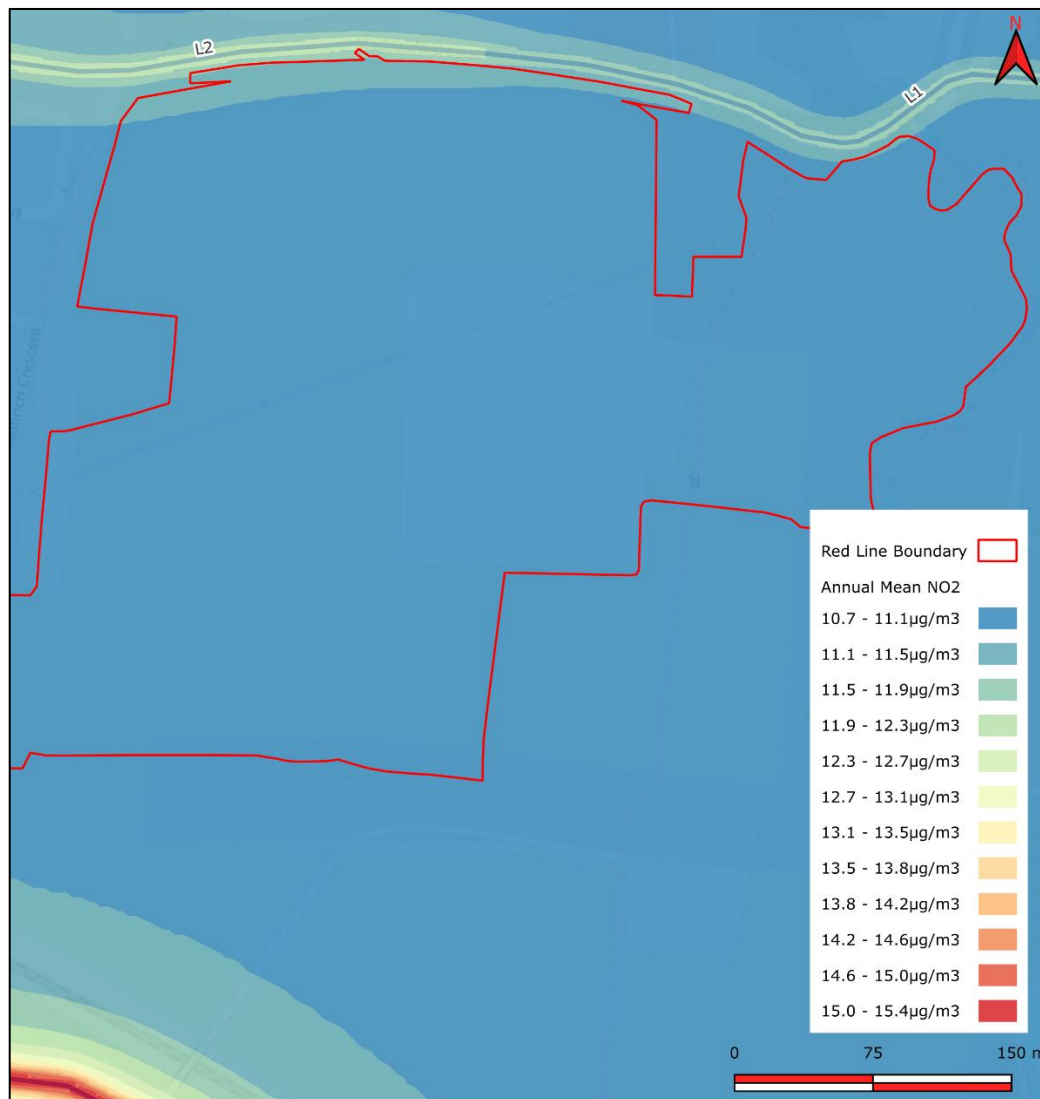
- Traffic generated by the Cumulative Development is predicted to increase annual mean  $\text{NO}_2$  concentrations by no more than  $1 \mu\text{g}/\text{m}^3$ ,

which equates to less than 2.5% of the AQAL and is classed as a Negligible impact;

- Traffic generated by the Cumulative Development is predicted to increase annual mean PM<sub>10</sub> concentrations by no more than 1 µg/m<sup>3</sup>, which equates to less than 2.5% of the AQAL and is classed as a Negligible impact;
- Traffic generated by the Cumulative Development is predicted to increase annual mean PM<sub>2.5</sub> concentrations by no more than 1 µg/m<sup>3</sup>. Annual mean concentrations are below the 2030 AMIT at all receptors.

Road Traffic Emissions: Exposure / Site Sensitivity

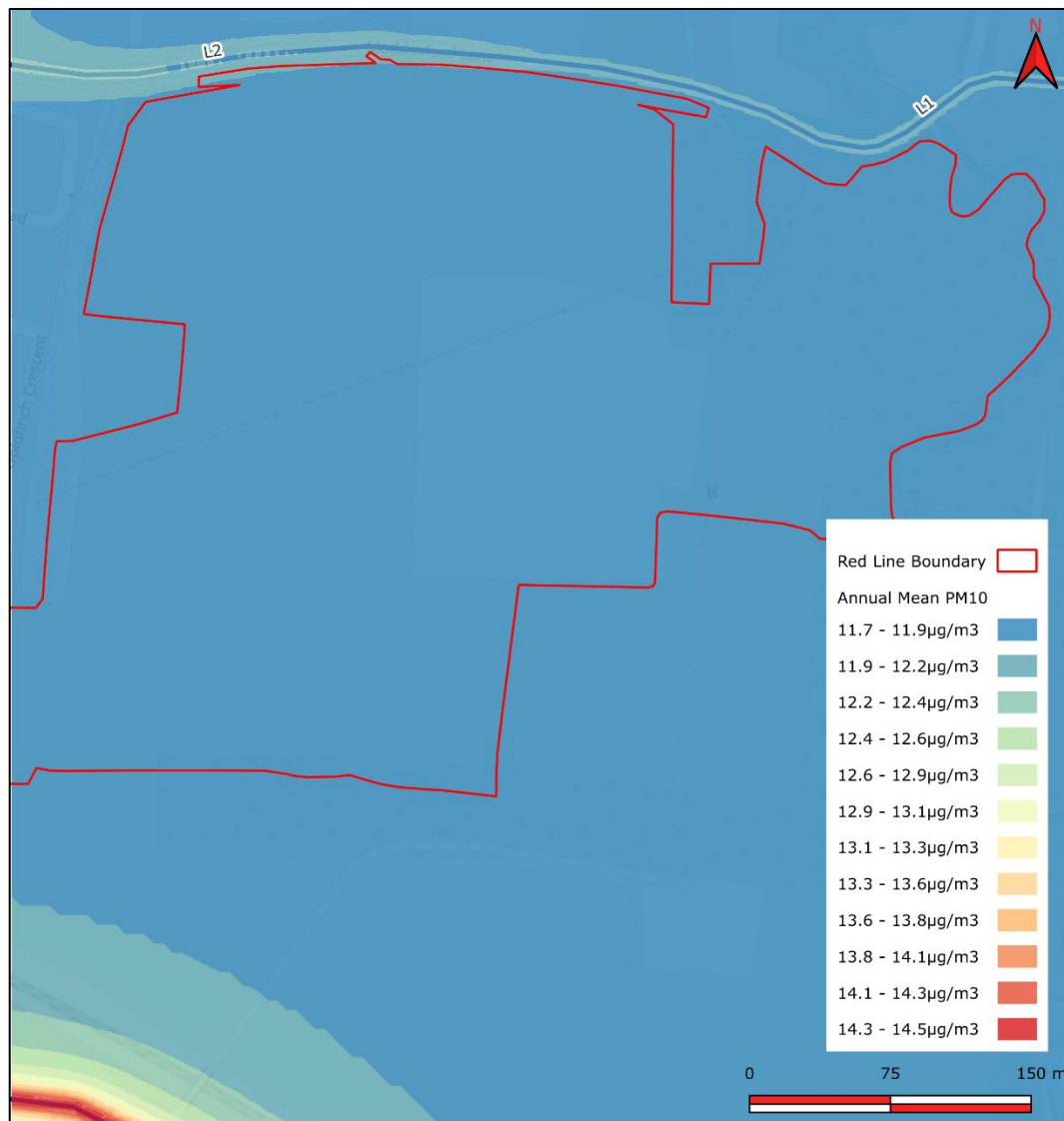
5.24 1.5m height grid modelled annual mean concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> are presented as contours across the Site below. As detailed in Appendix B, results are presented for a 2030 future year (which utilises background concentrations from 2024, and so is a conservative approach).



**Figure 5-1: Annual Mean NO<sub>2</sub> Contour (µg/m<sup>3</sup>)**

5.25 Figure 5-1 shows that annual mean NO<sub>2</sub> concentrations are below the AQAL across the Site.

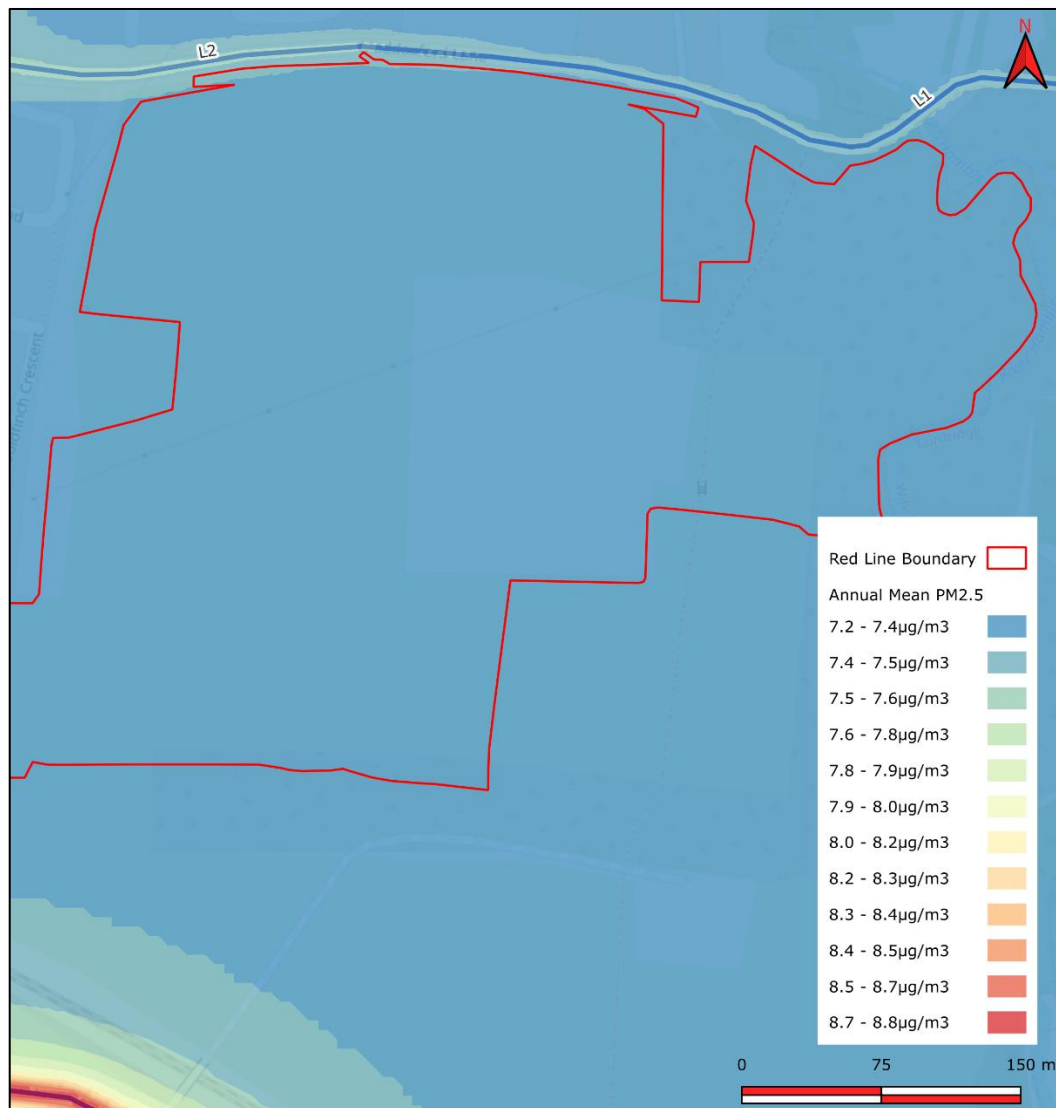
5.26 As noted in LAQM.TG (22), it can be considered that exceedances of the NO<sub>2</sub> 1-hour mean AQAL may occur if the annual mean is above 60µg/m<sup>3</sup>. Modelled annual mean concentrations of NO<sub>2</sub> are below 60µg/m<sup>3</sup>, therefore NO<sub>2</sub> concentrations are unlikely to exceed the 1-hour mean AQAL.



**Figure 5-2: Annual Mean PM<sub>10</sub> Contour (µg/m³)**

5.27 Figure 5-2 shows that annual mean PM<sub>10</sub> concentrations are below the AQAL across the Site.

5.28 With a similar approach to NO<sub>2</sub>, LAQM.TG(22) recommends that where annual mean PM<sub>10</sub> concentrations fall below 32µg/m³ the 24-hour AQAL is unlikely to be exceeded. Based on predicted annual mean background PM<sub>10</sub> concentrations the 24-hour AQAL is unlikely to be exceeded at the Site.



**Figure 5-3: Annual Mean PM<sub>2.5</sub> Contour (µg/m³)**

5.29 Figure 5-3 shows that annual mean concentrations of PM<sub>2.5</sub> do not exceed the AMIT, which is applicable from 2030. Concentrations would reasonably be expected to decline and compliance with the AMCT in 2040 would also be expected.

## **6 Mitigation**

### **Construction Phase**

- 6.1 The qualitative construction dust risk assessment shows that the works would be Medium Risk for adverse impacts during construction, in the absence of mitigation. To effectively reduce the risk of impacts to Negligible, appropriate mitigation measures would be adopted.
- 6.2 Implementing these measures, such as Dust Management Plan (DMP) through appropriate planning conditions (see Appendix D), should effectively reduce the risk of impacts to Negligible during the construction phase.

### **Operation Phase**

- 6.3 In relation to human health, operation phase impacts have been predicted as Negligible, and the Site can be determined as suitable for residential development in terms of exposure.
- 6.4 However, EBC recommend that mitigation measures are proposed to reduce emissions and exposure, as below:
- Low-emission transport plans (e.g., electric vehicle charging points, sustainable transport promotion);
  - On-site green infrastructure and planting schemes to support air quality improvements.
- 6.5 EBC also expect to see a developers contribution of £100 per dwelling, to be proportionate to the % of total vehicle movements from the Site passing through High Street Botley AQMA.
- 6.6 780 AADT will route through the Maypole Roundabout, which is 61.3% of the total increase in vehicle movements of 1,273 AADT.

6.7 Therefore, the developers contribution can be factored proportionately as follows:

- £100 per dwelling x 280 dwellings x 61.3% = **£17,159**

## **7 Discussion and Conclusions**

### **Construction Phase**

- 7.1 A qualitative construction dust risk assessment has been carried out in accordance with IAQM guidance. The qualitative construction dust risk assessment shows that the works would be Medium Risk for adverse impacts during construction, in the absence of mitigation. By following the mitigation measures outlined in this report, the risk of construction phase impacts would reasonably be reduced to Negligible.

### **Operation Phase**

- 7.1 Impacts from operation phase road traffic emissions are considered not significant, and future residents at the Site are considered unlikely to be exposed to pollution concentrations above AQALs.

### **Overall**

- 7.2 From the evidence presented, and by following the guidance provided in this report, the Proposed Development would be expected to comply with all relevant air quality policy. As such, air quality should not pose any significant obstacles to the planning process
- 7.1 The conclusion that operational phase impacts will remain negligible is contingent on implementation of the assumed traffic forecasts and fleet improvements, and the absence of materially adverse future policy or economic conditions.

## **8 Appendices**

### **Appendix A: Construction Phase Methodology**

#### **Step 1**

Step 1 is a basic screening stage, to determine whether the more detailed assessment provided in Step 2 is required. Should human receptors be identified within 250m of the boundary or 50m from the construction vehicle route up to 500m from the site entrance, then the assessment proceeds to Step 2. Additionally, should ecological receptors be identified within 50m of the site or the construction vehicle route, then the assessment also proceeds to Step 2.

#### **Step 2a - Potential Dust Emission Magnitude**

Step 2a determines the potential for dust to arise during the construction phase. Activities on construction sites with the potential to generate dust can be categorised into 4 types of activities:

- Demolition – any activities associated with the removal of existing structures on the Site;
- Earthworks – includes the processes of soil-stripping, ground-levelling, excavation and landscaping;
- Construction – any activities relating to the provision of new structures on the Site; and
- Trackout – the transport of dust and dirt from the Site onto the public road network where it may be deposited and re-suspended by vehicle traffic.

The potential dust emission magnitude for each of the activities is determined by the scale and magnitude of the works, and are classified as small, medium or large depending on the criteria outlined below in Table 8-1.

**Table 8-1: Construction Dust - Magnitude of Emission**

| Activity     | Potential Dust Emission Magnitude                                                                                                                                                                                 |                                                                                                                                                                   |                                                                                                                                                                                                                     |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | Small                                                                                                                                                                                                             | Medium                                                                                                                                                            | Large                                                                                                                                                                                                               |
| Demolition   | 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 | Total building volume 12,000 m <sup>3</sup> – 75,000m <sup>3</sup> , potentially dusty construction material, demolition activities 6-12m above ground level      | 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 level                               |
| Earthworks   | Total Site area <18,000m <sup>2</sup> , soil type with large grain size, <5 heavy earth moving vehicles active at any one time, formation of bunds <3m in height                                                  | Total Site area 18,000m <sup>2</sup> – 110,000m <sup>2</sup> , moderately dusty soil type, 5-10 heavy earth moving vehicles, formation of bunds 3m – 6m in height | Total Site area >110,000m <sup>2</sup> , potentially dusty soil type (such as clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles, formation of bunds >6m |
| Construction | Total building volume <12,000m <sup>3</sup> , construction material with low potential for dust release (such as metal cladding or timber)                                                                        | Total building volume 12,000m <sup>3</sup> – 75,000m <sup>3</sup> , potentially dusty construction material (such as concrete), on Site concrete batching         | Total building volume >75,000m <sup>3</sup> , on Site concrete batching, sandblasting                                                                                                                               |
| Trackout     | <20 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved roads <50m                                                                                        | 20-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (such as high clay content), unpaved road length 50m – 100m                 | >50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (such as high clay content), unpaved road length >100m                                                                         |

### **Step 2b - Sensitivity of the Area to Construction Dust**

Step 2B defines the sensitivity of the area around the development to potential dust impacts. The influencing factors to determine individual receptor sensitivities are shown in Table 8-2.

**Table 8-2: Examples of Factors Defining Sensitivity of an Area**

| Receptor Sensitivity | Examples                                                                                                                                                                                                                                                                                                                                                                    |                                                                                          |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|                      | Human Receptors                                                                                                                                                                                                                                                                                                                                                             | Ecological Receptors                                                                     |
| High                 | <p>Users expect of high levels of amenity.</p> <p>High aesthetic or value property.</p> <p>People expected to be present continuously for extended periods of time.</p> <p>Locations where members of the public are exposed over a time period relevant to the AQAL for PM<sub>10</sub>. e.g., residential properties, hospitals, schools, and residential care homes.</p> | <p>Internationally or nationally designated site e.g., Special Area of Conservation.</p> |
| Medium               | <p>Users would expect to enjoy a reasonable level of amenity.</p> <p>Aesthetics or value of their property could be diminished by soiling.</p> <p>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 e.g., parks and places of work.</p>                 | <p>Nationally designated site e.g., Sites of Special Scientific Interest.</p>            |
| Low                  | <p>Enjoyment of amenity would not reasonably be expected.</p> <p>Property would not be expected to be diminished in appearance.</p> <p>Transient exposure, where people would only be expected to be present for limited periods. e.g., public footpaths, playing fields, shopping streets, farmland, short term car parks and roads.</p>                                   | <p>Locally designated site e.g., Local Nature Reserve.</p>                               |

The sensitivity of the area is defined separately for dust soiling impacts, human health impacts and ecological impacts according to the criteria shown in the following tables, derived from IAQM guidance.

**Table 8-3: Sensitivity of the Area to Dust Soiling**

| Receptor Sensitivity | No. 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 8-4: Sensitivity of the Area to Human Health Impacts**

| Receptor Sensitivity | Annual Mean PM <sub>10</sub> Concentration | No. of Receptors | Distance from the Source (m) |        |        |        |
|----------------------|--------------------------------------------|------------------|------------------------------|--------|--------|--------|
|                      |                                            |                  | <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 | Medium |
|                      |                                            | 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    |

| Receptor Sensitivity | Annual Mean PM <sub>10</sub> Concentration | No. of Receptors | Distance from the Source (m) |        |      |      |
|----------------------|--------------------------------------------|------------------|------------------------------|--------|------|------|
|                      |                                            |                  | <20                          | <50    | <100 | <250 |
|                      | <24 µg/m <sup>3</sup>                      | 1-10             | Medium                       | Low    | Low  | Low  |
|                      |                                            | >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  |
|                      | <24 µg/m <sup>3</sup>                      | >10              | Low                          | Low    | Low  | Low  |
|                      |                                            | 1-10             | Low                          | Low    | Low  | Low  |
| Low                  | -                                          | <1               | Low                          | Low    | Low  | Low  |

**Table 8-5: 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    |

### **Step 2c - Risk of Impacts**

Step 2c combines the information from Steps 2a and 2b to determine the risk of dust impacts without mitigation (i.e., excluding embedded mitigation), according to the matrices below.

The risk of impacts is determined for each of the 4 activities using the matrices prescribed in the IAQM guidance, as reproduced below:

**Table 8-6: Dust Risk Category from Demolition Activities**

| Receptor Sensitivity | Potential Dust Emission Magnitude |        |            |
|----------------------|-----------------------------------|--------|------------|
|                      | Large                             | Medium | Small      |
| High                 | High                              | Medium | Medium     |
| Medium               | High                              | Medium | Low        |
| Low                  | Medium                            | Low    | Negligible |

**Table 8-7: Dust Risk Category from Earthworks and Construction Activities**

| Receptor Sensitivity | Potential Dust Emission Magnitude |        |            |
|----------------------|-----------------------------------|--------|------------|
|                      | Large                             | Medium | Small      |
| High                 | High                              | Medium | Low        |
| Medium               | Medium                            | Medium | Low        |
| Low                  | Low                               | Low    | Negligible |

**Table 8-8: Dust Risk Category from Trackout Activities**

| Receptor Sensitivity | Potential Dust Emission Magnitude |        |            |
|----------------------|-----------------------------------|--------|------------|
|                      | Large                             | Medium | Small      |
| High                 | High                              | Medium | Low        |
| Medium               | Medium                            | Medium | Low        |
| Low                  | Low                               | Low    | Negligible |

### **Step 3**

Step 3 requires the identification of site-specific mitigation measures within the IAQM guidance to reduce potential dust impacts based upon the relevant risk categories identified in Step 2. For sites with Negligible risk, mitigation measures beyond those required by legislation are not required. However, additional controls may be applied as part of good practice.

### **Step 4**

Once the risk of dust impacts has been determined and the appropriate mitigation measures identified, the final Step is to determine the significance of any residual impacts.

For almost all construction activity, the aim should be to control effects using effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be not significant.

## Appendix B: Operation Phase Methodology

### Overview

**Table 8-9: ADMS-Roads Model Inputs Processing Tools**

| Model Input Parameter         | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Model Version                 | <p>A detailed AQA has been undertaken using the air dispersion model ADMS-Roads. The software is commercially available, has been accepted for this type of assessment by Defra and is used extensively for AQA's.</p> <p>ADMS-Roads is able to provide an estimate of ambient pollution concentrations, considering important input data such as background pollutant concentrations, variable emissions, meteorological data, and traffic flows.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Assessment Scenarios          | <p>The following scenarios have been assessed:</p> <ul style="list-style-type: none"> <li>• 2024 Baseline scenario (for the purposes of model verification);</li> <li>• 2030 Do Minimum scenario (inclusive of committed developments), without the Proposed Development;</li> <li>• 2030 Do Something scenario (Do Minimum plus the Proposed Development).</li> <li>• 2030 Do Something Sensitivity scenario (Do Something plus the and the cumulative impact associated with the Development to the north of Maddoxford Lane).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Emission Factor Toolkit (EFT) | <p>Emission rates for NO<sub>x</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> used in the dispersion modelling assessment were calculated from the latest EFT (v.13.1) which was released in March 2025</p> <p>Most modern vehicles on the road in the UK meet a particular Euro emissions standard from 1 – 6, with 6 being the newest. Different parts of the country have newer or older vehicles than others. This is defined as the "fleet". The EFT estimates this primarily based on whether the location is within or outside London or in England, Wales or Scotland.</p> <p>In the case of this model the vehicle fleet used was defined as "England (urban)" for model verification in Maldon, and "England (rural)" for the impact assessment study area.</p> <p>When predicting future year emissions, the toolkit includes forecasts such as anticipated advances in vehicle technology and changes in vehicle fleet composition, which assumes that vehicle emissions will reduce over time. However, there is some uncertainty over the accuracy of the future predictions.</p> |
| Surface Roughness             | <p>The following surface roughness parameters have been applied in the model:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

| Model Input Parameter                         | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                               | <ul style="list-style-type: none"> <li>Dispersion site surface roughness = 0.5m (ADMS pre-set for 'Parkland, Open Suburbia');</li> <li>Met site surface roughness = 0.2m (ADMS pre-set for 'Agricultural Areas Min', to reflect its more open location).</li> </ul>                                                                                                                                                                                                                                                                                                 |
| Meteorological Data                           | <p>To calculate pollutant concentrations, ADMS-Roads requires hourly sequential meteorological data, including wind direction, wind speed, temperature, cloud cover and stability, which exert significant influence over atmospheric dispersion.</p> <p>The assessment has been undertaken using 2024 meteorological data from Southampton Airport Meteorological Station, which is the closest and most representative meteorological station which records all of the parameters necessary for dispersion modelling.</p> <p>The wind rose is provided below:</p> |
| Minimum Monin-Obukhov Length                  | <p>The following Minimum Monin-Obukhov (MO) lengths were applied:</p> <ul style="list-style-type: none"> <li>Dispersion site = 10m (ADMS pre-set for 'Small towns &lt;50,000').</li> <li>Met Site = 10m (ADMS pre-set for 'Small towns &lt;50,000').</li> </ul>                                                                                                                                                                                                                                                                                                     |
| Surface Albedo                                | <ul style="list-style-type: none"> <li>0.23 (model default)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Queuing                                       | <p>In accordance with LAQM.TG (22), vehicle speeds were modelled at 20kph to represent congestion and queuing traffic within approximately 50m of junctions based on a review of Google Earth.</p>                                                                                                                                                                                                                                                                                                                                                                  |
| NO <sub>x</sub> to NO <sub>2</sub> conversion | <p>Ambient NO<sub>x</sub> concentrations have been predicted through dispersion modelling. Annual NO<sub>x</sub> concentrations have been converted using Defra's NO<sub>x</sub> to NO<sub>2</sub> conversion tool version 9.1.</p> <p>Total NO<sub>2</sub> was determined by adding the calculated background NO<sub>2</sub> concentration to the modelled road contribution NO<sub>x</sub>.</p>                                                                                                                                                                   |
| Background Concentrations                     | <p>Defra UK-AIR modelled background concentrations for the relevant grid square and assessment years were considered to be the appropriate source of background concentrations in the dispersion modelling assessment. Annual mean background NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations were therefore derived from this dataset.</p> <p>For human health assessment, and to ensure a conservative approach, background concentrations for the future year operation phase assessment have been held at 2023.</p>                         |

### **Modelled Roads and Traffic Profile**

Traffic data used in the ADMS modelling assessment is set out in Table 8-10. The traffic data used in the assessment was provided by ACE.

**Table 8-10: Traffic Data used in ADMS Model**

| Link Name                           | Speed<br>(kph) | 2024 Baseline |       | Do Minimum (2030) |       | Do Something (2030) |       | Do Something<br>(Cumulative Sensitivity<br>2030) |       |
|-------------------------------------|----------------|---------------|-------|-------------------|-------|---------------------|-------|--------------------------------------------------|-------|
|                                     |                | Total AADT    | HDV%  | Total AADT        | HDV%  | Total AADT          | HDV%  | Total AADT                                       | HDV%  |
| Maddoxford Ln (E of Access)         | 96             | 2561          | 9.0%  | 2790              | 8.3%  | 2891                | 8.1%  | 2923                                             | 8.0%  |
| Maddoxford Ln (W of Access)         | 96             | 2561          | 9.0%  | 2790              | 8.3%  | 3962                | 6.4%  | 4330                                             | 6.1%  |
| Maddoxford Ln (W of Wallace Ave)    | 48             | 4536          | 1.2%  | 4879              | 1.2%  | 6051                | 1.3%  | 6419                                             | 1.4%  |
| Maddoxford Ln (W of Oatlands)       | 48             | 1481          | 2.5%  | 1648              | 2.4%  | 2588                | 2.2%  | 2883                                             | 2.2%  |
| Wallace Ave (N of Maddoxford Ln)    | 32             | 3999          | 1.4%  | 4229              | 1.3%  | 4229                | 1.3%  | 4229                                             | 1.3%  |
| Wallace Ave (W of Kingsman Dr)      | 32             | 3999          | 1.4%  | 4229              | 1.3%  | 4229                | 1.3%  | 4229                                             | 1.3%  |
| Kingsman Dr (E)                     | 32             | 1057          | 5.2%  | 1118              | 4.9%  | 1118                | 4.9%  | 1118                                             | 4.9%  |
| Oatlands                            | 48             | 2818          | 0.6%  | 2980              | 0.6%  | 3212                | 0.7%  | 3285                                             | 0.7%  |
| Winchester Rd (N of Maddoxford Ln)  | 64             | 8216          | 2.7%  | 10294             | 2.4%  | 10538               | 2.4%  | 10614                                            | 2.4%  |
| White Stork Road                    | 32             | 4208          | 5.0%  | 4450              | 4.7%  | 4450                | 4.7%  | 4450                                             | 4.7%  |
| Winchester Rd (N of White Stork Rd) | 64             | 14379         | 11.6% | 15206             | 10.9% | 15450               | 10.8% | 15526                                            | 10.7% |

**LAND SOUTH OF MADDOXFORD LANE**  
**AIR QUALITY ASSESSMENT**

**2501890\_A-ACE-XX-00-RP-C-0801\_B**  
**February 2026**

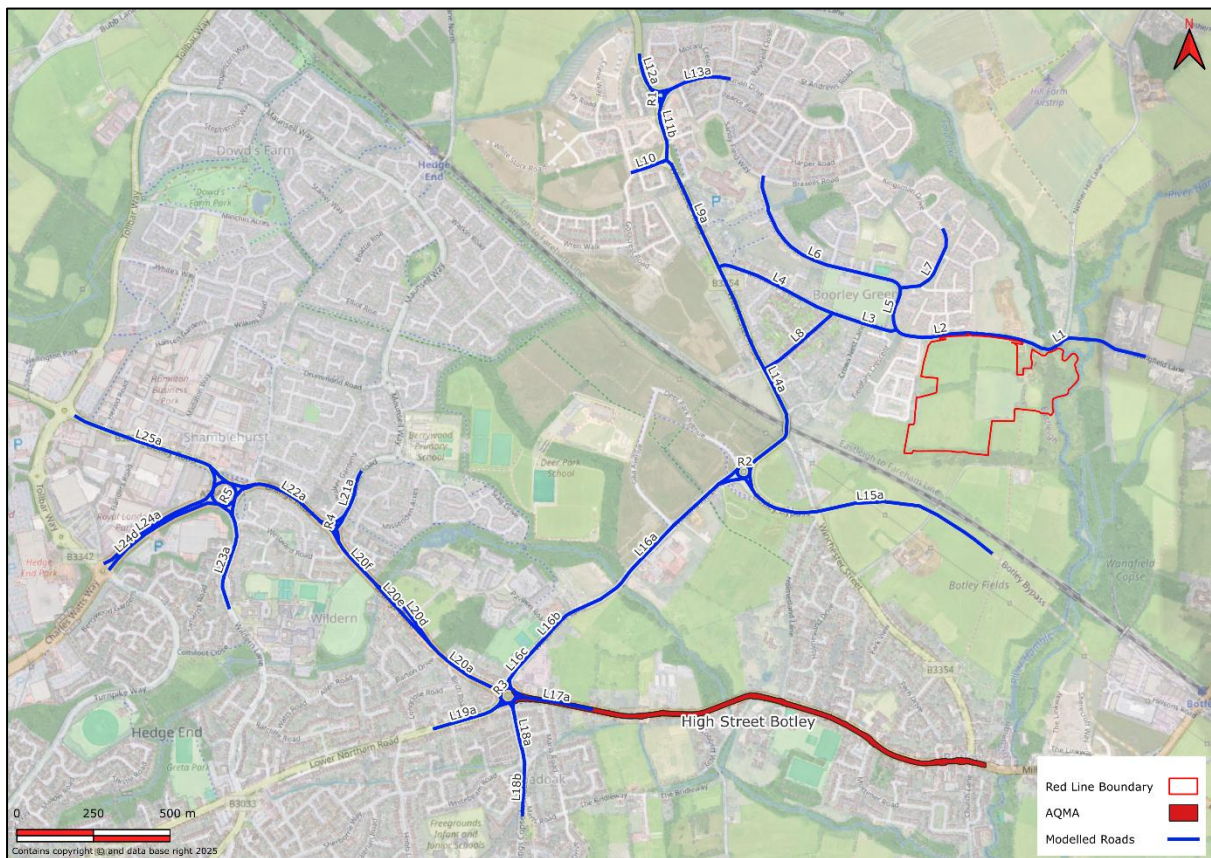
| Link Name                        | Speed<br>(kph) | 2024 Baseline |       | Do Minimum (2030) |      | Do Something (2030) |      | Do Something<br>(Cumulative Sensitivity<br>2030) |      |
|----------------------------------|----------------|---------------|-------|-------------------|------|---------------------|------|--------------------------------------------------|------|
|                                  |                | Total AADT    | HDV%  | Total AADT        | HDV% | Total AADT          | HDV% | Total AADT                                       | HDV% |
| Winchester Rd (N of Kingsman Dr) | 64             | 11259         | 10.0% | 14461             | 8.1% | 14705               | 8.0% | 14781                                            | 8.0% |
| Kingsman Dr (W)                  | 48             | 7873          | 5.0%  | 8326              | 4.7% | 8326                | 4.7% | 8326                                             | 4.7% |
| Winchester Rd (S of Oatlands)    | 64             | 10225         | 2.4%  | 14052             | 2.2% | 14980               | 2.2% | 15271                                            | 2.2% |
| Botley Bypass                    | 64             | 20677         | 5.0%  | 21866             | 4.7% | 22014               | 4.7% | 22060                                            | 4.7% |
| Woodhouse Ln                     | 64             | 9343          | 3.2%  | 12909             | 2.8% | 13689               | 2.8% | 13934                                            | 2.7% |
| Broad Oak                        | 64             | 16893         | 2.8%  | 17955             | 2.6% | 17955               | 2.6% | 17955                                            | 2.6% |
| Kings Copse Ave                  | 64             | 7941          | 0.6%  | 10050             | 0.8% | 10249               | 0.8% | 10311                                            | 0.8% |
| Lower Northam Rd                 | 48             | 9744          | 3.7%  | 10962             | 3.4% | 10962               | 3.4% | 10962                                            | 3.4% |
| Grange Rd (E of Locke Road)      | 64             | 18566         | 2.7%  | 20273             | 2.5% | 20836               | 2.5% | 21013                                            | 2.5% |
| Locke Rd                         | 48             | 6471          | 0.4%  | 6825              | 0.4% | 6825                | 0.4% | 6825                                             | 0.4% |
| Grange Rd (W of Locke Road)      | 64             | 14525         | 2.9%  | 13325             | 2.8% | 13888               | 2.8% | 14065                                            | 2.8% |

**LAND SOUTH OF MADDOXFORD LANE**  
**AIR QUALITY ASSESSMENT**

**2501890\_A-ACE-XX-00-RP-C-0801\_B**  
**February 2026**

| Link Name                                                      | Speed<br>(kph) | 2024 Baseline |      | Do Minimum (2030) |      | Do Something (2030) |      | Do Something<br>(Cumulative Sensitivity<br>2030) |      |
|----------------------------------------------------------------|----------------|---------------|------|-------------------|------|---------------------|------|--------------------------------------------------|------|
|                                                                |                | Total AADT    | HDV% | Total AADT        | HDV% | Total AADT          | HDV% | Total AADT                                       | HDV% |
| Wildern Ln                                                     | 32             | 7107          | 2.0% | 7543              | 1.9% | 7543                | 1.9% | 7543                                             | 1.9% |
| Charles Watts Way                                              | 64             | 34255         | 3.0% | 36681             | 2.8% | 37171               | 2.8% | 37325                                            | 2.8% |
| Botley Road                                                    | 64             | 13152         | 3.7% | 14310             | 3.5% | 14383               | 3.5% | 14405                                            | 3.5% |
| Winchester Road /<br>Kingsman Drive                            | 32             | 9786          | 5.8% | 12280             | 5.0% | 12670               | 5.0% | 12793                                            | 5.0% |
| Botley Bypass Roundabout                                       | 32             | 13415         | 3.5% | 16276             | 3.2% | 16894               | 3.2% | 17089                                            | 3.2% |
| Maypole Roundabout                                             | 32             | 13286         | 2.4% | 14810             | 2.3% | 15000               | 2.3% | 15060                                            | 2.3% |
| Grange Oak / Locke Road                                        | 32             | 13187         | 2.0% | 13474             | 1.9% | 13850               | 1.9% | 13967                                            | 1.9% |
| Charles Watts / Grange<br>Road / Botley Road /<br>Wildern Lane | 32             | 17260         | 2.9% | 17965             | 2.8% | 18246               | 2.7% | 18335                                            | 2.7% |

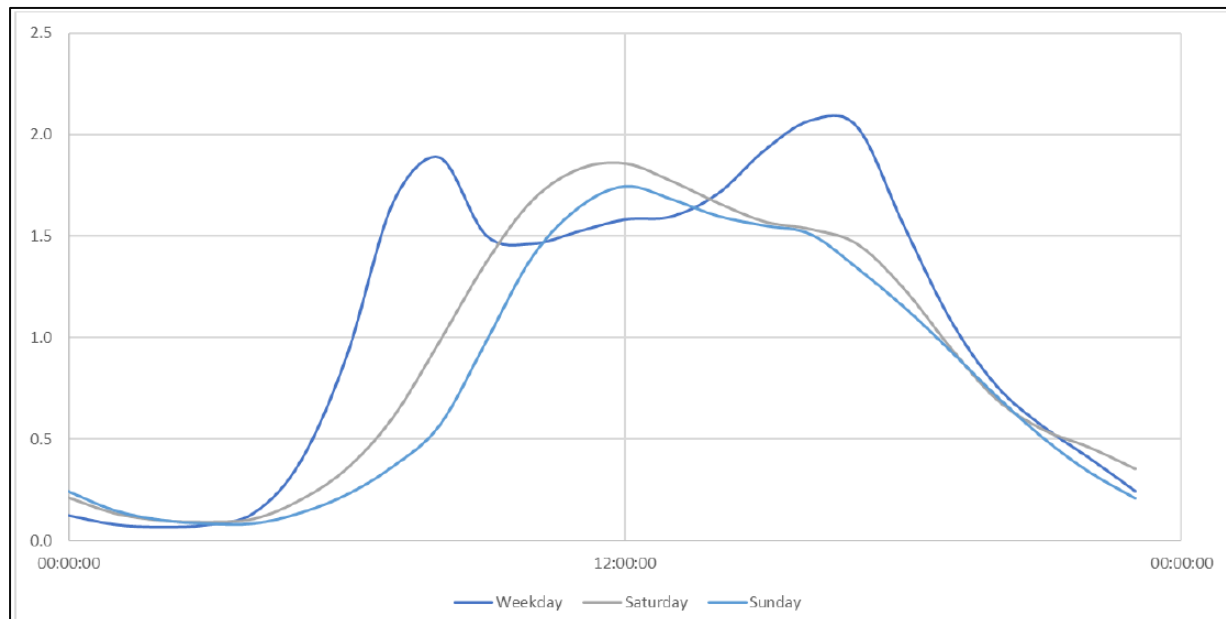
The roads modelled in the ADMS-Roads dispersion model are shown below in Figure 8-1



**Figure 8-1: Location of Road Links used in ADMS Modelling**

A diurnal traffic profile was applied to the model to account for typical variation in road traffic throughout the day and week. The diurnal profile used in the model has been calculated based on Department of Transport (DfT) Road traffic statistics (TRA) dataset.

TRA0307 provides 'Motor vehicle traffic distribution by time of day and day of the week on all roads, Great Britain', which shows the average hourly traffic flow in each combination of weekday and hour relative to the average hour across a whole year for main roads in England. Figure 8-2 shows the 2024 diurnal traffic profile included in the model:



**Figure 8-2: Diurnal traffic profile included in the dispersion model**

### **Receptor Locations**

Sensitive receptors have been identified in Section 4. In addition, a grid of discrete receptor points was modelled across the Site. The grid was made up of 113 x 119 modelled receptor points, at a representative 1.5m breathing height, originating at NGR: 451225.24 (x), 113843.67 (y), with a spacing of 5m between the grid points.

### **Model Verification**

An important stage in the modelling process is model verification, which involves comparing the model output with measured concentrations to increase confidence in modelled predictions. Model verification was undertaken using 2024 diffusion tube data from EBC monitoring locations.

According to LAQM.TG(22), the difference between modelled results and monitored concentrations is acceptable where it is within 25% (10% is preferable).

It is most appropriate to verify the model in terms of primary pollutant emissions of nitrogen oxides ( $\text{NO}_x = \text{NO} + \text{NO}_2$ ). The model output of road- $\text{NO}_x$  (i.e., the component of total  $\text{NO}_x$  coming from road traffic) has been compared with the 'measured' road- $\text{NO}_x$ .

The following air quality monitoring locations were selected for model verification, which were considered to be the most representative of the study area with suitable traffic data availability.

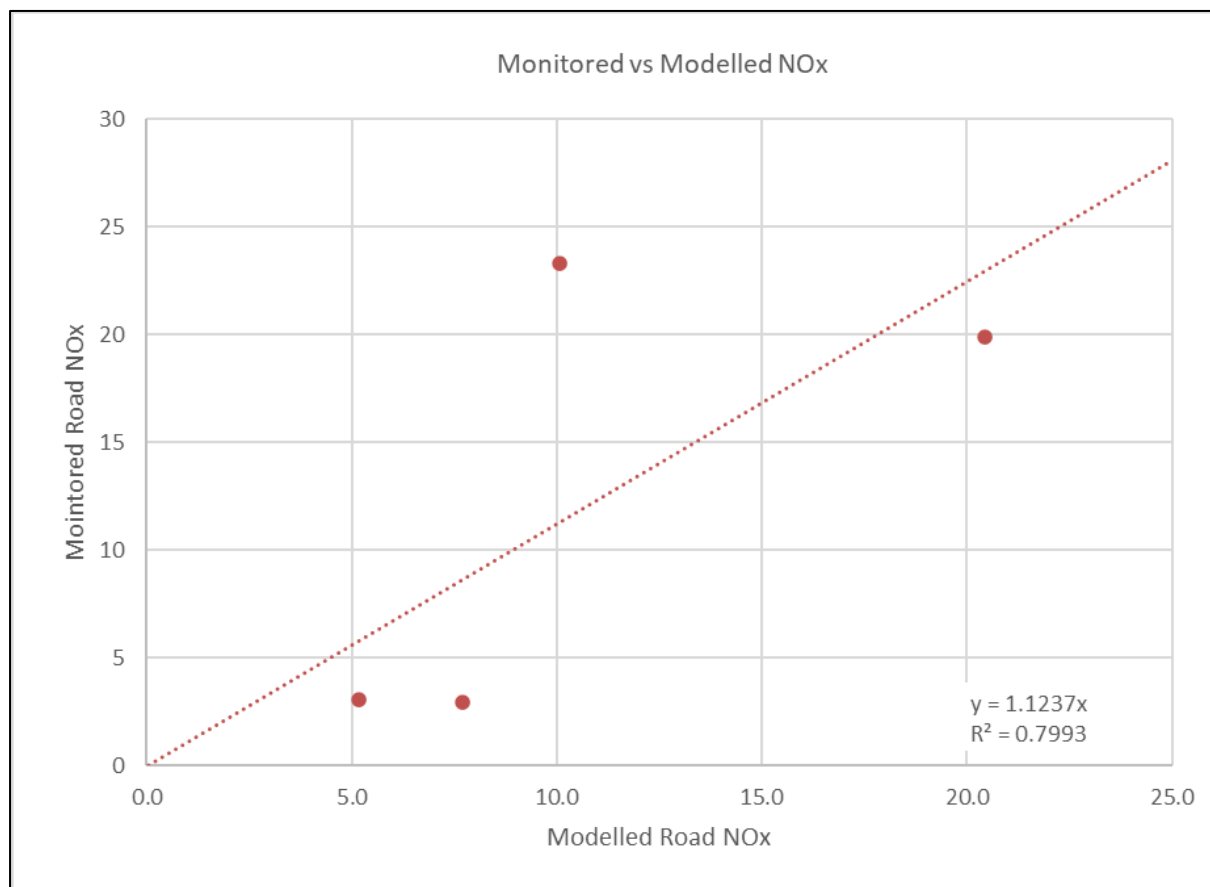
- WSRB
- GR
- KCA(18)
- PAV

The pre-adjusted modelled and monitored verification results are shown in Table 8-11:

**Table 8-11: Modelled and Monitored Concentrations**

| Monitoring ID | Modelled Road- $\text{NO}_x$ ( $\mu\text{g}/\text{m}^3$ ) | Monitored Road- $\text{NO}_x$ ( $\mu\text{g}/\text{m}^3$ ) | Ratio | Modelled Total $\text{NO}_2$ ( $\mu\text{g}/\text{m}^3$ ) | Monitored Total $\text{NO}_2$ ( $\mu\text{g}/\text{m}^3$ ) | Difference (%) |
|---------------|-----------------------------------------------------------|------------------------------------------------------------|-------|-----------------------------------------------------------|------------------------------------------------------------|----------------|
| WSRB          | 7.7                                                       | 3.0                                                        | 0.4   | 13.6                                                      | 11                                                         | 19             |
| GR            | 20.4                                                      | 19.9                                                       | 1.0   | 20.8                                                      | 21                                                         | 1              |
| KCA           | 10.1                                                      | 23.3                                                       | 2.3   | 16.3                                                      | 22                                                         | -26            |
| PAV           | 5.2                                                       | 3.1                                                        | 0.6   | 12.9                                                      | 12                                                         | 8              |

As shown, 75% of modelled concentrations of  $\text{NO}_x$  and  $\text{NO}_2$  were already within the 25% range of acceptability, with results at GR and PAV within the ideal 10% range pre-adjustment. However, as model underpredictions are present in the study area, an adjustment factor of **1.12** has been determined as the equation of the slope of the best-fit line between the 'measured' road contribution and the model derived road contribution of  $\text{NO}_x$ , as shown below:



**Figure 8-3: Comparison of Modelled Road-NO<sub>x</sub> with Measured Road NO<sub>x</sub>**

The overall pre-adjusted uncertainty (RMSE) for annual mean NO<sub>2</sub> was 7.7%, which is already within the ideal range of uncertainty, and equates to 3.1µg/m<sup>3</sup>.

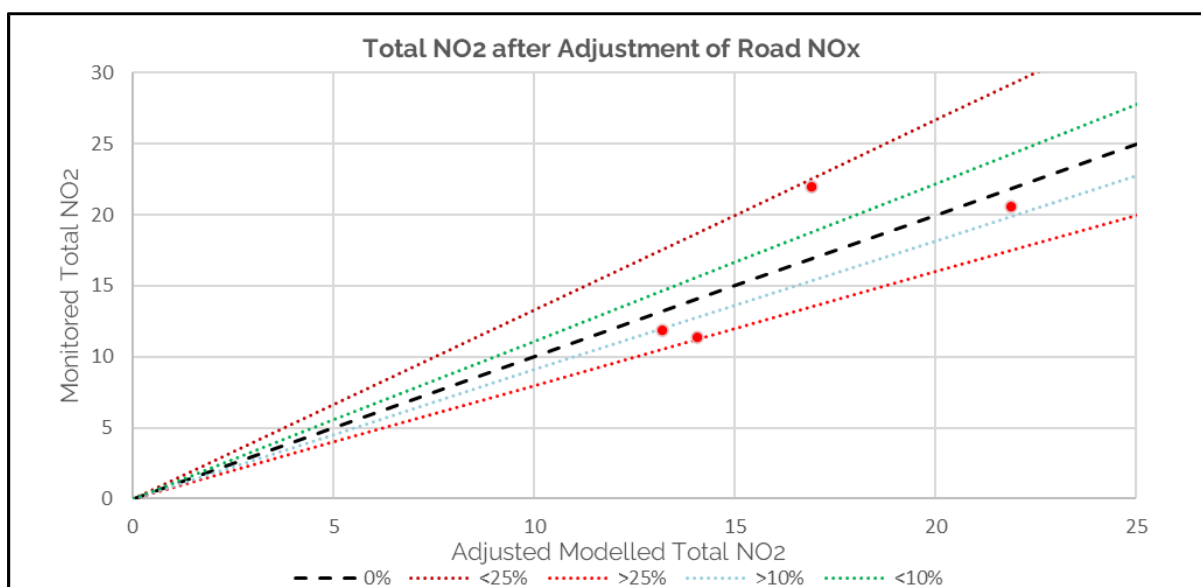
Table 8-12 shows total monitored versus modelled NO<sub>2</sub> following the adjustment of the road contribution of NO<sub>x</sub> by this factor.

**Table 8-12: Post-adjusted 2024 Modelled and Monitored Results**

| Monitoring ID | Adjusted Modelled NO <sub>2</sub> (µg/m <sup>3</sup> ) | Monitored NO <sub>2</sub> (µg/m <sup>3</sup> ) | Difference (%) |
|---------------|--------------------------------------------------------|------------------------------------------------|----------------|
| WSRB          | 14.1                                                   | 11.4                                           | 23%            |
| GR            | 21.9                                                   | 20.6                                           | 6%             |
| KCA(18)       | 16.9                                                   | 22.0                                           | -23%           |

| Monitoring ID | Adjusted Modelled NO <sub>2</sub> (µg/m <sup>3</sup> ) | Monitored NO <sub>2</sub> (µg/m <sup>3</sup> ) | Difference (%) |
|---------------|--------------------------------------------------------|------------------------------------------------|----------------|
| PAV           | 13.2                                                   | 11.9                                           | 11%            |

Following adjustment of NO<sub>x</sub>, all modelled concentrations of NO<sub>2</sub> were within the acceptable range of +/- 25% of monitored concentrations (with GR and PAV remaining within 10%):



**Figure 8-4: Comparison of Modelled and Monitored NO<sub>2</sub>**

In addition, the overall post-adjusted uncertainty (RMSE) for annual mean NO<sub>2</sub> was 7.5%, which is within the ideal range of uncertainty, and equates to 3.0µg/m<sup>3</sup>. As such, the factor was considered to be acceptable.

As there is insufficient PM<sub>10</sub> or PM<sub>2.5</sub> monitoring data in the study area for roads with available traffic data, it was not possible to perform model verification for these pollutants. As such, the Road NO<sub>x</sub> adjustment factor has also been applied to PM<sub>10</sub> and PM<sub>2.5</sub> model results, in accordance with LAQM.TG (22).

## Appendix C: Operation Phase Sensitivity Test

The results of the operation phase sensitivity test, which evaluates the cumulative effect of the Proposed Development in combination with the forthcoming development to the north of Maddoxford Lane are presented below.

*Nitrogen dioxide (NO<sub>2</sub>)*

**Table 8-13: Predicted Change in Annual Mean NO<sub>2</sub> Due to Development**

| Receptor | DM<br>(µg/m <sup>3</sup> ) | DS<br>(µg/m <sup>3</sup> ) | Change<br>(µg/m <sup>3</sup> ) | DS %<br>of<br>AQAL | %<br>Change<br>of AQAL | Impact                |
|----------|----------------------------|----------------------------|--------------------------------|--------------------|------------------------|-----------------------|
| AQ01     | 10.0                       | 10.0                       | <0.1                           | 25.0%              | 0.0                    | Negligible<br>Neutral |
| AQ02     | 10.0                       | 10.0                       | <0.1                           | 25.0%              | 0.0                    | Negligible<br>Neutral |
| AQ03     | 10.0                       | 10.0                       | <0.1                           | 25.0%              | 0.0                    | Negligible<br>Neutral |
| AQ04     | 10.0                       | 11.0                       | 1.0                            | 27.5%              | 2.5                    | Negligible<br>Adverse |
| AQ05     | 10.0                       | 10.0                       | <0.1                           | 25.0%              | 0.0                    | Negligible<br>Neutral |
| AQ07     | 10.0                       | 10.0                       | <0.1                           | 25.0%              | 0.0                    | Negligible<br>Neutral |
| AQ08     | 11.0                       | 11.0                       | <0.1                           | 27.5%              | 0.0                    | Negligible<br>Neutral |
| AQ09     | 11.0                       | 11.0                       | <0.1                           | 27.5%              | 0.0                    | Negligible<br>Neutral |
| AQ10     | 11.0                       | 11.0                       | <0.1                           | 27.5%              | 0.0                    | Negligible<br>Neutral |
| AQ11     | 11.0                       | 12.0                       | 1.0                            | 30.0%              | 2.5                    | Negligible<br>Adverse |
| AQ12     | 11.0                       | 12.0                       | 1.0                            | 30.0%              | 2.5                    | Negligible<br>Adverse |
| AQ13     | 11.0                       | 11.0                       | <0.1                           | 27.5%              | 0.0                    | Negligible<br>Neutral |
| AQ14     | 11.0                       | 11.0                       | <0.1                           | 27.5%              | 0.0                    | Negligible<br>Neutral |
| AQ15     | 11.0                       | 11.0                       | <0.1                           | 27.5%              | 0.0                    | Negligible<br>Neutral |

| Receptor | DM<br>(µg/m³) | DS<br>(µg/m³) | Change<br>(µg/m³) | DS %<br>of<br>AQAL | %<br>Change<br>of AQAL | Impact                |
|----------|---------------|---------------|-------------------|--------------------|------------------------|-----------------------|
| AQ16     | 12.0          | 12.0          | <0.1              | 30.0%              | 0.0                    | Negligible<br>Neutral |
| AQ17     | 11.0          | 11.0          | <0.1              | 27.5%              | 0.0                    | Negligible<br>Neutral |
| AQ18     | 12.0          | 12.0          | <0.1              | 30.0%              | 0.0                    | Negligible<br>Neutral |
| AQ19     | 11.0          | 11.0          | <0.1              | 27.5%              | 0.0                    | Negligible<br>Neutral |
| AQ20     | 12.0          | 12.0          | <0.1              | 30.0%              | 0.0                    | Negligible<br>Neutral |
| AQ21     | 12.0          | 13.0          | 1.0               | 32.5%              | 2.5                    | Negligible<br>Adverse |
| AQ22     | 17.0          | 18.0          | 1.0               | 45.0%              | 2.5                    | Negligible<br>Adverse |
| AQ23     | 15.0          | 16.0          | 1.0               | 40.0%              | 2.5                    | Negligible<br>Adverse |
| AQ24     | 16.0          | 16.0          | <0.1              | 40.0%              | 0.0                    | Negligible<br>Neutral |
| AQ25     | 15.0          | 15.0          | <0.1              | 37.5%              | 0.0                    | Negligible<br>Neutral |
| AQ26     | 13.0          | 14.0          | 1.0               | 35.0%              | 2.5                    | Negligible<br>Adverse |
| AQ27     | 14.0          | 14.0          | <0.1              | 35.0%              | 0.0                    | Negligible<br>Neutral |
| AQ28     | 14.0          | 14.0          | <0.1              | 35.0%              | 0.0                    | Negligible<br>Neutral |
| AQ29     | 14.0          | 15.0          | 1.0               | 37.5%              | 2.5                    | Negligible<br>Adverse |
| AQ30     | 14.0          | 14.0          | <0.1              | 35.0%              | 0.0                    | Negligible<br>Neutral |
| AQ31     | 16.0          | 17.0          | 1.0               | 42.5%              | 2.5                    | Negligible<br>Adverse |
| AQ32     | 15.0          | 16.0          | 1.0               | 40.0%              | 2.5                    | Negligible<br>Adverse |
| AQ33     | 14.0          | 14.0          | <0.1              | 35.0%              | 0.0                    | Negligible<br>Neutral |
| AQ34     | 14.0          | 14.0          | <0.1              | 35.0%              | 0.0                    | Negligible<br>Neutral |

| Receptor | DM<br>( $\mu\text{g}/\text{m}^3$ ) | DS<br>( $\mu\text{g}/\text{m}^3$ ) | Change<br>( $\mu\text{g}/\text{m}^3$ ) | DS %<br>of<br>AQAL | %<br>Change<br>of AQAL | Impact                |
|----------|------------------------------------|------------------------------------|----------------------------------------|--------------------|------------------------|-----------------------|
| AQ35     | 13.0                               | 13.0                               | <0.1                                   | 32.5%              | 0.0                    | Negligible<br>Neutral |
| AQ36     | 14.0                               | 14.0                               | <0.1                                   | 35.0%              | 0.0                    | Negligible<br>Neutral |

Traffic generated by the Cumulative Development is predicted to increase annual mean  $\text{NO}_2$  concentrations by no more than  $1 \mu\text{g}/\text{m}^3$ , which equates to less than 2.5% of the AQAL. All impacts are assessed to be Negligible and total concentrations are more than 10% below the AQAL. Therefore, the significance overall is assessed to be Negligible across the study area.

*Particulate matter ( $\text{PM}_{10}$ )*

**Table 8-14: Predicted Change in Annual Mean  $\text{PM}_{10}$  Due to Development**

| Receptor | DM<br>( $\mu\text{g}/\text{m}^3$ ) | DS<br>( $\mu\text{g}/\text{m}^3$ ) | Change<br>( $\mu\text{g}/\text{m}^3$ ) | DS %<br>of<br>AQAL | %<br>Change<br>of AQAL | Impact                |
|----------|------------------------------------|------------------------------------|----------------------------------------|--------------------|------------------------|-----------------------|
| AQ01     | 12.0                               | 12.0                               | <0.1                                   | 30.0%              | 0.0                    | Negligible<br>Neutral |
| AQ02     | 12.0                               | 12.0                               | <0.1                                   | 30.0%              | 0.0                    | Negligible<br>Neutral |
| AQ03     | 12.0                               | 12.0                               | <0.1                                   | 30.0%              | 0.0                    | Negligible<br>Neutral |
| AQ04     | 12.0                               | 13.0                               | 1.0                                    | 32.5%              | 2.5                    | Negligible<br>Adverse |
| AQ05     | 12.0                               | 12.0                               | <0.1                                   | 30.0%              | 0.0                    | Negligible<br>Neutral |
| AQ07     | 12.0                               | 12.0                               | <0.1                                   | 30.0%              | 0.0                    | Negligible<br>Neutral |
| AQ08     | 12.0                               | 12.0                               | <0.1                                   | 30.0%              | 0.0                    | Negligible<br>Neutral |
| AQ09     | 12.0                               | 13.0                               | 1.0                                    | 32.5%              | 2.5                    | Negligible<br>Adverse |
| AQ10     | 12.0                               | 12.0                               | <0.1                                   | 30.0%              | 0.0                    | Negligible<br>Neutral |
| AQ11     | 12.0                               | 13.0                               | 1.0                                    | 32.5%              | 2.5                    | Negligible<br>Adverse |

| Receptor | DM<br>(µg/m³) | DS<br>(µg/m³) | Change<br>(µg/m³) | DS %<br>of<br>AQAL | %<br>Change<br>of AQAL | Impact                |
|----------|---------------|---------------|-------------------|--------------------|------------------------|-----------------------|
| AQ12     | 12.0          | 13.0          | 1.0               | 32.5%              | 2.5                    | Negligible<br>Adverse |
| AQ13     | 12.0          | 12.0          | <0.1              | 30.0%              | 0.0                    | Negligible<br>Neutral |
| AQ14     | 12.0          | 12.0          | <0.1              | 30.0%              | 0.0                    | Negligible<br>Neutral |
| AQ15     | 12.0          | 12.0          | <0.1              | 30.0%              | 0.0                    | Negligible<br>Neutral |
| AQ16     | 13.0          | 13.0          | <0.1              | 32.5%              | 0.0                    | Negligible<br>Neutral |
| AQ17     | 12.0          | 12.0          | <0.1              | 30.0%              | 0.0                    | Negligible<br>Neutral |
| AQ18     | 13.0          | 13.0          | <0.1              | 32.5%              | 0.0                    | Negligible<br>Neutral |
| AQ19     | 13.0          | 13.0          | <0.1              | 32.5%              | 0.0                    | Negligible<br>Neutral |
| AQ20     | 13.0          | 13.0          | <0.1              | 32.5%              | 0.0                    | Negligible<br>Neutral |
| AQ21     | 13.0          | 13.0          | <0.1              | 32.5%              | 0.0                    | Negligible<br>Neutral |
| AQ22     | 15.0          | 15.0          | <0.1              | 37.5%              | 0.0                    | Negligible<br>Neutral |
| AQ23     | 14.0          | 14.0          | <0.1              | 35.0%              | 0.0                    | Negligible<br>Neutral |
| AQ24     | 14.0          | 14.0          | <0.1              | 35.0%              | 0.0                    | Negligible<br>Neutral |
| AQ25     | 14.0          | 14.0          | <0.1              | 35.0%              | 0.0                    | Negligible<br>Neutral |
| AQ26     | 13.0          | 13.0          | <0.1              | 32.5%              | 0.0                    | Negligible<br>Neutral |
| AQ27     | 13.0          | 13.0          | <0.1              | 32.5%              | 0.0                    | Negligible<br>Neutral |
| AQ28     | 13.0          | 13.0          | <0.1              | 32.5%              | 0.0                    | Negligible<br>Neutral |
| AQ29     | 13.0          | 13.0          | <0.1              | 32.5%              | 0.0                    | Negligible<br>Neutral |
| AQ30     | 13.0          | 13.0          | <0.1              | 32.5%              | 0.0                    | Negligible<br>Neutral |

| Receptor | DM (µg/m³) | DS (µg/m³) | Change (µg/m³) | DS % of AQAL | % Change of AQAL | Impact                |
|----------|------------|------------|----------------|--------------|------------------|-----------------------|
| AQ31     | 14.0       | 14.0       | <0.1           | 35.0%        | 0.0              | Negligible<br>Neutral |
| AQ32     | 14.0       | 14.0       | <0.1           | 35.0%        | 0.0              | Negligible<br>Neutral |
| AQ33     | 13.0       | 13.0       | <0.1           | 32.5%        | 0.0              | Negligible<br>Neutral |
| AQ34     | 13.0       | 13.0       | <0.1           | 32.5%        | 0.0              | Negligible<br>Neutral |
| AQ35     | 13.0       | 13.0       | <0.1           | 32.5%        | 0.0              | Negligible<br>Neutral |
| AQ36     | 13.0       | 13.0       | <0.1           | 32.5%        | 0.0              | Negligible<br>Neutral |

Traffic generated by the Cumulative Development is predicted to increase annual mean PM<sub>10</sub> concentrations by no more than 1 µg/m³, which equates to less than 2.5% of the AQAL. All impacts are assessed to be Negligible and total concentrations are more than 10% below the AQAL. Therefore, the significance overall is assessed to be Negligible across the study area.

*Particulate matter (PM<sub>2.5</sub>)*

**Table 8-15: Predicted Change in Annual Mean PM<sub>2.5</sub> Due to Development**

| Receptor | DM (µg/m³) | DS (µg/m³) | Change (µg/m³) |
|----------|------------|------------|----------------|
| AQ01     | 7.0        | 7.0        | <0.1           |
| AQ02     | 8.0        | 8.0        | <0.1           |
| AQ03     | 8.0        | 8.0        | <0.1           |
| AQ04     | 8.0        | 8.0        | <0.1           |
| AQ05     | 7.0        | 7.0        | <0.1           |
| AQ07     | 8.0        | 8.0        | <0.1           |

| Receptor | DM (µg/m³) | DS (µg/m³) | Change (µg/m³) |
|----------|------------|------------|----------------|
| AQ08     | 8.0        | 8.0        | <0.1           |
| AQ09     | 8.0        | 8.0        | <0.1           |
| AQ10     | 7.0        | 8.0        | 1.0            |
| AQ11     | 8.0        | 8.0        | <0.1           |
| AQ12     | 8.0        | 8.0        | <0.1           |
| AQ13     | 7.0        | 7.0        | <0.1           |
| AQ14     | 7.0        | 7.0        | <0.1           |
| AQ15     | 8.0        | 8.0        | <0.1           |
| AQ16     | 8.0        | 8.0        | <0.1           |
| AQ17     | 7.0        | 8.0        | 1.0            |
| AQ18     | 8.0        | 8.0        | <0.1           |
| AQ19     | 8.0        | 8.0        | <0.1           |
| AQ20     | 8.0        | 8.0        | <0.1           |
| AQ21     | 8.0        | 8.0        | <0.1           |
| AQ22     | 9.0        | 9.0        | <0.1           |
| AQ23     | 8.0        | 8.0        | <0.1           |
| AQ24     | 9.0        | 9.0        | <0.1           |
| AQ25     | 8.0        | 8.0        | <0.1           |
| AQ26     | 8.0        | 8.0        | <0.1           |

| Receptor | DM ( $\mu\text{g}/\text{m}^3$ ) | DS ( $\mu\text{g}/\text{m}^3$ ) | Change ( $\mu\text{g}/\text{m}^3$ ) |
|----------|---------------------------------|---------------------------------|-------------------------------------|
| AQ27     | 8.0                             | 8.0                             | <0.1                                |
| AQ28     | 8.0                             | 8.0                             | <0.1                                |
| AQ29     | 8.0                             | 8.0                             | <0.1                                |
| AQ30     | 8.0                             | 8.0                             | <0.1                                |
| AQ31     | 9.0                             | 9.0                             | <0.1                                |
| AQ32     | 8.0                             | 8.0                             | <0.1                                |
| AQ33     | 8.0                             | 8.0                             | <0.1                                |
| AQ34     | 8.0                             | 8.0                             | <0.1                                |
| AQ35     | 8.0                             | 8.0                             | <0.1                                |
| AQ36     | 8.0                             | 8.0                             | <0.1                                |

Traffic generated by the Cumulative Development is predicted to increase annual mean  $\text{PM}_{2.5}$  concentrations by no more than  $1 \mu\text{g}/\text{m}^3$ . Annual mean concentrations are below the 2030 AMIT at all receptors.

## Appendix D: Construction Dust Mitigation

IAQM guidance provides potential mitigation measures to reduce impacts because of fugitive dust emissions during the construction phase. These have been adapted for the Site as summarised in Table 8-16.

These may be reviewed prior to the commencement of construction works and incorporated into a Construction Environmental Management Plan or similar if required by the Local Authority, for example by planning condition. An example draft planning condition is presented after the table below:

**Table 8-16: Fugitive Dust Emission Mitigation Measures**

| Issue / Control Measure                                                                                                                                                                                                                                                                                                                                                                                                                                    | Site Risk |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Medium    |
| <b>D = Desirable / H = Highly Recommended</b>                                                                                                                                                                                                                                                                                                                                                                                                              |           |
| <b>General</b>                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |
| Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.                                                                                                                                                                                                                                                                                                                                  | H         |
| 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.                                                                                                                                                                                                                                                                      | H         |
| Display the head or regional office contact information.                                                                                                                                                                                                                                                                                                                                                                                                   | H         |
| Develop and implement a DMP, which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the committed measures in this document. The desirable measures should be included as appropriate for the site. The DMP may include monitoring of dust deposition, dust flux, real-time PM <sub>10</sub> continuous monitoring and/or visual inspections. | H         |
| <b>Site Management</b>                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |
| 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.                                                                                                                                                                                                                                                                                            | H         |
| Make the complaints log available to the Local Authority when asked.                                                                                                                                                                                                                                                                                                                                                                                       | H         |
| 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.                                                                                                                                                                                                                                                                                               | H         |

| Issue / Control Measure                                                                                                                                                                                                                                                                                                                                                                      | Site Risk |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|                                                                                                                                                                                                                                                                                                                                                                                              | Medium    |
| <b>D = Desirable / H = Highly Recommended</b>                                                                                                                                                                                                                                                                                                                                                |           |
| <b>Monitoring</b>                                                                                                                                                                                                                                                                                                                                                                            |           |
| Undertake daily onsite and offsite inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the Local Authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars, and windowsills within 100 m of site boundary, with cleaning to be provided if necessary. | D         |
| Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and inspect log available to the Local Authority when asked.                                                                                                                                                                                                                               | H         |
| 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.                                                                                                                                                       | H         |
| Agree dust deposition, dust flux, or real-time PM <sub>10</sub> continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least 3 months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks, and construction.          | H         |
| <b>Preparing And Maintaining the Site</b>                                                                                                                                                                                                                                                                                                                                                    |           |
| Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.                                                                                                                                                                                                                                                                       | H         |
| Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.                                                                                                                                                                                                                                                            | H         |
| Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.                                                                                                                                                                                                                                                | H         |
| Avoid site runoff of water or mud.                                                                                                                                                                                                                                                                                                                                                           | H         |
| Keep site fencing, barriers and scaffolding clean using wet methods.                                                                                                                                                                                                                                                                                                                         | H         |
| 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                                                                                                                                                                                                               | H         |
| Cover, seed, or fence stockpiles to prevent wind whipping.                                                                                                                                                                                                                                                                                                                                   | H         |
| <b>Operating Vehicle/Machinery and Sustainable Travel</b>                                                                                                                                                                                                                                                                                                                                    |           |
| Ensure all vehicles switch off engines when stationary - no idling vehicles.                                                                                                                                                                                                                                                                                                                 | H         |

| Issue / Control Measure                                                                                                                                                                                                                                                                                                                                            | Site Risk |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|                                                                                                                                                                                                                                                                                                                                                                    | Medium    |
| <b>D = Desirable / H = Highly Recommended</b>                                                                                                                                                                                                                                                                                                                      |           |
| Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.                                                                                                                                                                                                                                    | H         |
| Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the Local Authority, where appropriate).      | D         |
| Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)                                                                                                                                                                                                                                      | D         |
| <b>Operations</b>                                                                                                                                                                                                                                                                                                                                                  |           |
| 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.                                                                                                                                                     | H         |
| Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.                                                                                                                                                                                                  | H         |
| Use enclosed chutes and conveyors and covered skips.                                                                                                                                                                                                                                                                                                               | H         |
| Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.                                                                                                                                                                                           | H         |
| 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.                                                                                                                                                                                      | H         |
| <b>Waste Management</b>                                                                                                                                                                                                                                                                                                                                            |           |
| Avoid bonfires and burning of waste materials.                                                                                                                                                                                                                                                                                                                     | H         |
| <b>Measures Specific to Demolition</b>                                                                                                                                                                                                                                                                                                                             |           |
| Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).                                                                                                                                                                                                          | D         |
| Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground. | H         |
| Avoid explosive blasting, using appropriate manual or mechanical alternatives.                                                                                                                                                                                                                                                                                     | H         |

| Issue / Control Measure                                                                                                                                                                                                      | Site Risk |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|                                                                                                                                                                                                                              | Medium    |
| <b>D = Desirable / H = Highly Recommended</b>                                                                                                                                                                                |           |
| Bag and remove any biological debris or damp down such material before demolition                                                                                                                                            | H         |
| <b>Measures Specific to Earthworks</b>                                                                                                                                                                                       |           |
| Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.                                                                                                                       | D         |
| Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.                                                                                                   | D         |
| Only remove the cover in small areas during work and not all at once.                                                                                                                                                        | D         |
| <b>Measures Specific to Construction</b>                                                                                                                                                                                     |           |
| Avoid scabbling (roughening of concrete surfaces) if possible                                                                                                                                                                | D         |
| 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 | H         |
| 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                | D         |
| For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.                                                                                                      | D         |
| <b>Measures Specific to Trackout</b>                                                                                                                                                                                         |           |
| 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                                      | H         |
| Avoid dry sweeping of large areas                                                                                                                                                                                            | H         |
| Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport                                                                                                                       | H         |
| Inspect on site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable                                                                                                   | H         |
| Record all inspections of haul routes and any subsequent action in a site log book.                                                                                                                                          | H         |
| Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned                                                                     | H         |

| Issue / Control Measure                                                                                                                          | Site Risk |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
|                                                                                                                                                  | Medium    |
| <b>D = Desirable / H = Highly Recommended</b>                                                                                                    |           |
| Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable) | H         |
| Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits  | H         |

**Draft condition wording:**

*No development shall take place until a Construction Environmental Management Plan (CEMP) has been submitted to and approved in writing by the Local Planning Authority. The CEMP shall include the Dust Management Plan required by Condition [X] and incorporate:*

- *Site-specific working hours and traffic routing*
- *Phasing of construction works and site access*
- *Air quality, noise, and vibration mitigation*
- *Dust suppression measures aligned to IAQM 2024*
- *Emergency procedures and incident response*
- *Mechanisms for updating the plan*

*The development shall thereafter be carried out in accordance with the approved CEMP.*

**Reason:** *To ensure environmental and residential amenity is protected throughout the construction phase, consistent with IAQM and LAQM.TG(22) guidance.*