

## 7 Air Quality

### 7.1 Scope of Assessment

- 7.1.1 This chapter of the ES assesses the likely significant effects of the Proposed Development in terms of air quality and is supported by **ES Volume 3, Appendix C: Air Quality.**
- 7.1.2 The chapter describes: the assessment methodology; the baseline conditions currently existing at the Site and in the surrounding area; the likely significant environmental effects; the mitigation measures required to prevent, reduce or offset any significant adverse effects; the likely residual effects after these measures have been employed; and the 'Type 2' ('inter-project') cumulative effects associated with the Proposed Development in combination with other developments within 5 km of the Site.
- 7.1.3 The primary pollutants of interest for this assessment are nitrogen dioxide ( $\text{NO}_2$ ) and particulate matter ( $\text{PM}_{10}$  and  $\text{PM}_{2.5}$ ), as well as dust generated from construction related activities. Likely significant effects are identified in relation to health-based standards.
- 7.1.4 Type 1 cumulative effects 'intra-project effects' which are the combined effects of individual topic impacts on a particular sensitive receptor are considered in **ES Volume 2, Chapter 13: Effect Interactions.**

### 7.2 Key Legislation, Policy and Guidance Considerations

- 7.2.1 The air quality assessment has been undertaken within the context of relevant planning policies, guidance documents and legislative instruments. These are summarised below.

#### Legislation and Regulation

##### *Air Quality Objectives and Standards*

- 7.2.2 The Air Quality Strategy for England, Scotland, Wales and Northern Ireland<sup>1</sup> and the London Environment Strategy<sup>2</sup> collectively include ambient air quality objectives (AQOs) to be achieved and a strategy to achieve compliance with the AQOs. The

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<sup>1</sup> Department for Environment, Food and Rural Affairs, 2007. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volume 1). London, Her Majesty's Stationery Office.

<sup>2</sup> Mayor of London, 2018. *London Environment Strategy*.

ambient AQOs are established in the Air Quality (England) Regulations 2000, as amended.<sup>3</sup>

7.2.3 The Environment Act 1995<sup>4</sup> requires all local authorities to carry out periodic reviews of air quality within their administrative areas. Where air quality is known or expected to exceed one or more of the AQOs, they must declare an air quality management area (AQMA) and implement an air quality action plan (AQAP) to work toward meeting the AQOs.

7.2.4 The Environment Act 2021 established a target framework for England and a duty to set targets in priority areas including air quality. The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023<sup>5</sup> set the following targets for PM<sub>2.5</sub>, to be met by 2040:

- Annual mean concentration target (AMCT) of 10 µg/m<sup>3</sup>; and
- Population exposure reduction target (PERT) of 35% compared to 2018.

7.2.5 The Environmental Improvement Plan, published in February 2023<sup>6</sup>, set interim targets to be met by 2028:

- AMCT of 12 µg/m<sup>3</sup>; and
- PERT of 22%.

7.2.6 Moreover, the European Union emissions limit values derived from the Ambient Air Quality Directive (2008/50/EC)<sup>7</sup> were transposed into English and Welsh law as air quality standards (AQSSs) via the Air Quality Standards Regulations 2010<sup>8</sup>, as amended<sup>9</sup>.

7.2.7 Air quality assessments should consider whether the Proposed Development would hinder compliance with the AQOs or EU Limit Values, according to the Planning Practice Guidance<sup>10</sup>.

7.2.8 Across the country, most of the AQOs and AQSSs are no longer breached. Therefore, this air quality assessment has focused on achieving compliance with those established for those AQOs and AQSSs which continue to be breached in local

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<sup>3</sup> Air Quality (England) Regulations 2000.

<sup>4</sup> Environment Act 1995.

<sup>5</sup> The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023

<sup>6</sup> Environmental Improvement Plan 2023

hotspots and which are considered relevant based on the nature of the Proposed Development. The AQOs and AQSSs shown in **Table 7.1** below have been considered within this assessment and are herein collectively referred to as AQOs.

**Table 7.1: England's ambient AQOs relevant to the assessment**

| Pollutant         | Air quality objective levels   | Measured as  |
|-------------------|--|--------------|
| NO <sub>2</sub>   | 200 µg/m <sup>3</sup> , not to be exceeded more than 18 times per year | 1-hour mean  |
|                   | 40 µg/m <sup>3</sup>   | Annual mean  |
| PM <sub>10</sub>  | 50 µg/m <sup>3</sup> , not to be exceeded more than 35 times per year  | 24-hour mean |
|                   | 40 µg/m <sup>3</sup>   | Annual mean  |
| PM <sub>2.5</sub> | 20 µg/m <sup>3</sup> *   | Annual mean  |

\* The World Health Organisation (WHO) has set a PM<sub>10</sub> target of 20µg/m<sup>3</sup> and PM<sub>2.5</sub> target of 10µg/m<sup>3</sup> by 2030.

## Planning Policy

7.2.9 The land use planning process is a key means of improving air quality, particularly in the long term, through the careful location and design of new developments. Any air quality concern that relates to land use and its development can be a material consideration in the determination of planning applications.

### *National Planning Policy Framework and Planning Practice Guidance*

7.2.10 The National Planning Policy Framework (NPPF) was published during December 2024<sup>11</sup>. The NPPF establishes a framework under the Town and Country Planning Act which should be used by local authorities to make local plans and determine planning applications.

7.2.11 Paragraph 187 states:

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

“e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air,

<sup>11</sup> Ministry of Housing, Communities and Local Government, 2024. *National Planning Policy Framework*.

water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions....”

7.2.12 Paragraph 199 states:

“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”.

7.2.13 The 2019 Air Quality Planning Practice Guidance<sup>12</sup> supports the NPPF, by including recommendations on the scope of an air quality assessment.

### *Local policy and guidance*

#### *Tandridge District Council Core Strategy*

7.2.14 Tandridge District Council Core Strategy was adopted in 2008<sup>13</sup>. The strategy states that poor air quality is not a significant issue in Tandridge. There are some proposals to widen the M25 or the M23 and the council will work with the Highways England to provide adequate mitigation measures for air quality. There are no specific policy sections for air quality or dust.

#### *Tandridge District Council Plan 2033*

7.2.15 The replacement Local Plan was submitted for examination in January 2019 and hearings took place in Autumn 2019.

7.2.16 The Inspector’s report, received by the council in early 2024, stated that the plan was not capable of being found sound. The council subsequently resolved on 18 April 2024 to withdraw the submission version of its draft Local Plan under s.22(1) of the Planning and Compulsory Purchase Act 2004.

7.2.17 Work on the new local plan is underway but is at a very early stage so will not have any bearing on the determination of this application. The most recent Local

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<sup>12</sup> Ministry of Housing, Communities and Local Government, 2019. *Planning Practice Guidance: Air Quality*.

<sup>13</sup> Tandridge District Council (2008), Tandridge District Core Strategy, Adopted 15<sup>th</sup> October 2008

Development Scheme refers to submission of the new local plan in 2026 and adoption in 2027.

## Technical Standards and Guidance

*Guidance on the Assessment of Dust from Demolition and Construction (Institute of Air Quality Management, 2024) ('the IAQM 2024 guidance')*

7.2.18 The guidance<sup>14</sup>, which was published in 2024, provides a framework for assessing the risk which fugitive dust and PM could have on air quality and suggests appropriate dust and air emissions mitigation measures for sites according to the level of risk.

*Land-Use Planning & Development Control: Planning for Air Quality ('the EPUK-IAQM guidance')*

7.2.19 Published by Environmental Protection UK (EPUK) and the IAQM, this guidance<sup>15</sup> includes a method for screening the requirement for an air quality assessment and determining the significance of any air quality impacts associated with a development proposal. It also identifies mitigation measures which can be implemented to reduce air quality effects attributable to the scheme.

*Local Air Quality Management Technical Guidance ('TG22')*

7.2.20 TG22<sup>16</sup> include guidance for local authorities to assess and, where required, deliver improvements in air quality within their jurisdiction. TG22 also recommends where the AQOs should be applied, as outlined in **Table 7.2**. These are broadly similar to the locations where the AQSs have been applied due to the relevance of the exposure they represent.

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<sup>14</sup> Institute of Air Quality Management (IAQM) (2024), *Guidance on the Assessment of dust from demolition and construction, Version 2.2*

<sup>15</sup> Environmental Protection UK & the Institute of Air Quality Management (IAQM), (2017), *Land-Use Planning & Development Control: Planning for Air Quality*

<sup>16</sup> Department for Environment, Food and Rural Affairs (Defra) (2022), Part IV of the Environment Act 1995: Local Air Quality Management: Technical Guidance (TG22), London: Crown

**Table 7.2: Examples of where the air quality objectives should apply, as per TG22**

| Averaging Objectives         | Period | Objectives should apply at  | Objectives should generally not apply at  |
|------------------------------|--------|---|---|
| Annual mean                  |        | All locations where members of the public might be regularly exposed. Building facades of residential properties, schools, hospitals, care homes etc.   | Building facades of offices or other places of work where members of the public do not have regular access.<br>Hotels, unless people live there as their permanent residence.<br>Gardens of residential properties.<br>Kerbside sites (as opposed to locations at the building facade), or any other location where public exposure is expected to be short term. |
| 24-hour mean and 8-hour mean |        | All locations where the annual mean objective would apply, together with hotels.<br>Gardens of residential properties (not at peripheries or front gardens unless exposure is likely there).  | Kerbside sites (as opposed to locations at the building facade), or any other location where public exposure is expected to be short term.  |
| 1-hour mean                  |        | All locations where the annual mean and: 24 and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets). 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. Any outdoor locations where members of the public might reasonably expect to spend one hour or longer. | Kerbside sites where the public would not be expected to have regular access.   |

| Averaging Objectives | Period | Objectives should apply at  | Objectives should generally not apply at |
|----------------------|--------|---|--|
| 15-minute mean       |        | All locations where members of the public might reasonably be exposed for a period of 15 minutes or longer. |  |

## 7.3 Assessment Methodology

7.3.1 The approach taken for assessing the potential air quality impacts of the Proposed Development is as follows:

- baseline characterisation of local air quality;
- qualitative assessment of fugitive dust and emissions from construction related activities, including vehicle movements;
- advanced dispersion modelling assessment of air quality impacts attributable to the Proposed Development (once operational);
- recommendation of mitigation measures, where appropriate, to ensure any adverse effects on air quality are minimised; and,
- identification of residual impacts resulting from the Proposed Development.

7.3.2 Further information is provided in the forthcoming subsections.

### Determination of Baseline

7.3.3 There is no existing network of monitoring undertaken to monitor dust levels across the United Kingdom, nor is the assessment of dust generated by construction related activities dependent on baseline pollutant concentrations, therefore this has not been assessed.

7.3.4 Existing or baseline air quality refers to the concentrations of relevant substances that are already present in ambient air, including road traffic and industrial sources. Additional road traffic attributable to the Proposed Development, will contribute to the future baseline.

7.3.5 A study has been undertaken using data obtained from continuous and diffusion tube monitoring stations maintained by TDC and estimated background from the United Kingdom Air Information Resource (UK-AIR) website maintained by the Department for Environment, Food and Rural Affairs (Defra).

7.3.6 In **Section 7.5**, these data have been described and the potential for future site users to be introduced into an area of poor ambient air quality assessed.

## Prediction Methodology

### Construction Dust Assessment

7.3.7 Potential air emissions from demolition and construction activities, particularly in the form of dust, have the potential to cause a loss of amenity (due to dust soiling) or to affect (vascular) plant species sensitive to dust. The finer fraction of dust, in the form of PM<sub>10</sub> and PM<sub>2.5</sub>, also has the potential to affect human health. Given the variability of construction sites and the range of activities undertaken, a quantitative assessment of the dust and air pollutants generated is rarely feasible or practicable. Instead, a qualitative assessment has been undertaken to identify best practicable means for mitigating potential emissions.

7.3.8 A qualitative dust risk assessment for the construction phase of the Proposed Development has been undertaken, in line with the IAQM guidance 2024<sup>14</sup>. The method recommended by this guidance is outlined in **ES Volume 3, Appendix C1**. This provides an assessment of the likely impacts of infilling with inert material at the site and dust form the various stages of construction at selected representative receptor locations within 250 metres of the redline application boundary and within 50 metres of the likely route(s) used by construction vehicles on the public highway, up to 250 metres from the site exit(s). These receptor locations include, as appropriate, receptors at nearby committed and consented development sites.

### Significance Criteria

7.3.9 The risk of dust impacts from construction activities were defined by assessing the impact magnitude and receptor sensitivity and determining the dust impact risk based on the combined values presented.

7.3.10 The significance of the potential for dust to affect sensitive receptors before mitigation has been assessed using professional judgement but based on the risk of dust impacts. For example, where there is a medium or high risk of dust impacts in the absence of mitigation, this would be viewed as having a moderately or highly significant impact.

7.3.11 The significance of effects following the implementation of mitigation has then been reassessed. In this regard, the IAQM 2024 guidance indicates that *"For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be 'not significant.'"*

7.3.12 The significance of effects connected with construction related vehicle movements, including Non-Road Mobile Machinery (NRMM,) is outlined below.

## *Assessment of Air Quality and Emissions (Construction and Operational phases)*

7.3.13 The combustion of fuel in vehicles leads to several harmful by-products which can affect air quality in the vicinity of roads. Areas with high traffic volumes or near to major roads often experience elevated pollutant levels, particularly in the form of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>. Fixed sources, such as boilers or large plant, can also contribute to local air pollution once a proposed development is operational.

7.3.14 The Energy Centre proposed to be installed as part of the Proposed Development is understood to be air source heat pumps (ASHPs) for energy provision. As the ASHPs do not have associated emissions, further assessment of the Energy Centre has been screened out.

7.3.15 A screening assessment has been undertaken, following the methodology detailed in EPUK-IAQM guidance, to determine whether significant air quality effects associated with the introduction of vehicles attributable to the development could be screened out of further assessment.

7.3.16 Traffic data for both the construction and operational phases of the Proposed Development has been screened against the EPUK and IAQM screening criteria, found in the Land-Use Planning & development Control: Planning for Air Quality Guidance (2017)<sup>14</sup> ('the EPUK-IAQM guidance'), which suggests a detailed air quality assessment is required when:

- The change in light duty vehicle (LDV) flows is greater than 500 Annual Average Daily Traffic (AADT) outside an AQMA; or
- The change in heavy duty vehicle (HDV) flows is greater than 100 AADT outside an AQMA.

7.3.17 While undergoing construction, the Proposed Development is anticipated to lead to an increase of over 60 LDV movements (expressed as an annual average daily traffic (AADT) flow on Barrow Green Road which is not located in an AQMA. It will also lead to an increase of over 16 heavy duty vehicle (HDV) movements (expressed as an AADT). As such, the Site does not breach of the EPUK-IAQM guidance screening criteria, so a detailed dispersion modelling assessment of construction phase impacts has not been undertaken.

7.3.18 The Proposed Development will introduce fewer than 1,000 future additional vehicles or 200 heavy goods vehicles (expressed as an AADT) on any road link once operational or whilst undergoing construction, either alone or cumulatively. This means that the need to consider the impacts from ecological Sites in relation to

pollutants emitted from vehicles can be screened out, as per the IAQM 2020 guidance<sup>17</sup>.

7.3.19 Once operational the Site will exceed the EPUK-IAQM guidance screening criteria, therefore a detailed dispersion modelling assessment of operational phase impacts has been undertaken.

7.3.20 To summarise, predictions of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> were made for the following scenarios:

- **Scenario 1 (S1):** Baseline 2023: Base year for model verification, using 2024 traffic data and 2023 background pollutant concentrations and emissions factors;
- **Scenario 2 (S2):** Future Operational Baseline (2030): Traffic data comprised of 2030 future baseline without development flows; and,
- **Scenario 3 (S3):** Future Operational Baseline + Development (2030): Traffic data comprised of 2030 future baseline including additional vehicle movements associated with the Proposed Development.

7.3.21 The dispersion modelling assessment method is described in **ES Volume 3, Appendix C2.**

### Significance Criteria

7.3.22 The significance of effects associated with permanent sources of air pollution (whether construction or operational) has been determined separately to account for impacts generated in connection with each of the following:

- The impacts of the Proposed Development on air quality at existing sensitive receptors using the assessment criteria in the EPUK-IAQM guidance;
- For the operational scenarios only, the number of future Site users (of the Proposed Development) exposed to poor ambient air quality.

### *Significance criteria – Impacts on Existing Receptors*

7.3.23 The potential impacts of the Proposed Development at individual receptor locations modelled were assessed by comparing estimated pollutant concentrations with the AQOs (**Table 7.2**), with and without the Proposed Development in place. The EPUK-IAQM guidance descriptors for magnitude of impact were used to assess the annual mean changes in NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations, primarily because the

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<sup>17</sup> Institute of Air Quality Management (IAQM) (2020), *A guide to the assessment of air quality impacts on designated nature conservation sites*

mechanism considers the effects in terms of the magnitude of change from predicted concentrations and also relative to the AQOs.

7.3.24 **Table 7.3** shows the EPUK-IAQM guidance impact descriptors that take account of the percentage change in concentration relative to the air quality assessment level (AQAL, i.e. the annual mean AQOs), and the annual mean concentration at the receptor during the assessment year.

**Table 7.3: Air quality impact descriptors for changes to annual mean NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations**

| Annual mean concentration at receptor in assessment year | % Change in concentration relative to AQAL |             |             |             |
|--|--|-------------|-------------|-------------|
|  | 1  | 2 – 5       | 6 – 10      | >10         |
| 75% or less of AQAL                                      | Negligible                                 | Negligible  | Slight      | Moderate    |
| 76 – 94% of AQAL   | Negligible                                 | Slight      | Moderate    | Moderate    |
| 95 – 102% of AQAL  | Slight                                     | Moderate    | Moderate    | Substantial |
| 103 – 109% of AQAL                                       | Moderate                                   | Moderate    | Substantial | Substantial |
| 110% or more of AQAL                                     | Moderate                                   | Substantial | Substantial | Substantial |

*Note: The AQAL is relevant ambient AQO. For annual mean NO<sub>2</sub>, for instance, the AQO 40 µg/m<sup>3</sup>.*

7.3.25 The changes in 24-hour mean PM<sub>10</sub> concentrations were determined based on whether impacts from the Proposed Development caused annual mean PM<sub>10</sub> concentrations to exceed 31 µg/m<sup>3</sup>, where they did not without the Proposed Development.

7.3.26 The impact magnitude descriptors were considered, alongside receptor sensitivity, to determine air quality effect descriptors for specific receptors considered in this assessment.

7.3.27 As shown in **Table 7.2**, the locations where the ambient AQOs should be applied has been outlined in TG22, based on the potential sensitivity of receptors to acute and chronic exposure to air pollutants. The assessment has reported pollutant impact magnitudes at receptor locations where the annual mean AQOs are recommended to be applied in TG22. Consequently, all reported receptors should be considered as being a 'high' sensitivity.

7.3.28 Since all the receptors considered for the roads and point sources assessment have the same sensitivity, there is a relationship between impact descriptors and effect descriptors as shown in **Table 7.4**. Moderate or major effects are considered potentially significant, and minor and negligible effects are considered not significant.

**Table 7.4: Air Quality Effect Descriptors for Receptors Considered**

| Impact Descriptor | Effects Descriptor |
|-------------------|--------------------|
| Negligible        | Negligible         |
| Negligible        | Minor              |
| Slight            | Moderate           |
| Moderate          | Major              |
| Substantial       | Negligible         |

7.3.29 The overall significance of predicted changes in local air quality, including background pollutant concentrations, has been established through the consideration of the following factors:

- the existing and future air quality in the absence of the development;
- duration (temporary or long term);
- reversibility (reversible or permanent);
- the extent of current and future population exposure to the impacts; and,
- the influence and validity of any assumptions adopted when undertaking the prediction of impacts.

#### *Significance criteria – Impacts on Proposed Receptors*

7.3.30 To determine the potential for future users of the Proposed Development to be introduced into an area of poor ambient air quality, air pollutant concentrations at the on-site receptors in S3 were compared to the applicable AQOs (summarised in **Table 7.1**).

7.3.31 Before mitigation, an effect has been identified as significant where the annual mean AQO is exceeded or close to being exceeded at one or more of the on-site receptor locations representative of relevant exposure.

## **Limitations and Assumptions**

7.3.32 The following limitations and assumptions have been identified regarding the dispersion modelling assessment method, which are additional to those described throughout.

7.3.33 There will be uncertainties introduced as the model uses a series of algorithms to simplify real world dispersion processes. It has also been assumed that dispersion

will conform a Gaussian distribution over flat terrain, thereby simplifying dispersion conditions.

7.3.34 Much of the data imported into the model is based on reasonable estimates. For example, it is assumed that the AADT flow would represent conditions over a year, emissions generated from the emissions factor toolkit represent the average of vehicles from the fleet and modelled background pollutant concentrations are representative of conditions within the modelled area. It is also assumed that the meteorological data, surface roughness and Monin-Obukhov length would represent dispersion conditions across the modelled domain.

## 7.4 Scoping and Consultation

7.4.1 A Scoping Report (**ES Volume 3, Appendix A1**) was submitted to TDC on the 22<sup>nd</sup> August 2024 with a formal request for an EIA Scoping Opinion in accordance with Regulation 15 of the EIA Regulations. As part of this process, the key statutory and non-statutory consultees were consulted to review the proposed methodology and criteria for assessment. The Council subsequently issued their Scoping Opinion on the 21<sup>st</sup> October 2024 commenting on the proposed scope and methodology of the topics for assessment within the EIA. A copy of the Scoping Opinion is provided in **ES Volume 3, Appendix A2**.

7.4.2 A summary of the key points raised in the Scoping Opinion relevant to air quality are presented in **Table 7.5** including a response as to where the comments have been addressed within this chapter.

**Table 7.5: TDC Scoping Opinion Comments and Response**

| Summary of Comment   | Response or location within the ES where comments are addressed                         |
|--|---|
| TDC stated that it is agreed that Air Quality should be scoped in. The Council's Environmental Health Officer has confirmed that she is satisfied with the contents of the Scoping Report. | The Air Quality ES Chapter has followed the approach set out within the Scoping Report. |

## 7.5 Baseline Assessment and Identification of Key Receptors

### *Site Environment and presence of AQMAs*

7.5.1 The Site is located within Tandridge District Council (TDC) which does not have any declared AQMAs, and the Proposed Development is not located in an AQMA. The Proposed Development is located approximately 5km west of the AQMA No.13 (A25) declared by Sevenoaks District Council.

## *Sensitive Receptors*

7.5.2 There are several sensitive receptors within the study area which may be affected by the Proposed Development during the construction and operational phases, including:

- Occupants of nearby dwellings in close proximity to roads used for traffic travelling to and from the Proposed Development, both whilst construction activities are ongoing and once operational;
- Areas where members of the public may be exposed for one hour or longer in proximity to roads carrying traffic travelling to and from the Site, both whilst construction activities are ongoing and once operational; and
- Users of nearby buildings or amenity space, which may experience a loss of amenity due to dust soiling, or whose health may be affected as a result fugitive dust and pollutants such as NO<sub>2</sub> and PM<sub>10</sub> generated by construction related activities or non-road mobile machinery (NRMM).

7.5.3 A search of the Multi-Agency Geographic Information for the Countryside (MAGIC) maps website operated by Natural England indicates that the Woldingham & Oxted Downs, Sites of Special Scientific Interest (SSSI) is within 2 km to the Site, as well as several unnamed ancient woodlands in proximity to the Site but there are no designated Special Areas of Conservation, Special Protection Areas, Ramsar Sites, National or Local Nature Reserves within 2 km of the Site, as per the IAQM 2020 guidance.

## *Summary of Baseline Conditions*

7.5.4 Air quality monitoring has been undertaken by TDC. According to the Annual Status Reports for 2023<sup>18</sup>, there was no automatic monitoring undertaken by TDC. Non-automatic monitoring was undertaken at 30 locations within the district, out of these, five monitoring locations are within 2 km of the Proposed Development. There has been no exceedance of the NO<sub>2</sub> Annual Mean Air Quality Objectives at any of these diffusion tube monitoring sites as their concentrations were well below the air quality objective levels. The monitoring data for the year 2019-2023 for annual mean NO<sub>2</sub> concentrations is presented in **Table 7.6** below.

7.5.5 Annual mean PM<sub>10</sub> and PM<sub>2.5</sub> concentrations, 24-hour mean PM<sub>10</sub> concentrations were not monitored by TDC.

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<sup>18</sup> Tandridge District Council (2024), 2023 Air Quality Annual Status Report (ASR), June 2024

**Table 7.6: Annual mean NO<sub>2</sub> concentrations (µg/m<sup>3</sup>) during 2019 -2023**

| Site Name                              | Site Type           | Distance (km) | 2019 | 2020 | 2021 | 2022 | 2023 |
|--|---------------------|---------------|------|------|------|------|------|
| Amy Road<br>Oxted<br>TD34              | Urban<br>Background | 0.51          | 21.2 | 16.2 | 16.5 | 17.6 | 17.6 |
| Snatts Hill<br>Oxted<br>TD32           | Roadside            | 0.77          | 21.9 | 17.1 | 17.3 | 18.4 | 16.6 |
| 17<br>Westerham<br>Road, Oxted<br>TD28 | Roadside            | 0.96          | 28.1 | 22.2 | 22.3 | 22.6 | 19.3 |
| Water Lane<br>Limpsfield<br>TD30       | Urban<br>Background | 1.52          | 23.2 | 16.8 | 18.4 | 21.3 | 14.9 |
| Pebble Hill,<br>Limpsfield<br>TD6      | Kerbside            | 2.05          | -    | -    | -    | -    | 27.2 |
| Annual Air Quality Standard            |                     |               | 40   |      |      |      |      |

### *Estimated Background Data*

7.5.6 Estimated background data are available from UK-AIR website operated by Defra. The website provides estimated annual average background concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> on a 1km<sup>2</sup> grid basis.

7.5.7 **Table 7.7** presents estimated annual average background NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations for the grid square containing the Site for the years 2023 (corresponding to the baseline year of the assessment) and 2030 (corresponding to the earliest expected opening year of the Proposed Development).

**Table 7.7: Estimated Background Annual Average NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> Concentrations at the Site**

| Assessment Year | Estimated <sup>19</sup> Annual Average Pollutant Concentrations<br>Derived from the LAQM Support Website (µg/m <sup>3</sup> ) |                  |                   |
|-----------------|---|------------------|-------------------|
|                 | NO <sub>2</sub>   | PM <sub>10</sub> | PM <sub>2.5</sub> |

<sup>19</sup> Note – The site has approximate centre at coordinate 538500, 153500 thus, these have been used to present the pollutant concentrations in the table.

|                       |      |      |      |
|-----------------------|------|------|------|
| 2023                  | 12.6 | 15.4 | 10.0 |
| 2030                  | 9.7  | 15.1 | 9.7  |
| Air Quality Objective | 40   | 40   | 20   |

7.5.8 The estimated background concentrations are well below the relevant UK Air Quality Strategy Objectives for NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>.

### *Future Baseline*

7.5.9 As background concentrations are predicted to fall with time, background concentrations in future years would not be expected to exceed their respective annual mean standards. As currently using the Defra background maps the background concentrations for NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> are 13µg/m<sup>3</sup>, 16µg/m<sup>3</sup>, and 10µg/m<sup>3</sup> respectively which are well below their relative standards.

## 7.6 Identification and Description of Changes Likely to Generate Effect

### Construction Phase

7.6.1 During the construction phase, construction activities have the potential to generate fugitive dust emissions which may give rise to annoyance due to the soiling of surfaces or which can damage vascular plant species. Emissions of this nature can also pose a risk of human health due to the increase in exposure to PM<sub>10</sub> concentrations.

7.6.2 Emissions from goods vehicles and vehicles used by site personnel to travel to and from site; as well as from non-road mobile machinery (NRMM), may also affect local air quality.

### Operational Phase

7.6.3 There are residential properties located on along Barrow Green Road, Church Lane, Wheeler Avenue and the A25 which could be sensitive to the vehicle movements associated with the Proposed Scheme. Assessment of the changes likely to generate effect is located in **Section 7.7**.

7.6.4 Future residents of the Proposed Development may be impacted upon by existing local air quality, including contributions of road traffic emissions from additional vehicles entering and exiting the Proposed Development. Assessment of site suitability for residential use is located in **Section 7.7**.

## 7.7 Assessment of Likely Significant Effect

### Construction Phase

#### *Embedded Mitigation Measures*

7.7.1 As described in the Qualitative Construction Dust Assessment, the Scheme will constitute a maximum of medium risk for construction dust, with potentially significant effects in the absence of mitigation. The use of appropriate mitigation measures throughout the construction period will ensure that impacts to sensitive receptors are minimised. These measures are recommended to be included within a Construction Environmental Management Plan (CEMP), which will be secured by condition; a Dust Management Plan or similar.

7.7.2 Any non-road mobile machinery used on Site which were purchased since the Non-Road Mobile Machinery Directive (97/68/EC), including subsequent amendments, came into effect, will comply with the emissions requirements specified in the relevant legislation.

#### *Anticipated Effects*

##### *Construction Dust Screening Assessment*

7.7.3 According to the IAQM 2024 guidance, an assessment of construction dust effects is normally required if there are human or ecological receptors within 250 metres of locations where potentially dusty activities take place on Site, or within 50 metres expected to be used by construction vehicles on a public highway (where trackout could arise), up to 250 metres from the Site entrance.

7.7.4 If these criteria are not met, it can be assumed that the level of risk from dust amenity will be negligible, and any effects will be not significant.

7.7.5 As there are human receptors within 250 metres of the Proposed Development, a dust risk assessment has been undertaken.

##### *Construction Dust Full Qualitative Assessment*

##### *Dust Emissions Magnitude*

7.7.6 The dust emission magnitude for each of the four construction related activities (demolition, earthworks, construction and trackout) are informed by the types of construction relative activities expected to take place at the Site. These comprise:

- Demolition;
- Earthworks;
- Construction; and,

- Trackout: According to the IAQM 2024 guidance, trackout is defined as "The transport of dust and dirt from the construction/ demolition site when HDVs leave the site (having travelled over muddy ground) onto the public road network, where it may be deposited and then re-suspended by vehicles using the network."

7.7.7 Potential dust emission magnitudes from each of the construction related activities has been assessed using the IAQM guidance criteria (described in **ES Volume 3, Appendix C1**) and are detailed in **Table 8.6**. It should be noted that in accordance with IAQM 2024 guidance, the assessment has been undertaken assuming no mitigation measures have been secured. Information is either derived from information provided by the Client in connection with the Site, or where required, from appropriate assumptions.

**Table 7.8: Dust Emission Magnitudes**

| Type of work | Description of site characteristics with reference to IAQM 2024 guidance  | Dust emissions magnitude |
|--------------|---|--------------------------|
| Demolition   | No demolition required as the existing site is currently vacant.  | N/A                      |
| Earthworks   | Total site area 18,000-110,000m <sup>2</sup> .<br>Expected to be approximately 13,000 Kg of foundation concrete, assumed that 5-10 heavy vehicles at one time.          | Medium                   |
| Construction | Total building volume anticipated to be >75,000m <sup>3</sup> .<br>It is understood that the proposed buildings will be made from brick, concrete and cement materials. | Large                    |
| Trackout     | Peak construction traffic movements expected to be 16 HGVs per day, expressed as an AADT.<br>Heavy goods vehicles may travel over >100m of unpaved ground on site.      | Medium                   |

#### *Receptor Sensitivity*

7.7.8 **Table 7.9** outlines the sensitivity of the surrounding area was determined, including receptors connected with committed and consented schemes, determined in accordance with the IAQM 2024 guidance method summarised in **ES Volume 3, Appendix C1**.

7.7.9 The Site has been assessed as having a large construction dust emissions magnitude and trackout was assumed to occur on applicable roads within 250 m of the likely Site exit, as per the IAQM 2024 guidance.

**Table 7.9: Sensitivity of the surrounding area**

| Receptor     | Demolition | Earthworks  | Construction                            | Trackout   |
|--------------|------------|---|---|--|
| Dust Soiling | N/A        | <b>Medium:</b> 1 to 10 high sensitivity receptors | <b>Medium:</b> 1 to 10 high sensitivity | <b>Medium:</b> 1 to 100 high sensitivity receptors |

| Receptor             | Demolition | Earthworks   | Construction  | Trackout  |
|----------------------|------------|--|---|---|
|                      |            | within 20m of the Site boundary, these are primarily residential properties.   | receptors within 20m of the Site boundary, these are primarily residential properties.  | within 50m of roads located within 250 of Site exits.   |
| Human Health Impacts | N/A        | <b>Low:</b> 1 to 10 high sensitivity receptors within 20m of the Site boundary and local annual mean PM <sub>10</sub> concentrations lower than 24µg/m <sup>3</sup> .  | <b>Low:</b> 1 to 10 high sensitivity receptors within 20m of the Site boundary and local annual mean PM <sub>10</sub> concentrations lower than 24µg/m <sup>3</sup> . | <b>Low:</b> 1 to 100 high sensitivity receptors within 50m of roads within 250 from Site exits. Local annual mean PM <sub>10</sub> concentrations lower than 24µg/m <sup>3</sup> .  |
| Ecological           | N/A        | <b>Negligible:</b> A search of the Multi-Agency Geographic Information for the Countryside (MAGIC) maps website operated by Natural England indicates that there are no sensitive ecological receptors within 50m of the Site. |   | <b>Low:</b> A search of the Multi-Agency Geographic Information for the Countryside (MAGIC) maps website operated by Natural England indicates that there is an unnamed ancient woodland within 50m of the route along which trackout is expected to occur. |

### Dust Impact Risk

7.7.10 The construction dust risks shown in **Table 7.10** have been assigned based on the dust emission magnitude associated with each on-site activity and the sensitivity of the surrounding area, using the IAQM 2024 guidance method described in **ES Volume 3, Appendix C1**.

**Table 7.10: Summary of dust risk from site activities**

| Potential Impact | Risk of Dust Impacts |            |              |          |
|------------------|----------------------|------------|--------------|----------|
|                  | Demolition           | Earthworks | Construction | Trackout |
| Dust Soiling     | N/A                  | Medium     | Medium       | Medium   |
| Human Health     | N/A                  | Low        | Low          | Low      |
| Ecological       | N/A                  | Negligible | Negligible   | Low      |

7.7.11 The overall dust risk from the Site is predicted to be a maximum of medium.

7.7.12 Based on the 'medium' dust impact risks above, it is considered that fugitive dust could have a maximum of likely 'medium' secondary, local, temporary effects in the absence of mitigation.

7.7.13 Appropriate mitigation measures will help to negate most of the potential negative air quality impacts resulting from the construction of the Proposed Development and will avoid significant dust effects. This is further discussed in **Section 7.8**.

#### *Anticipated Effects – Construction Phase traffic Emissions*

7.7.14 As the construction phase traffic is expected to be a maximum of 16 HDV and 60 LDV (cars- construction workers) movements per day along the Site access. All of the HDV movements are to the west of the Site access along Barrow Green Road. This is below the HDV and LDV threshold for a need to assess using detailed dispersion modelling using the EPUK-IAQM guidance. The impact of construction phase road traffic would therefore be negligible and not significant.

## **Operational Phase**

### *Embedded Mitigation Measures*

7.7.15 A Draft Travel Plan has been prepared for the Proposed Development and is submitted with the Application. It contains measures expected to facilitate modal shift.

#### *Anticipated Effects*

##### *Impacts of the Development on local air quality*

7.7.16 **Table 7.11** presents the predicted annual mean NO<sub>2</sub> concentrations at each of the existing receptor locations to which the annual and hourly mean AQOs should be applied in S2 and S3. It also shows the percentage change in pollutant concentrations (with the Proposed Development in place) relative to the AQAL (i.e., the annual mean NO<sub>2</sub> AQO), the S3 pollutant concentration as a percentage of the AQAL, and the assigned EPUK-IAQM guidance impact descriptor.

7.7.17 **Table 7.11** shows that the annual mean NO<sub>2</sub> concentrations are not predicted to exceed the annual mean NO<sub>2</sub> AQO at all modelled existing receptors in either S2 or S3.

7.7.18 The largest change in annual mean NO<sub>2</sub> concentrations at annual mean sensitive receptors was <0.5 % increase relative to the AQO. As per the EPUK-IAQM guidance assessment method, the impact of the Proposed Development on air quality was assessed as negligible at each of the relevant modelled receptors.

7.7.19 None of the existing receptors modelled are exposed to annual mean NO<sub>2</sub> concentrations exceeding 60µg/m<sup>3</sup> with the Proposed Development in place. Therefore, in accordance with TG22, the one-hour mean objective is unlikely to be exceeded as a direct result of the Proposed Development.

**Table 7.11: Predicted annual mean NO<sub>2</sub> (µg/m<sup>3</sup>) at modelled existing receptors (operational phase) and assessment of impact magnitude in accordance with the EPUK-IAQM guidance between Scenario 2 and Scenario 3**

| Receptor ID | S2 Without Development | S3 With Development | % of AQAL | % Change relative to AQO | EPUK-IAQM Impact descriptor |
|-------------|------------------------|---------------------|-----------|--------------------------|-----------------------------|
| R1          | 12.45                  | 12.61               | 31.53     | <0.5%                    | Negligible                  |
| R2          | 12.28                  | 12.41               | 31.03     | <0.5%                    | Negligible                  |
| R3          | 11.32                  | 11.46               | 28.65     | <0.5%                    | Negligible                  |
| R4          | 11.27                  | 11.39               | 28.48     | <0.5%                    | Negligible                  |
| R5          | 15.82                  | 15.91               | 39.78     | <0.5%                    | Negligible                  |
| R6          | 16.64                  | 16.69               | 41.73     | <0.5%                    | Negligible                  |
| R7          | 13.25                  | 13.28               | 33.20     | <0.5%                    | Negligible                  |
| R8          | 14.25                  | 14.30               | 35.75     | <0.5%                    | Negligible                  |
| R9          | 13.82                  | 13.94               | 34.85     | <0.5%                    | Negligible                  |
| R10         | 16.45                  | 16.53               | 41.33     | <0.5%                    | Negligible                  |
| R11         | 15.14                  | 15.23               | 38.08     | <0.5%                    | Negligible                  |
| R12         | 14.55                  | 14.71               | 36.78     | <0.5%                    | Negligible                  |
| R13         | 12.80                  | 12.91               | 32.28     | <0.5%                    | Negligible                  |
| R14         | 13.36                  | 13.49               | 33.73     | <0.5%                    | Negligible                  |
| R15         | 17.48                  | 17.56               | 43.90     | <0.5%                    | Negligible                  |
| R16         | 15.44                  | 15.50               | 38.75     | <0.5%                    | Negligible                  |
| R17         | 13.27                  | 13.39               | 33.48     | <0.5%                    | Negligible                  |
| R18         | 13.14                  | 13.26               | 33.15     | <0.5%                    | Negligible                  |
| R19         | 11.59                  | 11.75               | 29.38     | <0.5%                    | Negligible                  |
| R20         | 12.76                  | 12.84               | 32.10     | <0.5%                    | Negligible                  |
| R21         | 11.80                  | 11.99               | 29.98     | <0.5%                    | Negligible                  |

7.7.20 **Table 7.12** presents the predicted annual mean PM<sub>10</sub> concentrations at each of the existing receptor locations to which the annual mean AQOs should be applied in S2 and S3. It also shows the percentage change in pollutant concentrations (with the Proposed Development) relative to the AQAL (i.e. the annual mean PM<sub>10</sub> AQO), the S3 pollutant concentration as a percentage of the AQAL, and the assigned EPUK-IAQM guidance impact descriptor.

7.7.21 **Table 7.12** shows that the annual mean  $PM_{10}$  concentrations are not predicted to exceed the annual mean  $PM_{10}$  AQO at any of the modelled receptors in both S2 and S3.

7.7.22 The largest change in annual mean concentrations was a <0.5 % increase relative to the AQO. As per the EPUK-IAQM guidance assessment method, the impact of the Proposed Development on air quality was assessed as negligible at the modelled receptors sensitive to changes in annual mean  $PM_{10}$  concentrations.

7.7.23 As the largest concentration was below the  $31\mu g/m^3$  annual mean  $PM_{10}$  concentration which can be expected prior to the  $50\mu g/m^3$  24-hour mean AQO threshold being exceeded on more than the 35 occasions permissible per annum, the Proposed Development was expected to have an insignificant effect on 24-hour mean  $PM_{10}$  concentrations.

**Table 7.12: Predicted annual mean PM<sub>10</sub> (µg/m<sup>3</sup>) at modelled existing receptors (operational phase) and assessment of impact magnitude in accordance with the EPUK-IAQM guidance between Scenario 2 and Scenario 3**

| Receptor ID | S2 Without Development | S3 With Development | % of AQAL | % Change relative to AQO | EPUK-IAQM Impact descriptor |
|-------------|------------------------|---------------------|-----------|--------------------------|-----------------------------|
| R1          | 14.75                  | 14.85               | 37.13     | <0.5%                    | Negligible                  |
| R2          | 14.63                  | 14.71               | 36.78     | <0.5%                    | Negligible                  |
| R3          | 13.97                  | 14.07               | 35.18     | <0.5%                    | Negligible                  |
| R4          | 13.93                  | 14.01               | 35.03     | <0.5%                    | Negligible                  |
| R5          | 17.14                  | 17.20               | 43.00     | <0.5%                    | Negligible                  |
| R6          | 17.77                  | 17.80               | 44.50     | <0.5%                    | Negligible                  |
| R7          | 15.33                  | 15.35               | 38.38     | <0.5%                    | Negligible                  |
| R8          | 16.07                  | 16.10               | 40.25     | <0.5%                    | Negligible                  |
| R9          | 15.23                  | 15.29               | 38.23     | <0.5%                    | Negligible                  |
| R10         | 17.07                  | 17.12               | 42.80     | <0.5%                    | Negligible                  |
| R11         | 16.09                  | 16.14               | 40.35     | <0.5%                    | Negligible                  |
| R12         | 15.67                  | 15.77               | 39.43     | <0.5%                    | Negligible                  |
| R13         | 15.42                  | 15.49               | 38.73     | <0.5%                    | Negligible                  |
| R14         | 15.92                  | 16.01               | 40.03     | <0.5%                    | Negligible                  |
| R15         | 17.61                  | 17.65               | 44.13     | <0.5%                    | Negligible                  |
| R16         | 16.27                  | 16.30               | 40.75     | <0.5%                    | Negligible                  |
| R17         | 15.86                  | 15.94               | 39.85     | <0.5%                    | Negligible                  |
| R18         | 15.73                  | 15.80               | 39.50     | <0.5%                    | Negligible                  |
| R19         | 14.10                  | 14.19               | 35.48     | <0.5%                    | Negligible                  |
| R20         | 14.98                  | 15.03               | 37.58     | <0.5%                    | Negligible                  |
| R21         | 14.45                  | 14.56               | 36.40     | <0.5%                    | Negligible                  |

7.7.24 **Table 7.13** presents the predicted annual mean PM<sub>2.5</sub> concentrations at each of the existing receptor locations to which the annual mean AQOs should be applied in S2 and S3. It also shows the percentage change in pollutant concentrations (with the scheme) relative to the 2028 interim AMCT of 12µg/m<sup>3</sup> (i.e. the target annual mean PM<sub>2.5</sub> concentration), the S3 pollutant concentration as a percentage of the interim AMCT, and the assigned EPUK-IAQM guidance impact descriptor.

7.7.25 It shows that the annual mean PM<sub>2.5</sub> concentrations are not predicted to exceed the annual mean PM<sub>2.5</sub> AQO at any of the relevant modelled receptors in both S2 and S3.

Additionally, the concentrations at each receptor location are not predicted to exceed the 2028 interim AMCT.

7.7.26 The largest change in annual mean concentrations was a <0.5 % increase relative to the AQO). As per the EPUK-IAQM guidance assessment method, the impact of the Proposed Development on air quality was assessed as negligible at the relevant modelled receptors.

**Table 7.13: Predicted annual mean PM<sub>2.5</sub> (µg/m<sup>3</sup>) at modelled existing receptors (operational phase) and assessment of impact magnitude in accordance with the EPUK-IAQM guidance between Scenario 2 and Scenario 3**

| Receptor ID | S2 Without Development | S3 With Development | % of AQAL | % Change relative to AQO | EPUK-IAQM Impact descriptor |
|-------------|------------------------|---------------------|-----------|--------------------------|-----------------------------|
| R1          | 9.73                   | 9.78                | 81.50     | <0.5%                    | Negligible                  |
| R2          | 9.66                   | 9.70                | 80.83     | <0.5%                    | Negligible                  |
| R3          | 9.32                   | 9.37                | 78.08     | <0.5%                    | Negligible                  |
| R4          | 9.30                   | 9.34                | 77.83     | <0.5%                    | Negligible                  |
| R5          | 10.97                  | 11.00               | 91.67     | <0.5%                    | Negligible                  |
| R6          | 11.30                  | 11.32               | 94.33     | <0.5%                    | Negligible                  |
| R7          | 10.03                  | 10.04               | 83.67     | <0.5%                    | Negligible                  |
| R8          | 10.42                  | 10.43               | 86.92     | <0.5%                    | Negligible                  |
| R9          | 10.07                  | 10.11               | 84.25     | <0.5%                    | Negligible                  |
| R10         | 11.05                  | 11.08               | 92.33     | <0.5%                    | Negligible                  |
| R11         | 10.54                  | 10.57               | 88.08     | <0.5%                    | Negligible                  |
| R12         | 10.31                  | 10.35               | 86.25     | <0.5%                    | Negligible                  |
| R13         | 9.96                   | 10.00               | 83.33     | <0.5%                    | Negligible                  |
| R14         | 10.24                  | 10.28               | 85.67     | <0.5%                    | Negligible                  |
| R15         | 11.38                  | 11.40               | 95.00     | <0.5%                    | Negligible                  |
| R16         | 10.66                  | 10.68               | 89.00     | <0.5%                    | Negligible                  |
| R17         | 10.21                  | 10.25               | 85.42     | <0.5%                    | Negligible                  |
| R18         | 10.14                  | 10.18               | 84.83     | <0.5%                    | Negligible                  |
| R19         | 9.39                   | 9.44                | 78.67     | <0.5%                    | Negligible                  |
| R20         | 9.85                   | 9.87                | 82.25     | <0.5%                    | Negligible                  |
| R21         | 9.38                   | 9.44                | 78.67     | <0.5%                    | Negligible                  |

### Impacts of ambient air quality on future site users

7.7.27 The results of the modelling and the impact of the completed and operational Proposed Development on NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations at each modelled proposed development receptor (PR) are presented in **Table 7.14**.

7.7.28 The results shows that the on-site modelled pollution concentrations are all well below the annual mean NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> AQOs, as well as the 2028 interim AMCT.

7.7.29 As the annual mean PM<sub>10</sub> concentrations were also below ~31 $\mu\text{g}/\text{m}^3$ , the 24-hour mean PM<sub>10</sub> AQO (50 $\mu\text{g}/\text{m}^3$ ) would not be breached more than the permissible 35 days per annum. Additionally, given that the annual mean NO<sub>2</sub> concentration was predicted to be below 60 $\mu\text{g}/\text{m}^3$  at all modelled receptors, the one-hour mean objective is unlikely to be exceeded as a direct result of the Proposed Development, in accordance with TG22.

7.7.30 Consequently, the effect of ambient air quality on future Site users once the Proposed Development is operational are considered to be direct, local, permanent effects of negligible significance.

**Table 7.14: Estimated annual mean NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations at proposed receptors ( $\mu\text{g}/\text{m}^3$ ) for the 2030 with Development Scenario**

| Receptor ID | NO <sub>2</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> |
|-------------|-----------------|------------------|-------------------|
| PR1         | 11.35           | 13.98            | 9.32              |
| PR2         | 13.34           | 15.88            | 10.22             |
| PR3         | 12.99           | 15.65            | 10.10             |
| PR4         | 13.09           | 15.73            | 10.14             |
| PR5         | 12.98           | 15.65            | 10.10             |
| PR6         | 13.23           | 15.82            | 10.18             |

## 7.8 Scope for Additional Mitigation Measures

### Potential Additional Mitigation Measures

#### *Mitigation measures for Construction Dust*

7.8.1 As described in **Section 7.7**, the Proposed Development will constitute a maximum of medium risk for construction dust, with potentially significant effects in the absence of mitigation. The use of appropriate mitigation measures throughout the construction period will ensure that impacts to sensitive receptors are minimised. These measures are recommended to be included within a Construction Environmental Management Plan (CEMP), which will be secured by condition; a Dust Management Plan or similar.

7.8.2 The following is a set of best-practice measures from the 2024 IAQM guidance that should be incorporated into the specification for the works. The measures should be implemented for as long as potentially dusty activities take place at the Site. Some of the measures may only be necessary during specific phases of work, or during activities with a high potential to produce dust, and the list should be refined and expanded upon in liaison with the construction contractor when producing the DMP or CEMP. The measures listed below in *italics* are classified as “desirable” in the IAQM 2024 guidance, the others being “highly recommended”.

#### *Communications*

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
- Display the head or regional office contact information.

#### *Dust Management*

- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. The DMP may include monitoring of dust deposition, dust flux, real time PM10 continuous monitoring and/or visual inspections.
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Agree dust deposition, dust flux, or real-time PM10 continuous monitoring locations with the Local Authority. Where possible commence baseline

monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.
- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
- Avoid bonfires and burning of waste materials.
- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available

to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary, with cleaning to be provided if necessary.

- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

#### *Earthworks*

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.

#### *Construction*

- 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.
- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

#### *Trackout*

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.

- Record all inspections of haul routes and any subsequent action in a site log book.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- 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.
- Access gates to be located at least 10m from receptors where possible.

7.8.3 With the proposed construction activities mitigation measures as described in place, the likely residual impact of works undertaken during the construction phase on local air quality can be considered as 'negligible' (i.e. 'not significant').

### *Mitigation Measures for Construction Plant and Traffic*

7.8.4 Additional mitigation (beyond the mitigation measured listed above) are not considered to be required.

### *Maintaining air quality at the Site*

7.8.5 The Proposed Development is not expected to introduce receptors into an area of poor ambient air quality and as such no mitigation has been recommended.

### **Likely Effectiveness of Additional Mitigation Measures**

7.8.6 Measures proposed to mitigate the effects of fugitive dust and emissions generated by construction related activity on amenity and human health are likely to be effective if implemented and monitored effectively by the construction Site Manager (in accordance with the DMP or CEMP), other nominated Site personnel and (as appropriate) staff working on Site construction activities at large.

7.8.7 Where appropriate, the Applicant can embed requirements to implement committed mitigation measures in construction tender documentation.

## **7.9 Residual Effects**

### **Construction Phase**

7.9.1 The implementation of mitigation measures outlined in **Section 7.8** will ensure the avoidance of significant effects in respect of construction dust. Effects would be likely to be negligible, with possible short-term minor adverse effects during adverse weather conditions.

7.9.2 Following the effective implementation of the embedded and additional mitigation measures proposed above, there are no significant residual effects arising from the Proposed Development during construction phase.

## Operational Phase

7.9.3 Following the effective implementation of the embedded mitigation measures proposed above, there are no significant residual effects arising from the Proposed Development during operational phase.

## 7.10 Cumulative Effects

7.10.1 Cumulative effects are the combined effects of several development schemes (in conjunction with the Proposed Development) which may, on an individual basis, be insignificant but, cumulatively, have a significant effect.

7.10.2 It is anticipated that all construction sites will adopt appropriate mitigation measures to limit emissions of dust and emissions and will hold the liaison meetings recommended above to coordinate/ consolidate dust management practices. With these measures in place, cumulative construction related activities are expected to have a 'not significant' effect on these receptors.

7.10.3 As stated elsewhere, this ES has given consideration to 'cumulative effects' for schemes located within 5 km radius from the boundary of the Site as listed in **ES Volume 2, Chapter 3: EIA Methodology, Table 3.7**. This threshold has been used when considering potential cumulative schemes for inclusion in the air quality assessment.

## 7.11 Summary and Conclusions

- 7.11.1 Air quality at the Site and surrounding environment is good and will likely improve over time. This chapter of the ES reviewed existing air quality within the study area and assessed the potential effect of the Proposed Development on air quality at proposed sensitive receptors. The effects of dust deposition during the construction phase were also considered.
- 7.11.2 Fugitive dust from demolition, construction, earthworks and trackout was assessed as medium risk and thus a potentially significant effect in the absence of mitigation. Mitigation measures are proposed to be implemented. With these mitigation measures in place, residual effects on receptors are likely to be negligible.
- 7.11.3 The traffic generated by the Proposed Development was screened for impacts on ecological receptors against the criteria established in the IAQM 2020 guidance and thus considered not significant.
- 7.11.4 The predicted number of HDVs and LDVs when the Proposed Development is under construction was screened out, so that the predicted impact would be negligible and not significant.
- 7.11.5 The assessment of impacts when the Proposed Development is operational has been assessed as negligible at all modelled existing human receptor locations. Future Site users were not predicted to be exposed to poor air quality when the Site opens. These impacts were thus not considered significant.
- 7.11.6 **Table 7.15** summarises the topic effects resulting from the Proposed Development.

**Table 7.15: Summary of Residual Effects**

| Receptor/<br>Affected<br>Group  | Value or<br>Sensitivity<br>(Significance<br>) of Receptor | Activity or<br>Impact  | Embedded<br>Design<br>Mitigation | Magnitude/<br>Spatial<br>Extent/<br>Duration/<br>Likelihood of<br>Occurrence | Significance<br>of effect  | Additional<br>Mitigation                                       | Residual<br>Magnitude<br>of Impact | Significance<br>of Residual<br>effect |
|---|---|--|----------------------------------|--|--|--|------------------------------------|---------------------------------------|
| <b>Construction (including cumulative effects)</b>  |   |  |                                  |  |  |  |                                    |                                       |
| Loss of<br>amenity at<br>nearby<br>human<br>receptor<br>locations due<br>to dust<br>soiling | High<br>(maximum)   | Fugitive dust<br>and<br>emissions in<br>connection<br>with<br>demolition,<br>earthworks,<br>construction<br>and trackout | CEMP                             | Medium<br>(maximum)<br>Local<br>Short – term<br>Likely                       | Minor<br>adverse (as<br>assessed in<br>the absence<br>of mitigation<br>in accordance<br>with the<br>IAQM 2024<br>guidance) | Best practice<br>measures<br>from the<br>IAQM 2024<br>guidance | Negligible                         | Negligible                            |
| Health of<br>nearby<br>residents, etc.  | Low<br>(maximum)  | Fugitive dust<br>and<br>emissions in<br>connection<br>with<br>demolition,<br>earthworks,<br>construction<br>and trackout | CEMP                             | Low<br>(maximum)<br>Local<br>Short-term<br>Likely                            | Minor<br>adverse (as<br>assessed in<br>the absence<br>of mitigation<br>in accordance<br>with the<br>IAQM 2024<br>guidance) | Best practice<br>measures<br>from the<br>IAQM 2024<br>guidance | Negligible                         | Negligible                            |

| Receptor/<br>Affected<br>Group                                | Value or<br>Sensitivity<br>(Significance<br>) of Receptor | Activity or<br>Impact  | Embedded<br>Design<br>Mitigation  | Magnitude/<br>Spatial<br>Extent/<br>Duration/<br>Likelihood of<br>Occurrence | Significance<br>of effect  | Additional<br>Mitigation                                       | Residual<br>Magnitude<br>of Impact | Significance<br>of Residual<br>effect |
|---|---|--|---|--|--|--|------------------------------------|---------------------------------------|
| Impact on<br>ecosystems                                       | Low<br>(maximum)  | Fugitive dust<br>and<br>emissions in<br>connection<br>with<br>demolition,<br>earthworks,<br>construction<br>and trackout | CEMP  | Low<br>(maximum)<br>Local<br>Short- term<br>Likely                           | Minor<br>adverse<br>(maximum, as<br>assessed in<br>the absence<br>of mitigation<br>in accordance<br>with the<br>IAQM 2024<br>guidance) | Best practice<br>measures<br>from the<br>IAQM 2024<br>guidance | Negligible                         | Negligible                            |
| Human<br>health (plant<br>and vehicle<br>emissions)           | High<br>(maximum)   | Movement of<br>plant and<br>vehicles in<br>connection<br>with<br>construction<br>related<br>activities                   | Legislative<br>emission<br>standards<br>with which<br>NRMM must<br>comply | Negligible<br>Local<br>Short-term<br>Likely                                  | Negligible   | None   | Negligible                         | Negligible                            |
| <b>Operation (including cumulative effects)</b>               |   |  |   |  |  |  |                                    |                                       |
| Human<br>health and<br>ecosystems<br>(impacts of<br>scheme on | High<br>(maximum)   | Vehicles<br>associated<br>with the<br>Proposed<br>Development  | Travel Plan   | Negligible<br>Local<br>Permanent<br>Likely                                   | Negligible   | None   | Negligible                         | Negligible                            |

| Receptor/<br>Affected<br>Group     | Value or<br>Sensitivity<br>(Significance<br>) of Receptor | Activity or<br>Impact               | Embedded<br>Design<br>Mitigation | Magnitude/<br>Spatial<br>Extent/<br>Duration/<br>Likelihood of<br>Occurrence | Significance<br>of effect | Additional<br>Mitigation | Residual<br>Magnitude<br>of Impact | Significance<br>of Residual<br>effect |
|------------------------------------|---|-------------------------------------|----------------------------------|--|---------------------------|--------------------------|------------------------------------|---------------------------------------|
| local air<br>quality)              |   |                                     |                                  |  |                           |                          |                                    |                                       |
| Impacts on<br>future site<br>users | High<br>(maximum)   | Operational<br>vehicle<br>movements | Travel Plan                      | Negligible<br>Local<br>Permanent<br>Likely                                   | Negligible                | None                     | Negligible                         | Negligible                            |