

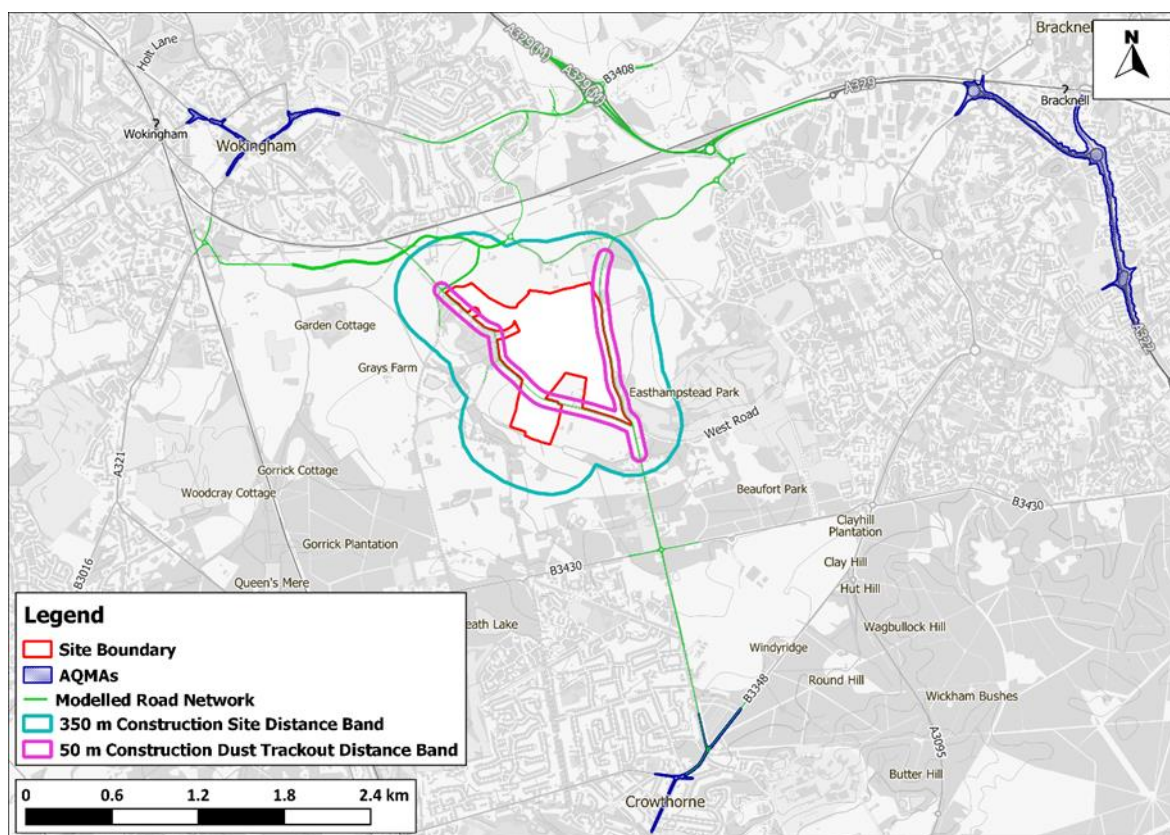
## 8. AIR QUALITY

### Introduction

- 8.1 This Chapter of the ES assesses the likely significant effects of the Proposed Development with respect to Air Quality, particularly the effects of additional emissions of dust during construction, and of nitrogen dioxide (NO<sub>2</sub>) and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) during the construction and operation of the Proposed Development, upon sensitive receptors around the Application Site. This Chapter also describes the legislative and policy framework; the methods used to assess the effects; the baseline conditions currently existing at the Application Site; the mitigation measures required to prevent, reduce or offset any significant negative effects; and the likely residual effects after these measures have been adopted.
- 8.2 The experience of the consultants who prepared this Chapter is set out in **Appendix 8.4**.

### Study Area

- 8.3 The Proposed Development lies approximately 1.5 km southeast of Wokingham town centre, where there is an Air Quality Management Area (AQMA); 2.8 km southwest of Bracknell, AQMA; and approximately 2.1 km north of the Crowthorne AQMA. All three AQMAs have been designated for exceedances of the NO<sub>2</sub> annual mean objectives. The Application Site is currently predominantly used as agricultural/equine land and there are neighbouring existing residential properties. The Proposed Development will generate additional traffic on local roads, which may impact on air quality at existing properties along the affected road network. The main air pollutants of concern related to road traffic emissions are NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>.
- 8.4 The study area for the assessment has been identified using professional judgement, focussing on the areas where impacts are anticipated to be greatest. It includes the application Site itself and all of the roads along which the development will lead to a potentially significant change in traffic flows. Specifically, the assessment has focussed on the roads bounding the development Site (Easthampstead Road, Old Wokingham Road, and the new South Wokingham Development Road), extending south along Old Wokingham Road, west along the new South Wokingham Development Road to Finchampstead Road and Oakey Drive, east along Peacock Lane to Berkshire Way, and north to London Road. The study area is shown in Error! Reference source not found..

**Figure 8.1 – Study Area in the Context of Air Quality**

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- 8.5 The construction dust assessment considers the potential for impacts within 350 m of the Site boundary, or within 50 m of roads used by construction vehicles within 500 m of the Site. The specific areas considered are detailed in Section 0.

### Legislative Planning Policy Framework

- 8.6 All European legislation referred to in this Chapter is written into UK law and remains in place.

### Air Quality Strategy 2007

- 8.7 The Air Quality Strategy<sup>1</sup> published by the Department for Environment, Food, and Rural Affairs (Defra) and Devolved Administrations, provides the policy framework for air quality management and assessment in the UK. It provides air quality standards and objectives for key air pollutants, which are designed to protect human health and the environment. It also

<sup>1</sup> Defra (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Defra.

sets out how the different sectors: industry, transport and local government, can contribute to achieving the air quality objectives. Local authorities are seen to play a particularly important role. The strategy describes the Local Air Quality Management (LAQM) regime that has been established, whereby every authority has to carry out regular reviews and assessments of air quality in its area to identify whether the objectives have been, or will be, achieved at relevant locations, by the applicable date. If this is not the case, the authority must declare an AQMA, and prepare an action plan which identifies appropriate measures that will be introduced in pursuit of the objectives.

### **Air Quality Strategy 2023**

- 8.8 The Air Quality Strategy: Framework for Local Authority Delivery 2023<sup>2</sup> sets out the strategic air quality framework for local authorities and other Air Quality Partners in England. It sets out their powers and responsibilities, and actions the government expects them to take. It does not replace other air quality guidance documents relevant to local authorities.

### **Clean Air Strategy 2019**

- 8.9 The Clean Air Strategy<sup>3</sup> sets out a wide range of actions by which the UK Government will seek to reduce pollutant emissions and improve air quality. Actions are targeted at four main sources of emissions: Transport, Domestic, Farming and Industry. At this stage, there is no straightforward way to take account of the expected future benefits to air quality within this assessment.

### **Reducing Emissions from Road Transport: Road to Zero Strategy**

- 8.10 The Office for Low Emission Vehicles (OLEV) and Department for Transport (DfT) published a Policy Paper<sup>4</sup> in July 2018 outlining how the government will support the transition to zero tailpipe emission road transport and reduce tailpipe emissions from conventional vehicles during the transition. This paper affirms the Government's pledge to end the sale of new conventional petrol and diesel cars and vans by 2040, and states that the Government expects the majority of new cars and vans sold to be 100% zero tailpipe emission and all new cars and vans to have significant zero tailpipe emission capability by this year, and that by 2050 almost every car and van should have zero tailpipe emissions. It states that the Government wants to see at least 50%, and as many as 70%, of new car sales, and up to 40% of new van sales, being ultra-low emission by 2030.
- 8.11 The paper sets out a number of measures by which Government will support this transition, but is clear that Government expects this transition to be industry and consumer led. The Government has recently announced that 80% of new cars and 70% of new vans sold in Great Britain must be zero emission by 2030, increasing to 100% by 2035. If these ambitions

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<sup>2</sup> Defra (2023a) Air Quality Strategy: Framework for Local Authority Delivery, [Online], Available: <https://www.gov.uk/government/publications/the-air-quality-strategy-for-england/air-quality-strategy-framework-for-local-authority-delivery>.

<sup>3</sup> Defra (2019a) Clean Air Strategy 2019, Available: <https://www.gov.uk/government/publications/clean-air-strategy-2019>.

<sup>4</sup> DfT (2018) The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy.

are realised then road traffic-related NOx emissions can be expected to reduce significantly over the coming decades, likely beyond the scale of reductions forecast in the tools utilised in carrying out this air quality assessment.

### **Environment Act 2021**

- 8.12 The UK's new legal framework for protection of the natural environment, the Environment Act<sup>5</sup> passed into UK law in November 2021. The Act gives the Government the power to set long-term, legally binding environmental targets. It also establishes an Office for Environmental Protection (OEP), responsible for holding the government to account and ensuring compliance with these targets.
- 8.13 The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (SI 2023 No. 96) sets two new targets for future concentrations of PM<sub>2.5</sub>. These targets are described in Paragraph 8.57.

### **Environmental Improvement Plan 2023**

- 8.14 Defra published its 25 Year Environment Plan in 2018<sup>6</sup>. The Environment Act<sup>5</sup> requires Defra to review this Plan at least every five years. The Environmental Improvement Plan 2023<sup>7</sup> is the first revision. This outlines the progress made since 2018 and adds detail to the goals defined in the 2018 Plan, including that of achieving clean air.
- 8.15 The Environmental Improvement Plan 2023 sets out the new air quality targets which have been set for concentrations of PM<sub>2.5</sub>. These targets, which are described in more detail in Paragraph 8.57, include the long-term targets in the Statutory Instrument described in Paragraph 8.13, and interim targets to be achieved by 2028.
- 8.16 The 2023 Plan outlines the role of local authorities in helping it meet both its targets and existing commitments. It also outlines the respective roles of industry, agricultural sectors, and the Department for Transport in providing the coordinated action required to meet both its new, and pre-existing targets and commitments.

## **Planning Policy**

### **National Policies**

- 8.17 The National Planning Policy Framework (NPPF)<sup>8</sup> sets out planning policy for England. It states that the purpose of the planning system is to contribute to the achievement of

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<sup>5</sup> Environment Act 2021 (2021).

<sup>6</sup> Defra (2018b) A Green Future: Our 25 Year Plan to Improve the Environment, [Online], Available: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/693158/25-year-environment-plan.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf).

<sup>7</sup> Defra (2023b) Environmental Improvement Plan 2023, [Online], Available: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1133967/environmental-improvement-plan-2023.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1133967/environmental-improvement-plan-2023.pdf)

<sup>8</sup> Ministry of Housing, Communities & Local Government (2023) National Planning Policy Framework, Available: [https://assets.publishing.service.gov.uk/media/65829e99fc07f3000d8d4529/NPPF\\_December\\_2023.pdf](https://assets.publishing.service.gov.uk/media/65829e99fc07f3000d8d4529/NPPF_December_2023.pdf)

sustainable development, and that the planning system has three overarching objectives, one of which (Paragraph 8c) is 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”.*

- 8.18 To prevent unacceptable risks from air pollution, Paragraph 180 of the NPPF states that:

*“Planning policies and decisions should contribute to and enhance the natural and local environment by...preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air quality”.*

- 8.19 Paragraph 191 states:

*“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”.*

- 8.20 More specifically on air quality, Paragraph 192 makes clear that:

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

- 8.21 The NPPF is supported by Planning Practice Guidance (PPG)<sup>9</sup>, which includes guiding principles on how planning can take account of the impacts of new development on air quality. The PPG states that:

*“Defra carries out an annual national assessment of air quality using modelling and monitoring to determine compliance with Limit Values. It is important that the potential impact of new development on air quality is taken into account where the national assessment*

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<sup>9</sup> Ministry of Housing, Communities & Local Government (2019) Planning Practice Guidance, Available: <https://www.gov.uk/government/collections/planning-practice-guidance>.

*indicates that relevant limits have been exceeded or are near the limit, or where the need for emissions reductions has been identified”.*

8.22 Regarding plan-making, the PPG states:

*“It is important to take into account air quality management areas, Clean Air Zones and other areas including sensitive habitats or designated sites of importance for biodiversity where there could be specific requirements or limitations on new development because of air quality”.*

8.23 The role of the local authorities through the LAQM regime is covered, with the PPG stating that a local authority Air Quality Action Plan *“identifies measures that will be introduced in pursuit of the objectives and can have implications for planning”*. In addition, the PPG makes clear that *“Odour and dust can also be a planning concern, for example, because of the effect on local amenity”*.

8.24 Regarding the need for an air quality assessment, the PPG states that:

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

8.25 The PPG sets out the information that may be required in an air quality assessment, making clear that:

*“Assessments need to be proportionate to the nature and scale of development proposed and the potential impacts (taking into account existing air quality conditions), and because of this are likely to be locationally specific”.*

8.26 The PPG also provides guidance on options for mitigating air quality impacts, as well as examples of the types of measures to be considered. It makes clear that:

*“Mitigation options will need to be locationally specific, will depend on the proposed development and need to be proportionate to the likely impact. It is important that local planning authorities work with applicants to consider appropriate mitigation so as to ensure new development is appropriate for its location and unacceptable risks are prevented”.*

### **Local Transport Plan**

8.27 The Proposed Development is located within the administrative boundary of Wokingham Borough Council (WBC), however it lies close to the border with Bracknell Forest Borough Council (BFBC). Due to its proximity, and the potential for development-generated traffic to travel into the Bracknell Forest, the relevant policies from the Local Transport Plans of both WBC and BFBC have been outlined.

8.28 WBC's Third Local Transport Plan<sup>10</sup> was adopted in 2011 and includes two policies that specifically refer to air quality.

8.29 Policy HW10 states that:

*"The Council will continue to develop and implement our Air Quality Action Plan in response to pollution caused by vehicle emissions".*

8.30 In addition, Policy SCDM5 refers to car clubs, stating that the Council will:

*"investigate and support the implementation of car clubs in the Borough" as they can help to "reduce congestion and emissions from transport and improve air quality".*

8.31 WBC are currently in the process of producing a Fourth Local Transport Plan; 'Local Transport Plan 4 Draft Issue'<sup>11</sup> was published in August 2023 outlining the LTP vision developed from existing national, regional and local policies, which led to the development of three themes and associated objectives. Air quality is specifically referred to within the "Reduce Environmental Impacts" theme, with the objective stating:

*"Clean air, removal of all air quality exceedances*

*Outcome: Improved air quality and the removal of all air quality exceedances in the borough.*

- *Reduction of traffic and/or changes to access and speed limits, to reduce pollution and remove air quality exceedances in Wokingham Town Centre...*

- *...Twyford Town Centre improvements – improve air quality, safety for cycling and pedestrians, and reliability of public transport services.*

- *Support the transition to zero emission buses and new vehicles across the borough..."*

8.32 Bracknell Forest Council published a Local Transport Plan 3 Core Strategy and Implementation Plan 2011-2026<sup>12</sup> in 2011. Within the plan, Policy TP20 (Air Quality Management) states that:

*"Where Air Quality Management Areas are declared, the Council will ensure that appropriate measures are identified in an AQMA Action Plan for that area."*

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<sup>10</sup> Wokingham Borough Council (2011) Local Transport Plan 2011-2026, Available: <https://wokingham.moderngov.co.uk/Data/Executive/201103311830/Agenda/Click%20to%20Download%20-%206772495.pdf>

<sup>11</sup> Wokingham Borough Council (2011) Local Transport Plan 4, Available: <https://wokingham.moderngov.co.uk/documents/s68105/Scrutiny%20LTP4%20Draft%20Strategy.pdf>

<sup>12</sup> Bracknell Forest Council (2011) Local Transport Plan 3 Core Strategy and Implementation Plan 2011-2026, Available: <https://www.bracknell-forest.gov.uk/sites/default/files/2021-08/ltp3-core-strategy-and-implementation-plan.pdf>

**Local Plan Policies**

8.33 The Wokingham Borough Core Strategy<sup>13</sup> was adopted in January 2010, and within this there are numerous policies which refer to air quality.

8.34 Policy CP1, relating to sustainable development, states that:

*“Planning permission will be granted for development proposals that:*

*i Maintain or enhance the high quality of the environment;*

*ii Minimise the emission of pollutants into the wider environment;*

*... 11. Demonstrate how they support opportunities for reducing the need to travel, particularly by private car in line with CP6...”*

8.35 Policy CP6 of the Core Strategy focuses on managing travel demand, and in relation to traffic emissions states:

*“Planning permissions will be granted for schemes that:*

*...g) Do not cause highway problems or lead to traffic related environmental problems.”*

8.36 WBC is in the process of updating its Local Plan<sup>14</sup>, which will guide how and where long term growth will take place within the Borough in the years up to 2037-2038. The Updated Local Plan will be completed and adopted between 2023 and 2026. Once finalised and adopted, the Local Plan will supersede the existing policies within the Core Strategy. The draft new Local plan includes the following relevant policies:

8.37 Policy C1: Active and Sustainable Transport and Accessibility

*“The use of active and sustainable transport modes is promoted. Development proposals should contribute to the delivery of an integrated transport system that is safe and accessible to all by implementing the following measures:*

*...h) Facilitate transport innovations and solutions which reduce greenhouse gases and improve air quality.”*

8.38 Policy C5: Technology and Innovation in Transport

*“Technology and innovation in transport which is designed to improve mobility, reduce congestion and improve emissions and air quality will be supported providing it does not compromise highway safety and other amenity and environmental concerns.*

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<sup>13</sup> Wokingham Borough Council (2010) Adopted Core Strategy Development Plan Document, Available: <https://www.wokingham.gov.uk/sites/wokingham/files/2023-06/Final%20adopted%20Core%20Strategy%20inc.%20cover.pdf>

<sup>14</sup> Wokingham Borough Council (2020) Right Homes, Right Places: Draft Local Plan Public Consultation, Available: [https://www.wokingham.gov.uk/sites/wokingham/files/2023-06/LPU%20Draft%20Plan%20Consultation%20-%20Jan%202020\\_0.pdf](https://www.wokingham.gov.uk/sites/wokingham/files/2023-06/LPU%20Draft%20Plan%20Consultation%20-%20Jan%202020_0.pdf)

*Electric vehicle charging*

*a) New developments must provide and retain electric vehicle charging facilities in accordance with adopted standards.*

*...c) Major development proposals will be required to submit an Electric Vehicle Charging Strategy to demonstrate that the provision of electric vehicle charging facilities in developments are in a safe, convenient and accessible location."*

## 8.39 Policy HC5: Environmental Protection

*"Development proposals will only be supported where it can be demonstrated that individually, or cumulatively in combination with other schemes, they do not have an unacceptable impact, either during the construction phase, or when completed on:*

*i Human health, wellbeing or safety,*

*ii Residential amenity,*

*iii Environmental quality or landscapes,*

*iv Other sensitive receptors."*

## 8.40 Policy HC6: Air Pollution and Air Quality

*"Prevailing air quality and potential impacts upon air quality arising from airborne emissions, dust and odour associated with the construction and operation of a proposal (including vehicular traffic) will be considered when determining planning applications.*

*Air Quality Assessments can demonstrate how prevailing air quality and potential impacts upon air quality have been considered and how air quality will be maintained at an acceptable standard through avoidance and mitigation measures. Development proposals are likely to require an Air Quality Assessment where:*

*i The site is located within an Air Quality Management Area (AQMA);*

*ii The site is within proximity to a source of air pollution which could present a significant risk to human health; or*

*iii The type of development would mean its occupiers would be particularly sensitive to air pollution, such as schools, health care establishments or housing for older people."*

8.41 The BFBC's development is guided by the Bracknell Local Plan (March 2024) and South East Plan Policy NRM6: Thames Basin Heaths Special Protection Area (Saved Policy). There are two relevant policies within the Bracknell Forest Local Plan.

8.42 Policy LP 58, Pollution and hazards, states:

*"1. Development proposals should:*

*i seek to minimise and reduce pollution and hazards, to mitigate any adverse impacts and where possible provide improvements;*

*ii neither individually nor cumulatively have an adverse effect on human health, wellbeing and safety, residential amenity, the quality of the natural environment or landscape, either during the construction phase or when completed; and,*

*iii avoid locating sensitive uses in areas with existing pollution or hazards or in areas that are likely to have them in the future.”*

8.43 Policy LP 31, Designated nature conservation and geological sites, states:

*“1. Any planning application affecting designated nature conservation or geological site must ensure that these sites are safeguarded and enhanced having regard to the national or local status and designation of the site as set out below:*

*Development proposals on or affecting:*

*i internationally designated Habitats sites, including candidate sites, will not be permitted unless it can be clearly demonstrated through an Habitats Regulation Assessment that there will be no significant adverse effect on their integrity. Developers will be required to provide all information that the Council may reasonably require for the purpose of the assessment. For larger residential developments this may include an assessment of the likely significant air quality effects on habitats sites;...”*

### **Building Standards**

8.44 Part F(1) of Schedule 1 of the Building Regulations 2010 as amended June 2022<sup>15</sup> places a duty on building owners, or those responsible for relevant building work<sup>16</sup>, to ensure adequate ventilation is provided to building occupants.

8.45 Approved Document F<sup>17</sup>, which accompanies the Building Regulations, explains that care should be taken to minimise entry of external air pollutants. Specific steps should be taken to manage ventilation intakes where the building is near to a significant source of emissions, or if local ambient concentrations exceed values set in the Air Quality Standards Regulations 2010 (see Paragraph 8.62, later). These steps include maximising the distance between emission source and air intake, considering likely dispersion patterns, and considering the timing of pollution releases when designing the ventilation system.

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<sup>15</sup> Ministry of Housing, Communities & Local Government (2022) The Building Regulations 2010 Schedule 1, 201022141st edition, Available: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/899279/Single\\_stitched\\_together\\_pdf\\_of\\_all\\_ADs\\_Jun20\\_.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/899279/Single_stitched_together_pdf_of_all_ADs_Jun20_.pdf).

<sup>16</sup> Building work is a legal term for work covered by the Building Regulations. With limited exemptions, the Regulations apply to all significant building work, including erecting or extending a building.

<sup>17</sup> HM Government (2021a) Ventilation - Approved Document F, [Online], Available: <https://www.gov.uk/government/publications/ventilation-approved-document-f>.

- 8.46 Part S(1) of Schedule 1, and Regulation 44D, of the Building Regulations 2010<sup>15</sup> define a requirement for the provision of infrastructure for charging electric vehicles. Precise requirements are explained further within Approved Document S<sup>18</sup> and depend on the overall number of parking spaces provided and the average financial cost of installation.
- 8.47 Compliance with the Building Regulations is not required for planning approval, but it is assumed that the Regulations will be complied with in the completed development.

### **Air Quality Action Plans**

#### *National Air Quality Plan*

- 8.48 Defra has produced an Air Quality Plan to tackle roadside NO<sub>2</sub> concentrations in the UK<sup>19</sup>; a supplement to the 2017 Plan<sup>20</sup> was published in October 2018 and sets out the steps Government is taking in relation to a further 33 local authorities where shorter-term exceedances of the limit value were identified. Alongside a package of national measures, the 2017 Plan and the 2018 Supplement require those identified English Local Authorities (or the GLA in the case of London Authorities) to produce local action plans and/or feasibility studies. These plans and feasibility studies must have regard to measures to achieve the statutory limit values within the shortest possible time, which may include the implementation of a Clean Air Zone (CAZ). There is currently no straightforward way to take account of the effects of the 2017 Plan or 2018 Supplement in the modelling undertaken for this assessment; however, consideration has been given to whether there is currently, or is likely to be in the future, a limit value exceedance in the vicinity of the Proposed Development. This assessment has principally been carried out in relation to the air quality objectives, rather than the limit values that are the focus of the Air Quality Plan.

#### *Local Air Quality Action Plan*

- 8.49 WBC's Air Quality Action Plan<sup>21</sup> sets out the actions WBC will take to improve air quality between 2017-2026. Actions are considered under eight broad categories: alternatives to private vehicle use; freight and delivery management; policy guidance and development control; promoting low emission transport; promoting travel alternatives; public information; transport planning and infrastructure; and traffic management.

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<sup>18</sup> HM Government (2021b) Infrastructure for the charging of electric vehicles - Approved Document S, [Online], Available: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1057375/AD\\_S.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1057375/AD_S.pdf).

<sup>19</sup> Defra (2017) Air quality plan for nitrogen dioxide (NO<sub>2</sub>) in the UK, Available: <https://www.gov.uk/government/publications/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2017>.

<sup>20</sup> Defra (2018) Supplement to the UK plan for tackling roadside nitrogen dioxide concentrations, Available: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/746100/air-quality-no2-plan-supplement.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/746100/air-quality-no2-plan-supplement.pdf).

<sup>21</sup> Wokingham Borough Council (2017) Air Quality Action Plan, Available: [https://www.westberks.gov.uk/media/45385/Air-Quality-Air-Quality-Action-Plan-Wokingham-2017/pdf/Joint\\_AQAP\\_2017\\_FINAL.PDF?m=637032689017370000](https://www.westberks.gov.uk/media/45385/Air-Quality-Air-Quality-Action-Plan-Wokingham-2017/pdf/Joint_AQAP_2017_FINAL.PDF?m=637032689017370000)

- 8.50 BFBC's Air Quality Action Plan<sup>22</sup> outlines the actions taken and planned to improve air quality, drawing on policies from the LTP3.

### Assessment Methodology and Significance Criteria

#### Defining the Baseline

##### *Current Baseline Conditions*

- 8.51 Existing sources of emissions and baseline air quality conditions within the study area have been defined using a number of approaches:
- industrial and waste management sources that may affect the area have been identified using Defra's Pollutant Release and Transfer Register<sup>23</sup>;
  - local sources have been identified through examination of the Council's Air Quality Review and Assessment reports;
  - information on existing air quality has been obtained by collating the results of monitoring carried out by the local authority. This covers both the study area and nearby sites, the latter being used to provide context for the assessment;
  - background concentrations have been defined using Defra's 2018-based background maps<sup>24</sup>. These cover the whole of the UK on a 1x1 km grid.; and
  - whether or not there are any exceedances of the annual mean limit value for NO<sub>2</sub> in the study area has been identified using the maps of roadside concentrations published by Defra<sup>25</sup> <sup>26</sup>. These are the maps used by the UK Government, together with the results from national Automatic Urban and Rural Network (AURN) monitoring sites that operate to the required data quality standards, to identify and report exceedances of the limit value. The national maps of roadside PM<sub>10</sub> and PM<sub>2.5</sub> concentrations, which are available for the years 2009 to 2019, show no exceedances of the limit values anywhere in the UK in 2019.

##### *Future Baseline Conditions*

- 8.52 Future baseline concentrations have been predicted using the ADMS-Roads dispersion model for the first year of operation of the Proposed Development (as 2026). Details of the model inputs, assumptions and the verification are provided in **Appendix 8.5**, together with the method used to derive future year background concentrations. Where assumptions have been made, a realistic worst-case approach has been adopted.

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<sup>22</sup> Bracknell Forest Council (2013) Air Quality Action Plan, Available: <https://democratic.bracknell-forest.gov.uk/documents/s69047/140106%20McCracken%20-%20Air%20Quality%20Action%20Plan%20Annex%201.pdf>

<sup>23</sup> Defra (2023d) UK Pollutant Release and Transfer Register, Available: <http://prtr.defra.gov.uk/map-search>.

<sup>24</sup> Defra (2023c) Local Air Quality Management (LAQM) Support Website, Available: <http://laqm.defra.gov.uk/>.

<sup>25</sup> Defra (2020) 2020 NO<sub>2</sub> projections data (2018 reference year), Available: <https://uk-air.defra.gov.uk/library/no2ten/2020-no2-pm-projections-from-2018-data>.

<sup>26</sup> Defra (2023e) UK Ambient Air Quality Interactive Map, Available: <https://uk-air.defra.gov.uk/data/gis-mapping>.

## Impact Assessment Methodology

### Assessment Criteria

#### Health Criteria

- 8.53 The Government has established a set of air quality standards and objectives to protect human health. The 'standards' are set as concentrations below which effects are unlikely even in sensitive population groups, or below which risks to public health would be exceedingly small. They are based purely upon the scientific and medical evidence of the effects of an individual pollutant. The 'objectives' set out the extent to which the Government expects the standards to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility and timescale. The objectives for use by local authorities are prescribed within the Air Quality (England) Regulations 2000<sup>27</sup> and the Air Quality (England) (Amendment) Regulations 2002<sup>28</sup>.
- 8.54 The UK-wide objectives for NO<sub>2</sub> and PM<sub>10</sub> were to have been achieved by 2005 and 2004 respectively, and continue to apply in all future years thereafter. Measurements across the UK have shown that the 1-hour NO<sub>2</sub> objective is unlikely to be exceeded at roadside locations where the annual mean concentration is below 60 µg/m<sup>3</sup><sup>29</sup>. Therefore, 1-hour NO<sub>2</sub> concentrations will only be considered if the annual mean concentration is above this level. Measurements have also shown that the 24-hour mean PM<sub>10</sub> objective could be exceeded at roadside locations where the annual mean concentration is above 32 µg/m<sup>3</sup><sup>29</sup>. The predicted annual mean PM<sub>10</sub> concentrations are thus used as a proxy to determine the likelihood of an exceedance of the 24-hour mean PM<sub>10</sub> objective. Where predicted annual mean concentrations are below 32 µg/m<sup>3</sup> it is unlikely that the 24-hour mean objective will be exceeded.
- 8.55 The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective. Defra explains where these objectives will apply in its Local Air Quality Management Technical Guidance (LAQM.TG22). The annual mean objectives for NO<sub>2</sub> and PM<sub>10</sub> are considered to apply at the façades of residential properties, schools, hospitals etc.; they do not apply at hotels. The 24-hour mean objective for PM<sub>10</sub> is considered to apply at the same locations as the annual mean objective, as well as in gardens of residential properties and at hotels. The 1-hour mean objective for NO<sub>2</sub> applies wherever members of the public might regularly spend 1-hour or more, including outdoor eating locations and pavements of busy shopping streets.
- 8.56 For PM<sub>2.5</sub>, the objective set by Defra for local authorities is to work toward reducing concentrations without setting any specific numerical value. In the absence of a numerical

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<sup>27</sup> The Air Quality (England) Regulations, 2000, Statutory Instrument 928 (2000), HMSO, Available: <http://www.legislation.gov.uk/ukxi/2000/928/contents/made>.

<sup>28</sup> The Air Quality (England) (Amendment) Regulations, 2002, Statutory Instrument 3043 (2002), HMSO, Available: <https://www.legislation.gov.uk/ukxi/2002/3043/contents/made>.

<sup>29</sup> Defra (2022) Review & Assessment: Technical Guidance LAQM.TG22 August 2022 Version, [Online], Available: <https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf>.

objective, it is convention to assess local air quality impacts against the limit value (see Paragraph 8.62), originally set at 25  $\mu\text{g}/\text{m}^3$  and currently set at 20  $\mu\text{g}/\text{m}^3$ .

- 8.57 Defra has also recently set two new targets, and two new interim targets, for  $\text{PM}_{2.5}$  concentrations in England. One set of targets focuses on absolute concentrations. The long-term target is to achieve an annual mean  $\text{PM}_{2.5}$  concentration of 10  $\mu\text{g}/\text{m}^3$  by the end of 2040, with the interim target being a value of 12  $\mu\text{g}/\text{m}^3$  by the start of 2028<sup>30</sup>. The second set of targets relate to reducing overall population exposure to  $\text{PM}_{2.5}$ . By the end of 2040, overall population exposure to  $\text{PM}_{2.5}$  should be reduced by 35% compared with 2018 levels, with the interim target being a reduction of 22% by the start of 2028.
- 8.58 Defra will assess compliance with the population exposure targets by averaging concentrations measured at its own background monitoring stations. This will not consider small changes over time to precisely where people are exposed (such as would relate to exposure introduced by a new development). Furthermore, as explained in Paragraph 8.16, all four new targets provide metrics against which central Government can assess its own progress. While local authorities have an important role delivering the required improvements, these are expected to relate to controlling emissions and not to directly assessing  $\text{PM}_{2.5}$  concentrations against the targets.
- 8.59 In March 2023, the Department for Levelling Up, Housing and Communities<sup>31</sup> explained that the new  $\text{PM}_{2.5}$  targets will:
- “need to be integrated into the planning system, and in setting out planning guidance for local authorities and businesses, we will consider the specific characteristics of  $\text{PM}_{2.5}$ . The guidance will be forthcoming in due course, until then we expect local authorities to continue to assess local air quality impacts in accordance with existing guidance.”*
- 8.60 Defra has also provided advice<sup>32</sup> which explains that there is no current requirement to consider the new  $\text{PM}_{2.5}$  targets in planning decisions and that guidance to local planning authorities will be forthcoming before this position changes. In the future, when planning decisions do need to consider the new targets, the expectation is that this will focus on reducing emissions from new development rather than there being a direct requirement for planning-related air quality assessments to predict  $\text{PM}_{2.5}$  concentrations.
- 8.61 For the time being, therefore, no assessment is required, and indeed no robust assessment is possible, in relation to the new  $\text{PM}_{2.5}$  targets and they are not considered further.

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<sup>30</sup> Meaning that it will be assessed using measurements from 2027. The 2040 target will be assessed using measurements from 2040. National targets are assessed against concentrations expressed to the nearest whole number, for example a concentration of 10.4  $\mu\text{g}/\text{m}^3$  would not exceed the 10  $\mu\text{g}/\text{m}^3$  target.

<sup>31</sup> Department for Levelling Up, Housing and Communities (DLUHC) (2023) Planning Newsletter, Available: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1140170/03\\_Chief\\_Planners\\_Newsletter\\_March\\_2023.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1140170/03_Chief_Planners_Newsletter_March_2023.pdf)

<sup>32</sup> Defra (2023h) Integrating the Environment Act air quality targets into the planning system, 102023rd edition.

- 8.62 EU Directive 2008/50/EC<sup>33</sup> sets limit values for NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>, and is implemented in UK law through the Air Quality Standards Regulations<sup>34 35</sup>. The limit values for NO<sub>2</sub> and PM<sub>10</sub> are the same numerical concentrations as the UK objectives, but achievement of the limit values is a national obligation rather than a local one and concentrations are reported to the nearest whole number. In the UK, only monitoring and modelling carried out by UK Central Government meets the specification required to assess compliance with the limit values. Central Government does not normally recognise local authority monitoring or local modelling studies when determining the likelihood of the limit values being exceeded, unless such studies have been audited and approved by Defra and DfT's Joint Air Quality Unit (JAQU).
- 8.63 The relevant air quality criteria for this assessment are provided in Error! Reference source not found..

**Table 8.1** – Air Quality Criteria for NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>

| Pollutant         | Time Period  | Value                                                              |
|-------------------|--------------|--------------------------------------------------------------------|
| NO <sub>2</sub>   | 1-hour Mean  | 200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year |
|                   | Annual Mean  | 40 µg/m <sup>3</sup>                                               |
| PM <sub>10</sub>  | 24-hour Mean | 50 µg/m <sup>3</sup> not to be exceeded more than 35 times a year  |
|                   | Annual Mean  | 40 µg/m <sup>3</sup> <sup>a</sup>                                  |
| PM <sub>2.5</sub> | Annual Mean  | 20 µg/m <sup>3</sup> <sup>b</sup>                                  |

<sup>a</sup> A proxy value of 32 µg/m<sup>3</sup> as an annual mean is used in this assessment to assess the likelihood of the 24-hour mean PM<sub>10</sub> objective being exceeded. Measurements have shown that, above this concentration, exceedances of the 24-hour mean PM<sub>10</sub> objective are possible.

<sup>b</sup> There is no numerical PM<sub>2.5</sub> objective for local authorities. Convention is to assess against the UK limit value which is currently 20 µg/m<sup>3</sup>.

#### Construction Dust Criteria

- 8.64 There are no formal assessment criteria for dust. In the absence of formal criteria, the approach developed by the Institute of Air Quality Management (IAQM)<sup>36 37</sup> has been used. Full details of this approach are provided in **Appendix 8.2**.

<sup>33</sup> The European Parliament and the Council of the European Union (2008) Directive 2008/50/EC of the European Parliament and of the Council, Available: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0050..>

<sup>34</sup> As amended through The Air Quality Standards (Amendment) Regulations 2016 and The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020.

<sup>35</sup> The Air Quality Standards Regulations 2010 Statutory Instrument 1001 (2010), HMSO, Available: [http://www.legislation.gov.uk/ukSI/2010/1001/pdfs/ukSI\\_20101001\\_en.pdf](http://www.legislation.gov.uk/ukSI/2010/1001/pdfs/ukSI_20101001_en.pdf).

<sup>36</sup> The IAQM is the professional body for air quality practitioners in the UK.

<sup>37</sup> IAQM (2016) Guidance on the Assessment of Dust from Demolition and Construction v1.1, Available: <http://iaqm.co.uk/guidance/>.

*Road Traffic Screening Criteria*

- 8.65 EPUK and the IAQM recommend a two-stage screening approach<sup>38</sup> to determine whether emissions from road traffic generated by a development have the potential for significant air quality impacts. The approach, as described in **Appendix 8.3**, first considers the size and parking provision of a development; if the development is residential and is for fewer than ten homes or covers less than 0.5 ha, or is non-residential and will provide less than 1,000 m<sup>2</sup> of floor space or cover a site area of less than 1 ha, and will provide ten or fewer parking spaces, then there is no need to progress to a detailed assessment.
- 8.66 The second stage then compares the changes in vehicle flows on local roads that a development will lead to against specified screening criteria. The screening thresholds (described in full in **Appendix 8.3**) inside an AQMA are a change in flows of more than 25 heavy duty vehicles (HDVs) or 100 light duty vehicles (LDVs) per day; outside of an AQMA the thresholds are 100 HDVs or 500 LDVs. Where these criteria are exceeded, a detailed assessment is likely to be required, although the guidance advises that *“the criteria provided are precautionary and should be treated as indicative”*, and *“it may be appropriate to amend them on the basis of professional judgement”*.
- 8.67 While these screening criteria are specifically intended to act as a trigger for a detailed assessment, they can also sometimes be used to identify the extent of the road network that requires assessment. Where the change in traffic on a given road link is less than the relevant screening threshold, it is unlikely that a significant impact would occur, and these links can be disregarded unless there are additional development-related emissions affecting receptors along the link.

**Demolition and Construction Impacts***Construction Dust*

- 8.68 The construction dust assessment considers the potential for impacts within 350 m of the Site boundary, or within 50 m of roads used by construction vehicles. The assessment methodology is that provided by IAQM<sup>37</sup>. This follows a sequence of steps. Step 1 is a basic screening stage, to determine whether the more detailed assessment provided in Step 2 is required. Step 2a determines the potential for dust to be raised from on-site works and by vehicles leaving the Site. Step 2b defines the sensitivity of the area to any dust that may be raised. Step 2c combines the information from Steps 2a and 2b to determine the risk of dust impacts without appropriate mitigation. Step 3 uses this information to determine the appropriate level of mitigation required to ensure that there should be no significant impacts. **Appendix 8.2** explains the approach in more detail.

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<sup>38</sup> The IAQM issued revised guidance in August 2023, however the guidance includes a number of errors and inconsistencies. Based on discussions with the IAQM, a corrected version of the guidance is anticipated shortly. To avoid being subject to these errors, this assessment has been based on the 2016 version.

*Construction Traffic*

- 8.69 EPUK & IAQM consider that a detailed assessment is required where a development leads to an increase in HDV of more than 25 Annual Average Daily Traffic (AADT) in an AQMA, or 100 Annual Average Daily Traffic (AADT) outside an AQMA. Typical traffic volumes generated by the Site during the construction works will be considerably lower than the operational traffic generation, and below the relevant screening criteria. It is, therefore, not considered necessary to assess the impacts of traffic emissions during the construction phase and it can be concluded that the Proposed Development will not have a significant impact on local roadside air quality as a result of construction traffic emissions.

**Road Traffic Impacts***Screening*

- 8.70 The first step in considering the road traffic impacts of the Proposed Development has been to screen the development and its traffic generation against the criteria set out in the EPUK/IAQM guidance<sup>39</sup>, as described in Paragraph 8.65 and detailed further in **Appendix 8.3**. Where impacts can be screened out there is no need to progress to a more detailed assessment. The following sections describe the approach to dispersion modelling of road traffic emissions, which has been required for this project.

*Modelling Methodology*

- 8.71 Concentrations have been predicted using the ADMS-Roads dispersion model, with vehicle emissions derived using Defra's Emission Factor Toolkit (EFT) (v12.0)<sup>39</sup>. Details of the model inputs and the model verification are provided in **Appendix 8.5**.

*Assessment Scenarios*

- 8.72 NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations have been predicted for the following scenarios:
- the proposed year of first occupation (2026) without the Proposed Development, but including traffic associated with relevant Cumulative Schemes; and
  - the proposed year of first occupation (2026) with all phases of the Proposed Development, and including traffic associated with relevant Cumulative Schemes.

**Impact Description**

- 8.73 The approach developed jointly by EPUK and the IAQM<sup>38</sup> has been used in describing the modelled impacts. The approach identifies impacts at individual receptors based on the percentage change in concentrations relative to the relevant air quality objective, rounded to the nearest whole number, and the absolute concentration relative to the objective. Error! Reference source not found. sets out the method for determining the impact descriptor for annual mean concentrations at individual receptors, having been adapted from the table presented in the guidance document. For the assessment criterion the term Air Quality Assessment Level or AQAL has been adopted, as it covers all pollutants, i.e. those with and

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<sup>39</sup> Defra (2023c) Local Air Quality Management (LAQM) Support Website, Available: <http://laqm.defra.gov.uk/>.

without formal standards. Typically, as is the case for this assessment, the AQAL will be the air quality objective value. Note that impacts may be adverse or beneficial, depending on whether the change in concentration is positive or negative.

**Table 8.2** – Air Quality Impact Descriptors for Individual Receptors for All Pollutants <sup>a</sup>

| Long-Term Average Concentration At Receptor In Assessment Year <sup>b</sup> | Change in concentration relative to AQAL <sup>c</sup> |            |            |          |          |
|-----------------------------------------------------------------------------|-------------------------------------------------------|------------|------------|----------|----------|
|                                                                             | 0%                                                    | 1%         | 2-5%       | 6-10%    | >10%     |
| 75% or less of AQAL                                                         | Negligible                                            | Negligible | Negligible | Minor    | Moderate |
| 76-94% of AQAL                                                              | Negligible                                            | Negligible | Minor      | Moderate | Moderate |
| 95-102% of AQAL                                                             | Negligible                                            | Minor      | Moderate   | Moderate | Major    |
| 103-109% of AQAL                                                            | Negligible                                            | Moderate   | Moderate   | Major    | Major    |
| 110% or more of AQAL                                                        | Negligible                                            | Moderate   | Major      | Major    | Major    |

<sup>a</sup> Values are rounded to the nearest whole number.

<sup>b</sup> This is the “Without Scheme” concentration where there is a decrease in pollutant concentration and the “With Scheme” concentration where there is an increase.

<sup>c</sup> AQAL = Air Quality Assessment Level, which may be an air quality objective, EU limit or target value, GLA target or an Environment Agency ‘Environmental Assessment Level (EAL)’.

<sup>d</sup> Minor and Major are used as standard EIA terminology, and correspond to Slight and Substantial respectively in relevant guidance<sup>14</sup>

## Uncertainty

- 8.74 There are many components that contribute to the uncertainty of modelling predictions. The road traffic emissions dispersion model used in this assessment is dependent upon the traffic data that have been input, which will have inherent uncertainties associated with them. There are then additional uncertainties, as models are required to simplify real-world conditions into a series of algorithms.
- 8.75 An important stage in the process is model verification, which involves comparing the model output with measured concentrations (see **Appendix 8.5**). Because the model has been verified and adjusted, there can be reasonable confidence in the prediction of base year (2022) concentrations.
- 8.76 Predicting pollutant concentrations in a future year will always be subject to greater uncertainty. For obvious reasons, the model cannot be verified in the future, and it is necessary to rely on a series of projections provided by DfT and Defra as to what will happen to traffic volumes, background pollutant concentrations and vehicle emissions. Historic versions of Defra’s EFT tended to over-state emissions reductions into the future. However,

analyses of the most recent versions of Defra's EFT carried out by AQC<sup>40 41</sup> suggest that, on balance, these versions are unlikely to over-state the rate at which NOx emissions decline in the future at an 'average' site in the UK. In practice, the balance of evidence suggests that NOx concentrations are most likely to decline more quickly in the future, on average, than predicted by previous versions of the EFT, especially against a base year of 2016 or later. Whilst such an analysis has not been undertaken for EFT v12.0, it is considered that using EFT v12.0 for future-year forecasts in this report will provide a robust assessment, given that the model has been verified against measurements made in 2022.

### Site Suitability

- 8.77 Site suitability has been determined using dispersion modelling, applying the same modelling methodology for road traffic, as described above.

### Assessment of Significance

#### Construction Dust Significance

- 8.78 Guidance from IAQM<sup>37</sup> is that, with appropriate mitigation in place, the effects of construction dust will be negligible. The assessment thus focuses on determining the appropriate level of mitigation so as to ensure that effects will normally be negligible.

#### Operational Significance

- 8.79 There is no official guidance in the UK in relation to development control on how to assess the significance of air quality impacts. The approach developed jointly by EPUK and IAQM<sup>38</sup> has therefore been used. The overall significance of the air quality impacts is determined using professional judgement, taking account of the impact descriptors; the experience of the consultants preparing the Chapter is set out in **Appendix 8.4**. Full details of the EPUK/IAQM approach are provided in **Appendix 8.3**.
- 8.80 It is important to differentiate between the terms impact and effect with respect to the assessment of air quality. The term impact is used to describe a change in pollutant concentration at a specific location. The term effect is used to describe an environmental response resulting from an impact, or series of impacts. Within this Chapter, the air quality assessment has used published guidance and criteria described in the following sections to determine the likely air quality impacts at a number of sensitive locations. The potential significance of effects has then been determined by professional judgement, based on the frequency, duration and magnitude of predicted impacts and their relationship to appropriate air quality objectives.

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<sup>40</sup> AQC (2020) Performance of Defra's Emission Factor Toolkit 2013-2019, Available: <https://www.aqconsultants.co.uk/CMSPages/GetFile.aspx?guid=7fba769d-f1df-49c4-a2e7-f3dd6f316ec1>.

<sup>41</sup> AQC (2020) Comparison of EFT v10 with EFT v9, Available: <https://www.aqconsultants.co.uk/CMSPages/GetFile.aspx?guid=9d6b50e1-3897-46cf-90f1-3669c6814f1d>.

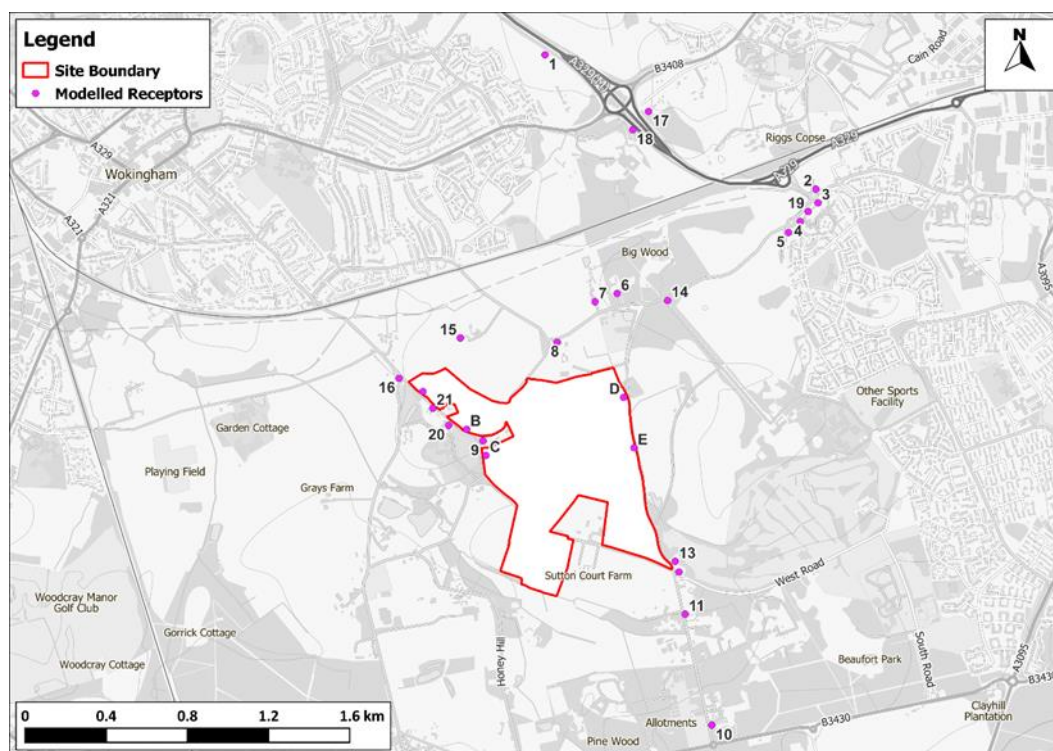
### Receptors

- 8.81 Concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> have been predicted at a number of locations both within, and close to, the Proposed Development. Receptors have been identified to represent a range of exposure, including worst-case locations (these being at the façades of the residential properties closest to the sources). When selecting receptors, particular attention has been paid to assessing impacts close to junctions, where traffic may become congested and where there is a combined effect of several road links, and close to those roads where the traffic increases as a result of the Proposed Development will be greatest.
- 8.82 Nineteen existing residential properties and two existing schools have been identified as receptors for the assessment. Five additional receptor locations have been identified within the new development, which represent exposure to existing sources. All identified receptors are of high sensitivity. These locations are described in Error! Reference source not found. and shown in Error! Reference source not found.
- 8.83 In addition, baseline concentrations have been modelled at three BFBC diffusion tubes 135, 58x/y/zC, and 91x/y/z, located along the B3348 within Crowthorne, in order to verify the model outputs (see **Appendix 8.5** for verification method).

**Table 8.3** – Description of Receptor Locations

| Receptor                   | Type        | X coordinate | Y coordinate | Heights Modelled (m)<br><sup>a</sup> |
|----------------------------|-------------|--------------|--------------|--------------------------------------|
| <b>Existing properties</b> |             |              |              |                                      |
| <b>1</b>                   | Residential | 483256       | 169149       | 1.5                                  |
| <b>2</b>                   | Residential | 484590       | 168489       | 1.5                                  |
| <b>3</b>                   | Residential | 484600       | 168421       | 1.5                                  |
| <b>4</b>                   | Residential | 484513       | 168329       | 1.5                                  |
| <b>5</b>                   | Residential | 484455       | 168275       | 1.5                                  |
| <b>6</b>                   | Residential | 483611       | 167975       | 1.5                                  |
| <b>7</b>                   | Residential | 483502       | 167934       | 1.5                                  |
| <b>8</b>                   | Residential | 483314       | 167735       | 1.5                                  |
| <b>9</b>                   | Residential | 482950       | 167250       | 1.5                                  |
| <b>10</b>                  | Residential | 484077       | 165851       | 1.5                                  |
| <b>11</b>                  | Residential | 483946       | 166397       | 1.5                                  |
| <b>12</b>                  | Residential | 483915       | 166604       | 1.5                                  |
| <b>13</b>                  | Residential | 483897       | 166657       | 1.5                                  |
| <b>14</b>                  | Residential | 483857       | 167938       | 1.5                                  |
| <b>15</b>                  | Residential | 482838       | 167756       | 1.5                                  |
| <b>16</b>                  | Residential | 482536       | 167558       | 1.5                                  |
| <b>18</b>                  | School      | 483766       | 168871       | 1.5                                  |
| <b>19</b>                  | Residential | 483688       | 168780       | 1.5                                  |
| <b>20</b>                  | School      | 484552       | 168378       | 1.5                                  |
| <b>21</b>                  | Residential | 482781       | 167326       | 1.5                                  |
| <b>New properties</b>      |             |              |              |                                      |
| <b>A</b>                   | Residential | 482654       | 167493       | 1.5                                  |
| <b>B</b>                   | Residential | 482869       | 167306       | 1.5                                  |
| <b>C</b>                   | Residential | 482964       | 167179       | 1.5                                  |
| <b>D</b>                   | Residential | 483643       | 167464       | 1.5                                  |
| <b>E</b>                   | Residential | 483694       | 167215       | 1.5                                  |

<sup>a</sup> A height of 1.5 m is used to represent ground-floor level exposure.

**Figure 8.2 – Receptor Locations**

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- 8.84 Selected receptors may be representative of air quality conditions at a number of properties; consideration has been given to how many sensitive locations each modelled receptor represents when considering the impacts of the Proposed Development and the overall significance of effects.
- 8.85 The construction dust risk assessment approach does not require specific receptors to be identified; instead, the numbers of different types of receptors within given distance bands are counted. These receptor counts are provided in Section 6.

### Baseline Conditions

#### Relevant Features

- 8.86 The setting of the Proposed Development has been outlined in **Chapter 3**. The Proposed Development is located near to three AQMAs (in Wokingham, Bracknell and Crowthorne) declared for exceedances in the NO<sub>2</sub> annual mean objectives, as highlighted in Error! Reference source not found..

#### Industrial Sources

- 8.87 No significant industrial or waste management sources have been identified that are likely to affect the Proposed Development, in terms of air quality.

### Local Air Quality Monitoring

- 8.88 WBC operates two automatic monitoring stations within its area, the closest of which is roadside monitor 'CM2' located approximately 1.5km to the northwest of the Site. WBC also operates a number of NO<sub>2</sub> monitoring sites using diffusion tubes prepared and analysed by Gradko (using the 20% TEA in acetone method).
- 8.89 Annual mean results for the years 2018 to 2022 are summarised in Error! Reference source not found., while results relating to the 1-hour mean objective are summarised in Error! Reference source not found.. All monitoring locations are shown in Error! Reference source not found.. Monitoring locations within Wokingham's AQMA are shown in Error! Reference source not found.. The monitoring data have been taken from WBC's 2023 Annual Status Report<sup>42</sup>.

**Table 8.4** – Summary of Annual Mean NO<sub>2</sub> Monitoring carried out by Wokingham (2018-2022) (µg/m<sup>3</sup>)

| Site No.                      | Site Type | Location                    | 2018        | 2019        | 2020 | 2021 | 2022 |
|-------------------------------|-----------|-----------------------------|-------------|-------------|------|------|------|
| <b>Wokingham AQMA</b>         |           |                             |             |             |      |      |      |
| <b>CM2</b>                    | Roadside  | Peach Street Wokingham      | 32.9        | 33.0        | 22.3 | 24.2 | 27.1 |
| <b>WOK52</b>                  | Roadside  | Westende Flats, Peach St    | 26.0        | 30.3        | 21.4 | 22.8 | 23.2 |
| <b>WOK838</b>                 | Roadside  | Giggling Spring, Shute End  | <b>41.0</b> | <b>41.8</b> | 28.6 | 36.5 | 37.2 |
| <b>WOK844</b>                 | Roadside  | Buckingham Court            | 36.0        | 38.6        | 25.9 | 31.2 | 31.1 |
| <b>WOK857</b>                 | Roadside  | Rectory Rd, Wokingham       | 39.3        | 39.9        | 29.0 | 31.9 | 32.4 |
| <b>WOK867</b>                 | Roadside  | 21 Denmark St, Wok          | 23.6        | 23.7        | 13.4 | 18.1 | 19.2 |
| <b>WOK872</b>                 | Roadside  | Registry Office, Reading Rd | 33.0        | 32.4        | 23.0 | 25.5 | 26.4 |
| <b>WOK873</b>                 | Roadside  | 27 The Terrace              | 25.0        | 24.7        | 17.3 | 19.3 | 19.4 |
| <b>WOK874</b>                 | Roadside  | Broad St, Wokingham         | 25.0        | 28.9        | 20.0 | 21.7 | 22.4 |
| <b>WOK879-881</b>             | Roadside  | Peach Street CM Unit 3      | 33.0        | 22.2        | 24.0 | 27.6 | 28.0 |
| <b>Wokingham Outside AQMA</b> |           |                             |             |             |      |      |      |
| <b>WOK803</b>                 | Roadside  | 3 Wellington Road           | 27.0        | 30.7        | 19.5 | 22.0 | 18.4 |

<sup>42</sup> Wokingham Borough Council (2023) 2023 Air Quality Annual Status Report (ASR), Available: <https://publicprotectionpartnership.org.uk/media/2878/asr-2023-wok.pdf>

| Site No.              | Site Type | Location                           | 2018      | 2019 | 2020 | 2021 | 2022 |
|-----------------------|-----------|------------------------------------|-----------|------|------|------|------|
| <b>Wokingham AQMA</b> |           |                                    |           |      |      |      |      |
| <b>WOK817</b>         | Roadside  | London Rd (298)                    | 24.0      | 21.6 | 14.0 | 15.3 | 15.5 |
| <b>WOK805</b>         | Roadside  | 18 Barkham Road                    | 24.0      | 25.0 | 17.1 | 18.3 | 18.5 |
| <b>WOK866</b>         | Roadside  | 58 Denmark Street                  | 24.0      | 25.3 | 15.9 | 17.7 | 18.9 |
| <b>WOK861</b>         | Roadside  | Mill Lane                          | 26.3      | 23.2 | 14.9 | 14.8 | 17.8 |
| <b>WOK882</b>         | Roadside  | Whitely Wood Lane                  | 33.4      | 32.6 | 20.7 | 23.8 | 24.9 |
| <b>WOK883</b>         | Roadside  | Evendons Pri Sch                   | 27.0      | 29.1 | 19.6 | 22.4 | 22.2 |
| <b>WOK892</b>         | Roadside  | 3A Wellington Rd                   | -         | -    | 15.4 | 18.7 | 22.5 |
| <b>WOK893</b>         | Roadside  | 6 Barkham Rd                       | -         | -    | 18.5 | 20.4 | 20.4 |
| <b>WOK894</b>         | Roadside  | 181 Outfield Crescent              | -         | -    | 13.3 | 14.4 | 14.9 |
| <b>WOK895</b>         | Roadside  | 47 Barkham Road                    | -         | -    | 13.5 | 16.4 | 16.6 |
| <b>WOK896</b>         | Roadside  | 1A Alderman Wiley Close, Wokingham | -         | -    | -    | 14.9 | 16.6 |
| <b>Objective</b>      |           |                                    | <b>40</b> |      |      |      |      |

8.90 BFBC operates one automatic monitoring station within its area, roadside monitor 'CM3' approximately 3.1 km northeast of the Site. WBC also operates a number of NO<sub>2</sub> monitoring sites using diffusion tubes prepared and analysed by Gradko (using the 20% TEA in acetone method).

8.91 Annual mean results for the years 2018 to 2022 are summarised in Error! Reference source not found., while results relating to the 1-hour mean objective are summarised in **Error! Reference source not found.** Monitoring locations within the Bracknell and Crowthorne AQMAs are shown in Error! Reference source not found. and Error! Reference source not found.. The monitoring data have been taken from the Council's 2023 Annual Status Report<sup>43</sup>.

**Table 8.5** – Summary of Annual Mean NO<sub>2</sub> Monitoring carried out by Bracknell Forest (2018-2022) (µg/m<sup>3</sup>)

| Site No.              | Site Type | Location      | 2018 | 2019 | 2020 | 2021 | 2022 |
|-----------------------|-----------|---------------|------|------|------|------|------|
| <b>Bracknell AQMA</b> |           |               |      |      |      |      |      |
| <b>CM3</b>            | Roadside  | Downshire Way | 36.6 | 33.6 | 24.9 | 29.9 | 31.1 |

<sup>43</sup> Bracknell Forest Council (2023) 2023 Air Quality Annual Status Report (ASR), Available: [https://publicprotectionpartnership.org.uk/media/2877/bfbc\\_asr\\_2023\\_ph-\\_eh\\_.pdf](https://publicprotectionpartnership.org.uk/media/2877/bfbc_asr_2023_ph-_eh_.pdf)

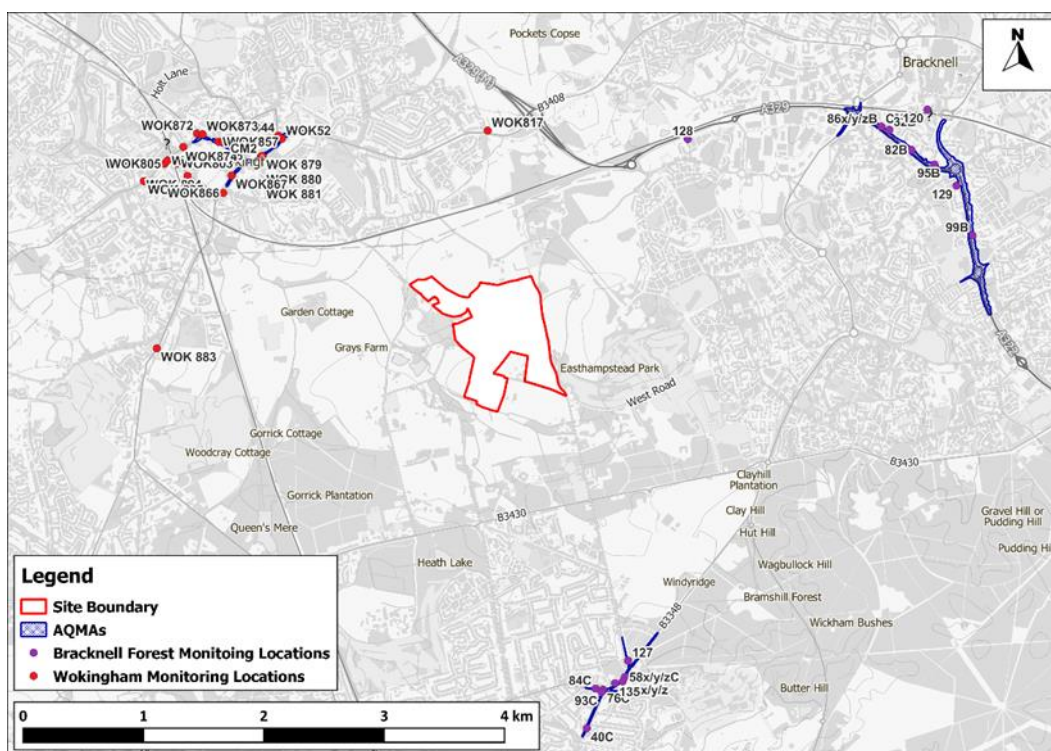
| Site No.                             | Site Type | Location                                       | 2018        | 2019        | 2020 | 2021 | 2022 |
|--------------------------------------|-----------|------------------------------------------------|-------------|-------------|------|------|------|
| <b>Bracknell AQMA</b>                |           |                                                |             |             |      |      |      |
| <b>32B</b>                           | Suburban  | 8 Old Bracknell Close, Bracknell               | 21.0        | 22.9        | 14.8 | 15.1 | 18.4 |
| <b>82B</b>                           | Suburban  | 19 Boxford Ridge, Bracknell                    | 30.0        | 31.8        | 23.7 | 22.9 | 26.4 |
| <b>95B</b>                           | Suburban  | 3 Leverkuse Road, Bracknell                    | 21.0        | 25.4        | 15.0 | 15.2 | 17.2 |
| <b>99B</b>                           | Roadside  | 16 Firlands, Bracknell                         | 24.0        | 25.2        | 19.2 | 18.3 | 23.3 |
| <b>129</b>                           | Kerbside  | Spring Cottage, Rectory Close, Bracknell       | -           | 20.4        | 13.2 | 12.2 | 12.8 |
| <b>86x/y/zB</b>                      | Roadside  | Downshire Way, Continuous Monitor, Bracknell 3 | 37.0        | 34.4        | 25.4 | 29.8 | 32.6 |
| <b>Cowthorne AQMA</b>                |           |                                                |             |             |      |      |      |
| <b>40C</b>                           | Kerbside  | 229 High Stret, Crowthorne                     | 26.0        | 27.1        | 19.5 | 18.3 | 21.8 |
| <b>76C</b>                           | Kerbside  | 2 Dukes Ride, Crowthorne                       | 27.0        | 27.8        | 19.9 | 17.9 | 21.2 |
| <b>84C</b>                           | Kerbside  | 24/26 Dukes Ride (Playhouse), Crowthorne       | 24.0        | 23.9        | 17.5 | 15.5 | 16.9 |
| <b>93C</b>                           | Roadside  | Prince Alfred PH, 2 High Street, Crowthorne    | 23.0        | 24.5        | 18.4 | 16.2 | 19.2 |
| <b>127</b>                           | Roadside  | 7 Old Wokingham Road, Crowthorne               | -           | 22.4        | 14.3 | 13.3 | 15.0 |
| <b>135</b>                           | Kerbside  | Woodleigh, Bracknell Road, Crowthorne          | -           | -           | 13.6 | 13.1 | 14.3 |
| <b>58x/y/zC</b>                      | Kerbside  | Firmount, Bracknell Road, Crowthorne 3         | <b>45.0</b> | <b>41.5</b> | 32.9 | 18.4 | 30.6 |
| <b>91x/y/z</b>                       | Roadside  | The Mount, Bracknell Road, Crowthorne 3        | 26.0        | 27.9        | 19.5 | 30.8 | 20.1 |
| <b>Bracknell Forest Outside AQMA</b> |           |                                                |             |             |      |      |      |
| <b>120</b>                           | Kerbside  | 1-96 Platform Station, Bracknell               | 21.1        | 27.3        | 15.9 | 16.6 | 19.2 |
| <b>128</b>                           | Kerbside  | 10 Lucas Place, Binfield                       | -           | 18.4        | 15.3 | 13.3 | 15.5 |
| <b>Objective</b>                     |           |                                                | <b>40</b>   |             |      |      |      |

<sup>a</sup> Exceedances of the objectives are shown in bold.

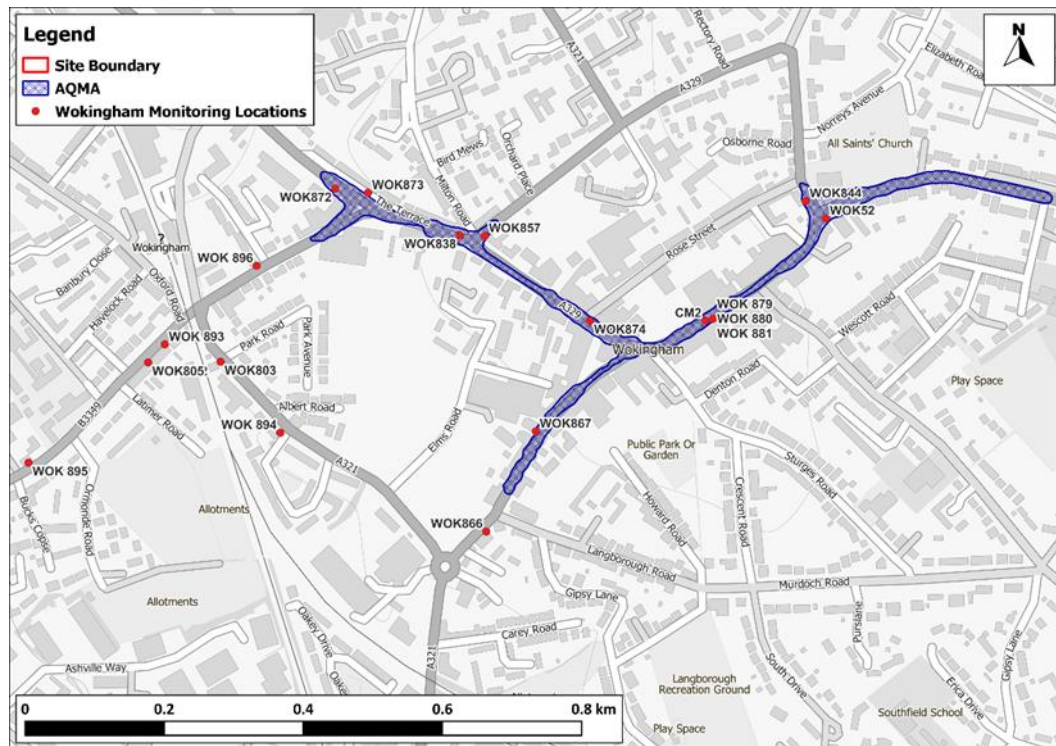
**Table 8.6** – Number of Hours With NO<sub>2</sub> Concentrations Above 200 µg/m<sup>3</sup>

| Site No.         | Site Type | Location               | 2018                        | 2019    | 2020    | 2021 | 2022 |
|------------------|-----------|------------------------|-----------------------------|---------|---------|------|------|
| CM2              | Roadside  | Peach Street Wokingham | 15                          | 0       | 0 (112) | 0    | 0    |
| CM3              | Roadside  | Downshire Way          | 4                           | 0 (127) | 0 (92)  | 0    | 0    |
| <b>Objective</b> |           |                        | <b>18 (200)<sup>a</sup></b> |         |         |      |      |

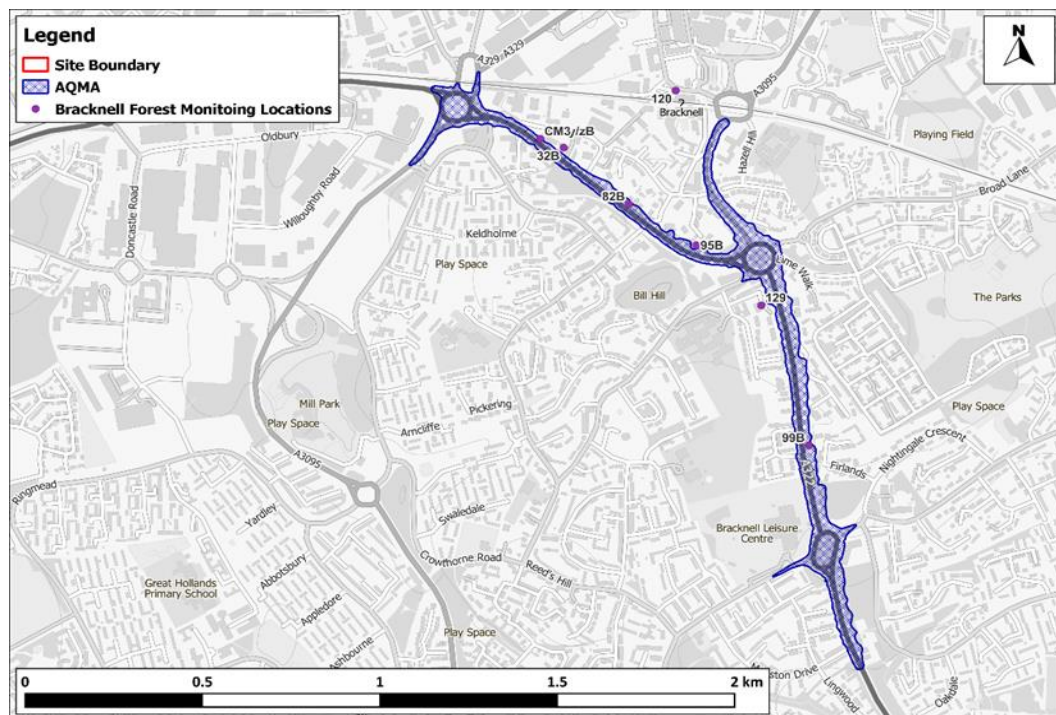
<sup>a</sup> Values in brackets are 99.79<sup>th</sup> percentiles, which are presented where data capture is <75%.

**Figure 8.3** – All Monitoring Locations

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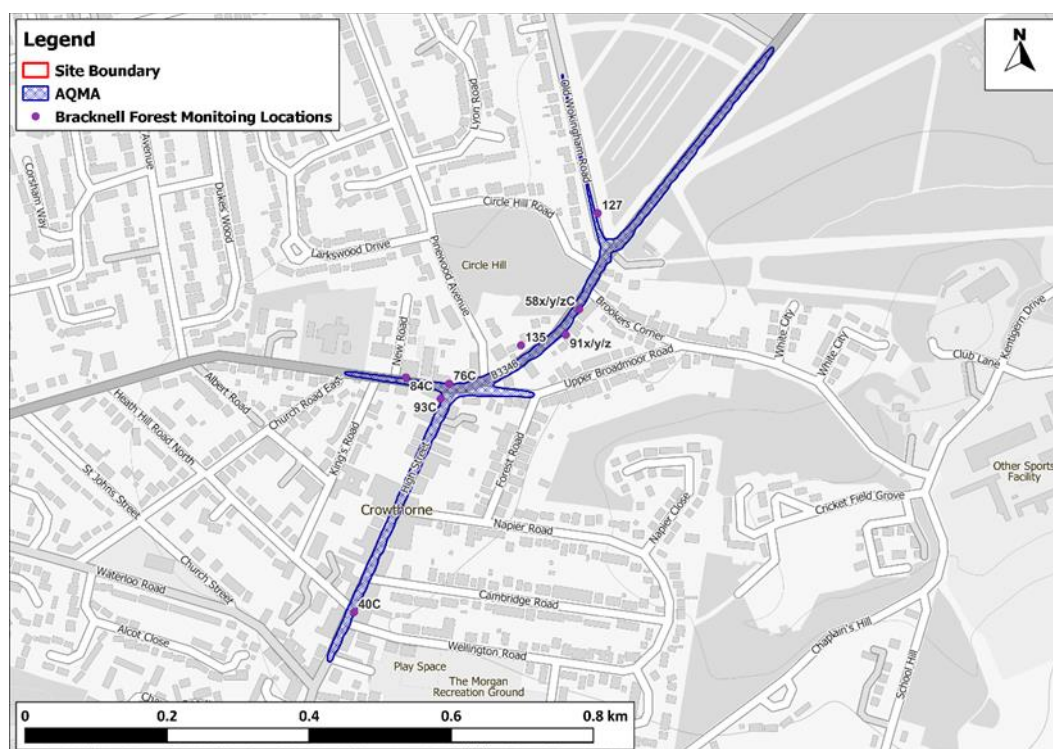
**Figure 8.4 – Wokingham AQMA Monitoring Locations**

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**Figure 8.5 – Bracknell Monitoring Locations**

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**Figure 8.6 – Crowthorne Monitoring Locations**



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- 8.92 As shown in Error! Reference source not found. and Error! Reference source not found., exceedances of the annual mean NO<sub>2</sub> objective in 2019 occurred at one roadside location in Wokingham (WOK838), and one kerbside location in Crowthorne during 2018 and 2019. There were no measured exceedances of the objective in 2022. There was an overall downward trend in concentrations observed between 2017 and 2022.
- 8.93 With regards to 1-hour mean NO<sub>2</sub> concentrations, measured concentrations at the automatic monitors 'CM2' and 'CM3' remained below the objective over the presented monitoring period. Additionally, the annual mean NO<sub>2</sub> concentrations at all diffusion tube monitors are below 60 µg/m<sup>3</sup> indicating that it is unlikely that the 1-hour mean NO<sub>2</sub> objective will have been exceeded (see Paragraph 8.54).
- 8.94 While 2020 and 2021 results have been presented in this Section for completeness, they are not relied upon in any way as they will not be representative of 'typical' air quality conditions due to the considerable impact of the Covid-19 pandemic on traffic volumes and thus pollutant concentrations.

- 8.95 Currently indicative or reference PM<sub>10</sub> and PM<sub>2.5</sub> monitoring is not carried out by WBC. BFBC's 'CM3' automatic monitoring station also measures PM<sub>10</sub>. Measured annual mean PM<sub>10</sub> concentrations were well below the objective during the monitoring period presented, and there were no recorded exceedances of the 24-hour PM<sub>10</sub> objective. Results for the years 2018 to 2022 are summarised in Error! Reference source not found..

**Table 8.7** – Summary of Annual Mean PM<sub>10</sub> Monitoring (2018-2022) (µg/m<sup>3</sup>)

| Site No.                                 | Site Type | Location | 2018    | 2019   | 2020        | 2021 | 2022 |
|------------------------------------------|-----------|----------|---------|--------|-------------|------|------|
| PM <sub>10</sub> Annual Mean (µg/m³)     |           |          |         |        |             |      |      |
| CM3                                      | Kerbside  |          | 19      | 17.2   | 18.4 (31.3) | 17.1 | 18.5 |
| Objective                                |           |          | 40      |        |             |      |      |
| PM <sub>10</sub> 24-Hour Means > 50µg/m³ |           |          |         |        |             |      |      |
| CM3                                      | Kerbside  |          | 1       | 6 (35) | 0 (18)      | 0    | 1    |
| Objective                                |           |          | 35 (50) |        |             |      |      |

<sup>c</sup> Values in brackets are 99.79<sup>th</sup> percentiles, which are presented where data capture is <75%.

### Exceedances of Limit Value

- 8.96 There are no AURN<sup>44</sup> monitoring sites within 1 km of the application Site with which to identify exceedances of the annual mean NO<sub>2</sub> limit value. Defra's roadside annual mean NO<sub>2</sub> concentrations<sup>26</sup>, which are used to identify and report exceedances of the limit value, do not identify any exceedances within the study area or within 1 km of the application Site in 2022. As such, there is considered to be no risk of a limit value exceedance in the vicinity of the Proposed Development by the time that it is operational.

### Background Concentrations

- 8.97 Estimated background concentrations in the study area are set out in Error! Reference source not found. and are all well below the objectives. A range of values is presented as the study area covers multiple 1x1 km grid squares.

<sup>44</sup> Defra (2023g) Defra AURN Archive, Available: <https://uk-air.defra.gov.uk/interactive-map?network=aurn>.

**Table 8.8** – Estimated Annual Mean Background Pollutant Concentrations in 2022 and 2026 ( $\mu\text{g}/\text{m}^3$ )

| Year      | NO <sub>2</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> |
|-----------|-----------------|------------------|-------------------|
| 2022      | 9.3-12.8        | 12.9-14.8        | 8.9-9.8           |
| 2026      | 8.3-11.0        | 12.4-14.3        | 8.5-9.4           |
| Objective | 40              | 40               | 20 <sup>a</sup>   |

<sup>a</sup> The 20  $\mu\text{g}/\text{m}^3$  PM<sub>2.5</sub> objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

### Future Baseline Conditions

- 8.98 Baseline concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> have been modelled at each of the existing receptor locations (see Error! Reference source not found. Error! Reference source not found. and Error! Reference source not found. for receptor locations). Results for the future year (2026) baseline (Without Scheme) are set out in **Table 8.1** for NO<sub>2</sub> and **Table 8.2** for PM<sub>10</sub> and PM<sub>2.5</sub>. The modelled road components of nitrogen oxides have been increased from those predicted by the model based on a comparison with local measurements (see **Appendix 8.5** for the verification methodology).

**Table 8.1** – Modelled Annual Mean Baseline Concentrations of NO<sub>2</sub> ( $\mu\text{g}/\text{m}^3$ ) at Existing Receptors

| Receptor | 2026 Without Scheme |
|----------|---------------------|
| 1        | 27.8                |
| 2        | 34.0                |
| 3        | 24.7                |
| 4        | 27.8                |
| 5        | 22.5                |
| 6        | 13.2                |
| 7        | 13.3                |
| 8        | 17.0                |
| 9        | 11.7                |
| 10       | 26.0                |
| 11       | 31.3                |
| 12       | 20.3                |
| 13       | 20.2                |
| 14       | 19.6                |
| 15       | 15.2                |

| Receptor  | 2026 Without Scheme |
|-----------|---------------------|
| 16        | 15.5                |
| 17        | 24.6                |
| 18        | 26.1                |
| 19        | 28.1                |
| 20        | 10.9                |
| 21        | 12.2                |
| Objective | 40                  |

**Table 8.2** – Modelled Annual Mean Baseline Concentrations of PM<sub>10</sub> and PM<sub>2.5</sub> at Existing Receptors (µg/m<sup>3</sup>)

| Receptor | 2026 Without Scheme           |                   |
|----------|-------------------------------|-------------------|
|          | PM <sub>10</sub> <sup>a</sup> | PM <sub>2.5</sub> |
| 1        | 14.8                          | 9.7               |
| 2        | 15.0                          | 9.9               |
| 3        | 14.5                          | 9.7               |
| 4        | 14.7                          | 9.8               |
| 5        | 14.4                          | 9.6               |
| 6        | 13.4                          | 8.8               |
| 7        | 13.3                          | 8.8               |
| 8        | 13.4                          | 8.8               |
| 9        | 12.6                          | 8.6               |
| 10       | 13.2                          | 9.1               |
| 11       | 13.4                          | 9.0               |
| 12       | 12.9                          | 8.8               |
| 13       | 12.8                          | 8.7               |
| 14       | 13.6                          | 8.9               |
| 15       | 12.8                          | 8.7               |
| 16       | 12.7                          | 8.7               |
| 17       | 13.8                          | 9.3               |
| 18       | 13.9                          | 9.3               |
| 19       | 14.7                          | 9.8               |
| 20       | 12.5                          | 8.6               |

| Receptor             | 2026 Without Scheme           |                   |
|----------------------|-------------------------------|-------------------|
|                      | PM <sub>10</sub> <sup>a</sup> | PM <sub>2.5</sub> |
| 21                   | 12.6                          | 8.6               |
| Assessment Criterion | 32 <sup>a</sup>               | 20 <sup>b</sup>   |

<sup>a</sup> While the annual mean PM<sub>10</sub> objective is 40 µg/m<sup>3</sup>, 32 µg/m<sup>3</sup> is the annual mean concentration above which an exceedance of the 24-hour mean PM<sub>10</sub> objective is possible, as outlined in LAQM.TG<sup>29</sup>. A value of 32 µg/m<sup>3</sup> is thus used as a proxy to determine the likelihood of exceedance of the 24-hour mean PM<sub>10</sub> objective, as recommended in EPUK & IAQM guidance<sup>38</sup>.

<sup>b</sup> The 20 µg/m<sup>3</sup> PM<sub>2.5</sub> objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

- 8.99 The predicted annual mean concentrations of NO<sub>2</sub> are below the objective in 2026 without the scheme at all receptors. The annual mean NO<sub>2</sub> concentrations are below 60 µg/m<sup>3</sup> at every receptor in 2026; it is, therefore, unlikely that the 1-hour mean NO<sub>2</sub> objective will be exceeded (see Paragraph 8.54).
- 8.100 The predicted annual mean concentrations of PM<sub>10</sub> and PM<sub>2.5</sub> are below the objectives in both 2026 at all receptors. The annual mean PM<sub>10</sub> concentrations are below 32 µg/m<sup>3</sup> and it is, therefore, unlikely that the 24-hour mean PM<sub>10</sub> objective will be exceeded.
- 8.101 These results are consistent with the conclusions of WBC and BFBC in the outcome of their air quality review and assessment work in that they have concluded that there are no currently exceedances of the objectives in the study area, either inside or outside the AQMAs, and none have been modelled.

## Assessment of Effects

### Construction Phase Impact Assessment

#### On-Site Exhaust Emissions

- 8.102 The IAQM guidance<sup>37</sup> states:

*“Experience of assessing the exhaust emissions from on-site plant (also known as non-road mobile machinery or NRMM) and site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed. For site plant and on-site traffic, consideration should be given to the number of plant/vehicles and their operating hours and locations to assess whether a significant effect is likely to occur”.*

- 8.103 The Proposed Development is large, and the majority of the site area is more than 50 m from any sensitive receptors. The areas in which NRMM and site traffic will typically operate are thus likely to be located more than 50 m away from any sensitive properties. It is judged that there no risk of significant effects at existing receptors as a result of on-site machinery emissions.

### Construction Dust and Particulate Matter Emissions

- 8.104 The construction works will give rise to a risk of dust impacts during demolition, earthworks and construction, as well as from trackout of dust and dirt by vehicles onto the public highway. Step 1 of the assessment procedure is to screen the need for a detailed assessment. There are receptors within the distances set out in the guidance (see **Appendix 8.2**), thus a detailed assessment is required. The following section sets out Step 2 of the assessment procedure.

### Potential Dust Emission Magnitude

#### Demolition

- 8.105 The Site is predominantly in agricultural / equine use, but also includes a small number of properties in residential or commercial use which will require demolishing. Based on the example definitions set out in 8.2.1 in **Appendix 8.2**, the dust emission class for demolition is considered to be *small*.

#### Earthworks

- 8.106 The characteristics of the soil at the Site have been defined using the British Geological Survey's UK Soil Observatory website<sup>45</sup>, as set out in Error! Reference source not found.. Overall, it is considered that, when dry, this soil has the potential to be moderately dusty.

**Table 8.11** – Summary of Soil Characteristics

| Category                         | Record                                                                                                                              |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Soil Layer Thickness             | Deep                                                                                                                                |
| Soil Parent Material Grain Size  | Mixed (Argillaceous <sup>a</sup> – Arenaceous <sup>b</sup> – Rudaceous <sup>c</sup> - Argillic)                                     |
| European Soil Bureau Description | Colluvium / Prequaternary Marine/Estuary Sand and Silt / River Terrace Sand / Gravel / Riverine Clat ND Floodplain Sands and Gravel |
| Soil Group                       | Light to Medium to Heavy                                                                                                            |
| Soil Texture                     | Clay to Clayey Loam <sup>d</sup> to Sandy/Silty Loam                                                                                |

<sup>a</sup> grain size < 0.06 mm.

<sup>b</sup> grain size 0.06 – 2.0 mm.

<sup>c</sup> grain size > 2.0 mm.

<sup>d</sup> a loam is composed mostly of sand and silt.

- 8.107 The Site covers some 370,000 m<sup>2</sup> and most of this will be subject to earthworks, involving including levelling of the ground and landscaping. Dust will arise mainly from vehicles travelling over unpaved ground and from the handling of dusty materials (such as dry soil).

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45 British Geological Survey (2023) UK Soil Observatory Map Viewer, Available: <http://mapapps2.bgs.ac.uk/ukso/home.html>.

Based on the example definitions set out in 8.2.1 in **Appendix 8.2**, the dust emission class for earthworks is considered to be *large*.

### Construction

- 8.108 Construction will involve some up to 1,030 built residential properties. Dust will arise from vehicles travelling over unpaved ground, the handling and storage of dusty materials, and from the cutting of concrete. The construction will take place over many years, with different phases taking place between approximately 2025-2038. Based on the example definitions set out in 8.2.1 in **Appendix 8.2**, the dust emission class for construction is considered to be *large*.

### Trackout

- 8.109 The number of heavy vehicles accessing the Site, which may track out dust and dirt, will be below 50 outward heavy vehicle movements per day on average along the effected road links. Based on the example definitions set out in 8.2.1 in **Appendix 8.2**, the dust emission class for trackout is considered to be *medium*.
- 8.110 Error! Reference source not found. summarises the dust emission magnitude for the Proposed Development.

**Table 8.12** – Summary of Dust Emission Magnitude

| Source       | Dust Emission Magnitude |
|--------------|-------------------------|
| Demolition   | Small                   |
| Earthworks   | Large                   |
| Construction | Large                   |
| Trackout     | Medium                  |

### Sensitivity of the Area

- 8.111 This assessment step combines the sensitivity of individual receptors to dust effects with the number of receptors in the area and their proximity to the Site. It also considers additional site-specific factors such as topography and screening, and in the case of sensitivity to human health effects, baseline PM<sub>10</sub> concentrations.
- 8.112 The IAQM guidance, explains that residential properties are 'high' sensitivity receptors to dust soiling, while places of work are 'medium' sensitivity receptors, (8.2.2 in **Appendix 8.2**). Residential properties and educational facilities are also classified as being of 'high' sensitivity to human health effects. There are over 10 residential properties within 20 m of the site (see Error! Reference source not found.).

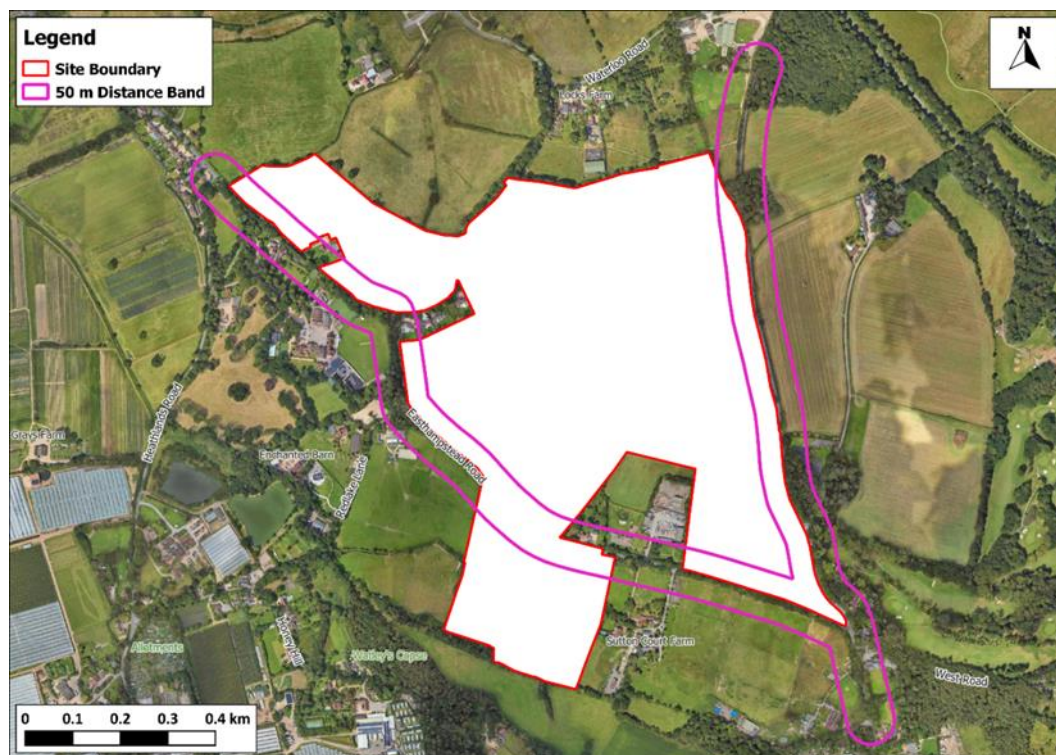
**Figure 8.7** – 20 m Distance Band around Site Boundary



*Imagery ©2024 Getmapping plc, Infoterra Ltd & Bluesky, Maxar Technologies, The GeoInformation Group, Map data ©2024*

- 8.113 Error! Reference source not found. shows that the dust emission magnitude for trackout is *medium* and 8.2.3 in **Appendix 8.2** thus explains that there is a risk of material being tracked 200 m from the Site exit. There are over 10 residential properties within 50 m of the roads along which material could be tracked (see Error! Reference source not found.).

**Figure 8.8** – 50 m Distance Bands around Roads Used by Construction Traffic Within 200 m of the Site Exits



Imagery ©2024 Getmapping plc, Infoterra Ltd & Bluesky, Maxar Technologies, The GeoInformation Group, Map data ©2024

### Sensitivity of the Area to Effects from Dust Soiling

- 8.114 Using the information set out in Paragraph **Error! Reference source not found.** and **Error! Reference source not found.** alongside the matrix set out in 8.2.3 in **Appendix 8.2**, the area surrounding the onsite works is of 'high' sensitivity to dust soiling. Using the information set out in Paragraph 8.113 and **Error! Reference source not found.** alongside the same matrix, the area is of 'medium' sensitivity to dust soiling due to trackout.

### Sensitivity of the Area to any Human Health Effects

- 8.115 The matrix in 8.2.4 in **Appendix 8.2** requires information on the baseline annual mean PM<sub>10</sub> concentration in the area. The properties nearest the Site are well away from main roads and the existing annual mean PM<sub>10</sub> concentration is best described by the background concentration from **Error! Reference source not found.** (14.8 µg/m<sup>3</sup>). Using the information set out in Paragraphs **Error! Reference source not found.** and **Error! Reference source not found.** alongside the matrix in 8.2.4 in **Appendix 8.2**, the area surrounding the onsite works is of 'low' sensitivity to human health effects. Using the information set out in Paragraph 8.113 and **Error! Reference source not found.** alongside the same matrix, the area surrounding roads along which material may be tracked from the site is also of 'low' sensitivity.

### Sensitivity of the Area to any Ecological Effects

- 8.116 The guidance only considers designated ecological sites within 50 m to have the potential to be impacted by the construction works. There are no designated ecological sites within 50 m of the Site boundary or those roads along which material may be tracked, thus ecological impacts will not be considered further.

### Summary of the Area Sensitivity

- 8.117 Error! Reference source not found. summarises the sensitivity of the area around the proposed construction works.

**Table 8.13** – Summary of the Area Sensitivity

| Effects Associated With: | Sensitivity of the Surrounding Area |                    |
|--------------------------|-------------------------------------|--------------------|
|                          | On-site Works                       | Trackout           |
| Dust Soiling             | High Sensitivity                    | Medium Sensitivity |
| Human Health             | Low Sensitivity                     | Low Sensitivity    |
| Ecological               | Negligible                          | Negligible         |

### Risk and Significance

- 8.118 The dust emission magnitudes in Error! Reference source not found. have been combined with the sensitivities of the area in Error! Reference source not found. using the matrix in 8.2.7 in **Appendix 8.2**, in order to assign a risk category to each activity. The resulting risk categories for the four construction activities, without mitigation, are set out in **Error! Reference source not found.** These risk categories have been used to determine the appropriate level of mitigation as set out in Section 10 (step 3 of the assessment procedure).

**Table 8.14** – Summary of Risk of Impacts Without Mitigation

| Source       | Dust Soiling | Human Health | Ecology    |
|--------------|--------------|--------------|------------|
| Demolition   | Medium Risk  | Negligible   | Negligible |
| Earthworks   | High Risk    | Low Risk     | Negligible |
| Construction | High Risk    | Low Risk     | Negligible |
| Trackout     | Low Risk     | Low Risk     | Negligible |

- 8.119 The IAQM guidance does not provide a method for assessing the significance of effects before mitigation, and advises that pre-mitigation significance should not be determined. With appropriate mitigation in place, the IAQM guidance is clear that the residual effect will normally be negligible<sup>37</sup>.

### Operational Phase Impact Assessment

#### Impacts at Existing Receptors

##### *Screening Assessment of Development-Generated Road Traffic Emissions*

- 8.120 The Proposed Development will generate traffic volumes that exceed the EPUK/IAQM screening thresholds on a number of local roads, thus a detailed assessment is required. Whilst some development generated traffic will travel into the AQMAs surrounding the Site,

local air quality monitoring (Error! Reference source not found. and Error! Reference source not found.) demonstrates affected roads have concentrations below 90% of the NO<sub>2</sub> annual mean objective. Thus, as per EPUK/IAQM guidance paragraph 6.15, it is appropriate to use >500 AADT as the screening threshold within the AQMAs surrounding the Site. No development generated traffic flows are over 500 AADT approaching the AQMAs, thus the traffic impacts within the AQMAs do not require assessment.

*Detailed Assessment of Development-Generated Road Traffic Emissions NO<sub>2</sub>*

- 8.121 Predicted annual mean concentrations of NO<sub>2</sub> in 2026 for existing receptors are set out in Error! Reference source not found. for both the “Without Scheme” and “With Scheme” scenarios. The impact at each receptor is also described using the impact descriptors given in Error! Reference source not found..

**Table 8.15** – Predicted Impacts on Annual Mean NO<sub>2</sub> Concentrations in 2026 (µg/m<sup>3</sup>)

| Receptor         | Without Scheme | With Scheme | % Change <sup>a</sup> | Impact Descriptor |
|------------------|----------------|-------------|-----------------------|-------------------|
| 1                | 27.8           | 28.0        | 1                     | Negligible        |
| 2                | 34.0           | 34.5        | 1                     | Negligible        |
| 3                | 24.7           | 25.1        | 1                     | Negligible        |
| 4                | 27.8           | 28.3        | 1                     | Negligible        |
| 5                | 22.5           | 22.9        | 1                     | Negligible        |
| 6                | 13.2           | 13.5        | 1                     | Negligible        |
| 7                | 13.3           | 13.5        | 1                     | Negligible        |
| 8                | 17.0           | 17.5        | 1                     | Negligible        |
| 9                | 11.7           | 11.8        | 0                     | Negligible        |
| 10               | 26.0           | 26.4        | 1                     | Negligible        |
| 11               | 31.3           | 31.9        | 1                     | Negligible        |
| 12               | 20.3           | 20.4        | 0                     | Negligible        |
| 13               | 20.2           | 20.2        | 0                     | Negligible        |
| 14               | 19.6           | 20.1        | 1                     | Negligible        |
| 15               | 15.2           | 15.0        | -1                    | Negligible        |
| 16               | 15.5           | 15.5        | 0                     | Negligible        |
| 17               | 24.6           | 24.9        | 1                     | Negligible        |
| 18               | 26.1           | 26.3        | 1                     | Negligible        |
| 19               | 28.1           | 28.7        | 1                     | Negligible        |
| 20               | 10.9           | 10.7        | 0                     | Negligible        |
| 21               | 12.2           | 11.9        | -1                    | Negligible        |
| <b>Objective</b> | <b>40</b>      |             | <b>-</b>              | <b>-</b>          |

<sup>a</sup> % changes are relative to the objective and have been rounded to the nearest whole number.

- 8.122 The annual mean NO<sub>2</sub> concentrations are below the objective at all receptors. The percentage changes in concentrations relative to the annual mean objective (when rounded) range from -1% to 1%, corresponding to a negligible impact at all receptors. The decrease in concentrations at receptors 15, 20, and 21 can be attributed to the decrease in traffic flows which occur with the development, on the new South Wokingham Development Link Road, and Easthampstead Road, due to the planned closure of Easthampstead Road between Redlake Lane and Old Wokingham Road.
- 8.123 Furthermore, as the predicted annual mean NO<sub>2</sub> concentrations are well below 60 µg/m<sup>3</sup> at all receptors both without and with the Proposed Development, it is unlikely that the 1-hour mean NO<sub>2</sub> objective will be exceeded (see Paragraph 8.54).

#### PM<sub>10</sub> and PM<sub>2.5</sub>

- 8.124 Predicted annual mean concentrations of PM<sub>10</sub> and PM<sub>2.5</sub> in 2026 for existing receptors are set out in **Table 8.3** for both the “Without Scheme” and “With Scheme” scenarios. The impacts at each receptor are also described using the impact descriptors given in Error! Reference source not found..

**Table 8.3 – Predicted Impacts on Annual Mean PM<sub>10</sub> and PM<sub>2.5</sub> Concentrations in 2026**

| Receptor | Annual Mean PM <sub>10</sub> (µg/m <sup>3</sup> ) |             |                       |                   | Annual Mean PM <sub>2.5</sub> (µg/m <sup>3</sup> ) |             |                       |                   |
|----------|---------------------------------------------------|-------------|-----------------------|-------------------|----------------------------------------------------|-------------|-----------------------|-------------------|
|          | Without Scheme                                    | With Scheme | % Change <sup>a</sup> | Impact Descriptor | Without Scheme                                     | With Scheme | % Change <sup>a</sup> | Impact Descriptor |
| 1        | 14.8                                              | 14.8        | 0                     | Negligible        | 9.7                                                | 9.7         | 0                     | Negligible        |
| 2        | 15.0                                              | 15.0        | 0                     | Negligible        | 9.9                                                | 10.0        | 0                     | Negligible        |
| 3        | 14.5                                              | 14.6        | 0                     | Negligible        | 9.7                                                | 9.7         | 0                     | Negligible        |
| 4        | 14.7                                              | 14.7        | 0                     | Negligible        | 9.8                                                | 9.8         | 0                     | Negligible        |
| 5        | 14.4                                              | 14.4        | 0                     | Negligible        | 9.6                                                | 9.7         | 0                     | Negligible        |
| 6        | 13.4                                              | 13.4        | 0                     | Negligible        | 8.8                                                | 8.8         | 0                     | Negligible        |
| 7        | 13.3                                              | 13.4        | 0                     | Negligible        | 8.8                                                | 8.8         | 0                     | Negligible        |
| 8        | 13.4                                              | 13.5        | 0                     | Negligible        | 8.8                                                | 8.8         | 0                     | Negligible        |
| 9        | 12.6                                              | 12.6        | 0                     | Negligible        | 8.6                                                | 8.6         | 0                     | Negligible        |
| 10       | 13.2                                              | 13.2        | 0                     | Negligible        | 9.1                                                | 9.1         | 0                     | Negligible        |
| 11       | 13.4                                              | 13.4        | 0                     | Negligible        | 9.0                                                | 9.1         | 0                     | Negligible        |
| 12       | 12.9                                              | 12.9        | 0                     | Negligible        | 8.8                                                | 8.8         | 0                     | Negligible        |
| 13       | 12.8                                              | 12.8        | 0                     | Negligible        | 8.7                                                | 8.7         | 0                     | Negligible        |

| Receptor  | Annual Mean PM <sub>10</sub> (µg/m <sup>3</sup> ) |             |                       | Impact Descriptor | Annual Mean PM <sub>2.5</sub> (µg/m <sup>3</sup> ) |             |                       | Impact Descriptor |
|-----------|---------------------------------------------------|-------------|-----------------------|-------------------|----------------------------------------------------|-------------|-----------------------|-------------------|
|           | Without Scheme                                    | With Scheme | % Change <sup>a</sup> |                   | Without Scheme                                     | With Scheme | % Change <sup>a</sup> |                   |
| 14        | 13.6                                              | 13.6        | 0                     | Negligible        | 8.9                                                | 8.9         | 0                     | Negligible        |
| 15        | 12.8                                              | 12.8        | 0                     | Negligible        | 8.7                                                | 8.7         | 0                     | Negligible        |
| 16        | 12.7                                              | 12.7        | 0                     | Negligible        | 8.7                                                | 8.7         | 0                     | Negligible        |
| 17        | 13.8                                              | 13.8        | 0                     | Negligible        | 9.3                                                | 9.3         | 0                     | Negligible        |
| 18        | 13.9                                              | 13.9        | 0                     | Negligible        | 9.3                                                | 9.3         | 0                     | Negligible        |
| 19        | 14.7                                              | 14.8        | 0                     | Negligible        | 9.8                                                | 9.8         | 0                     | Negligible        |
| 20        | 12.5                                              | 12.5        | 0                     | Negligible        | 8.6                                                | 8.6         | 0                     | Negligible        |
| 21        | 12.6                                              | 12.6        | 0                     | Negligible        | 8.6                                                | 8.6         | 0                     | Negligible        |
| Criterion | 32 <sup>b</sup>                                   | -           | -                     | -                 | 20 <sup>c</sup>                                    | -           | -                     | -                 |

<sup>a</sup> % changes are relative to the criterion and have been rounded to the nearest whole number.

<sup>b</sup> While the annual mean PM<sub>10</sub> objective is 40 µg/m<sup>3</sup>, 32 µg/m<sup>3</sup> is the annual mean concentration above which an exceedance of the 24-hour mean PM<sub>10</sub> objective is possible, as outlined in LAQM.TG22<sup>29</sup>. A value of 32 µg/m<sup>3</sup> is thus used as a proxy to determine the likelihood of exceedance of the 24-hour mean PM<sub>10</sub> objective, as recommended in EPUK & IAQM guidance<sup>38</sup>.

<sup>c</sup> The PM<sub>2.5</sub> objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

- 8.125 The annual mean PM<sub>10</sub> and PM<sub>2.5</sub> concentrations are well below the relevant criteria at all receptors, with or without the Proposed Development. The percentage change in concentrations relative to the applicable criteria (when rounded) is 0%, corresponding to a *negligible* impact at all receptors. Furthermore, as the annual mean PM<sub>10</sub> concentrations are below 32 µg/m<sup>3</sup>, it is unlikely that the 24-hour mean PM<sub>10</sub> objective will be exceeded at any of the receptors.

### Site Suitability

- 8.126 Predicted air quality conditions for future residents of the Proposed Development, taking account of emissions from the adjacent road network, are set out in Error! Reference source not found. for Receptors A to E (see Error! Reference source not found. and Error! Reference source not found. for receptor locations). Concentrations throughout the Site are below the objective. Air quality for future residents within the development will thus be acceptable.

**Table 8.17** – Predicted Annual Mean Concentrations of NO<sub>2</sub> (NO<sub>2</sub>), PM<sub>10</sub> and PM<sub>2.5</sub> in 2026 for New Receptors in the Proposed Development (µg/m<sup>3</sup>)

| Receptor                          | NO <sub>2</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> |
|-----------------------------------|-----------------|------------------|-------------------|
| A                                 | 12.5            | 12.6             | 8.6               |
| B                                 | 12.0            | 12.6             | 8.6               |
| C                                 | 11.6            | 12.6             | 8.6               |
| D                                 | 19.4            | 13.6             | 8.9               |
| E                                 | 25.8            | 13.8             | 9.0               |
| Objective / Criterion / Guideline | 40              | 32 <sup>a</sup>  | 20 <sup>b</sup>   |

<sup>a</sup> While the annual mean PM<sub>10</sub> objective is 40 µg/m<sup>3</sup>, 32 µg/m<sup>3</sup> is the annual mean concentration above which an exceedance of the 24-hour mean PM<sub>10</sub> objective is possible, as outlined in LAQM.TG22<sup>29</sup>. A value of 32 µg/m<sup>3</sup> is thus used as a proxy to determine the likelihood of exceedance of the 24-hour mean PM<sub>10</sub> objective, as recommended in EPUK & IAQM guidance<sup>38</sup>.

<sup>b</sup> The 20 µg/m<sup>3</sup> PM<sub>2.5</sub> objective, which was to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it.

### Significance of Operational Air Quality Effects

8.127 The operational air quality effects without mitigation are judged to be **negligible**. This professional judgement is made in accordance with the methodology set out in **Appendix 8.3**, and takes account of the assessment that:

- pollutant concentrations at worst-case locations within the Proposed Development will all be below the objectives, thus future residents will experience acceptable air quality;
- pollutant concentrations at all of the selected worst-case existing receptors along the local road network will be well below the air quality objectives, and all of the impacts are predicted to be *negligible*; and
- the Proposed Development will not have a meaningful effect on whether or not the interim and long-term PM<sub>2.5</sub> concentration targets are met within the study area.

### Proposed Mitigation

#### Good Design and Best Practice

- 8.128 The EPUK/IAQM guidance advises that good design and best practice measures should be considered, whether or not more specific mitigation is required.
- 8.129 The Proposed Development incorporates the following good design and best practice measures, which have been accounted for in the assessment as far as is possible:

- adoption of a Dust Management Plan (DMP) or Construction Environmental Management Plan (CEMP) to minimise the environmental impacts of the construction works;
- setting back of the development buildings from major roads by at least 8 m;
- provision of a car club parking space;
- electric vehicle charging points for every new home;
- provision of a detailed travel plan setting out measures to encourage sustainable means of transport (public, cycling and walking) via subsidised or free-ticketing, improved links to bus stops, improved infrastructure and layouts to improve accessibility and safety;
- provision of pedestrian and cycle access to the new development, including cycle parking;
- provision of a new bus stop to encourage use of public transport;
- use of geothermal/solar/air-source/ground-source heating to avoid the need for on-site combustion; and
- Financial contribution towards local traffic management measures.

### Recommended Mitigation

#### Construction Impacts

- 8.130 Measures to mitigate dust emissions will be required during the construction phase of the development in order to minimise effects upon nearby sensitive receptors.
- 8.131 The Site has been identified as a *Medium* Risk site during demolition, *High* Risk during earthworks and construction, and *Low* Risk for trackout, as set out in **Table 8.15**. Comprehensive guidance has been published by IAQM<sup>37</sup> that describes measures that should be employed, as appropriate, to reduce the impacts, along with guidance on monitoring during demolition and construction<sup>46</sup>. This reflects best practice experience and has been used, together with the professional experience of the consultant who has undertaken the dust impact assessment and the findings of the assessment, to draw up a set of measures that should be incorporated into the specification for the works. These measures are described in **Appendix 8.6**.
- 8.132 The mitigation measures should be written into a dust management plan (DMP). For major sites: The DMP may be integrated into a Code of Construction Practice or the Construction Environmental Management Plan, and may require monitoring.

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<sup>46</sup> IAQM (2018) Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites v1.1, Available: [www.iaqm.co.uk/guidance.html](http://www.iaqm.co.uk/guidance.html).

- 8.133 Where mitigation measures rely on water, it is expected that only sufficient water will be applied to damp down the material. There should not be any excess to potentially contaminate local watercourses.

#### **Road Traffic Impacts**

- 8.134 The assessment has demonstrated that the overall air quality effect of the Proposed Development will be negligible; it will not introduce any new exposure into areas of unacceptable air quality, nor will the development-generated traffic emissions have a significant impact on local air quality. It is, therefore, not considered appropriate to propose further mitigation measures for this development.
- 8.135 Measures to reduce pollutant emissions from road traffic are principally being delivered in the longer term by the introduction of more stringent emissions standards, largely via European legislation (which is written into UK law). The Councils' Air Quality Action Plan will also be helping to deliver improved air quality.

#### **Residual Effects**

##### **Construction Impacts**

- 8.136 The IAQM guidance is clear that, with appropriate mitigation in place, the residual effects will normally be negligible. The mitigation measures set out in **Appendix 8.6** are based on the IAQM guidance. With these measures in place and effectively implemented the residual effects are judged to be **negligible**.
- 8.137 The IAQM guidance does, however, recognise that, even with a rigorous dust management plan in place, it is not possible to guarantee that the dust mitigation measures will be effective all of the time, for instance under adverse weather conditions. During these events, short-term dust annoyance may occur, however, the scale of this would not normally be considered sufficient to change the conclusion that overall the effects will be **negligible**.

##### **Road Traffic Impacts**

- 8.138 The residual impacts will be the same as those identified in Section 7. The overall effects of the Proposed Development will be **negligible**.

#### **Cumulative Effects Assessment**

##### **Demolition and Construction**

- 8.139 The IAQM guidance is clear that, with appropriate mitigation measures in place, any residual enabling works and construction dust effects from an individual site will be **negligible**. The guidance also suggests that cumulative construction dust impacts are only likely where sites are within 500 m of each other. Work would also have to be taking place in areas of both sites that are close to a receptor in order for cumulative effects to occur.
- 8.140 In accordance with the mitigation measures set out in **Appendix 8.6**, if there is concurrent construction work on sites within 500 m of each other, the construction contractors should *"hold regular liaison meetings with other high risk construction sites within 500m of the site"*

*boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised”.*

- 8.141 Of the cumulative schemes identified, three are located within 500 m of the Site. It is anticipated that all construction sites will adopt appropriate mitigation measures to limit emissions of dust, will hold the liaison meetings recommended above and will ensure that plans are co-ordinated to minimise impacts upon the most sensitive receptors. With these measures in place, the cumulative effect of construction activities, in our professional view, are likely to be **negligible**.
- 8.142 With regards to cumulative effects from peak enabling works and construction traffic, the baseline traffic flows utilised in the assessment have included traffic generated by all nearby cumulative schemes. The predicted impact for peak enabling works and construction traffic has been shown to be negligible, thus the cumulative effect of enabling works and construction traffic will also be **negligible**.
- 8.143 It is anticipated that all construction sites will adopt appropriate mitigation measures to limit emissions of dust, will hold the liaison meetings recommended above and will ensure that plans are co-ordinated to minimise impacts upon the most sensitive receptors. With these measures in place, the cumulative effect of construction activities, in our professional view, are likely to be **negligible**.

#### **Completed Development**

- 8.144 The traffic data used in the 2026 ‘Without Proposed Development’ and ‘With Proposed Development’ scenarios also incorporate traffic flows associated with all cumulative schemes which would affect flows on the roads included in this assessment. As such, predictions of future pollutant concentrations presented in this ES Chapter take account of cumulative road traffic effects.
- 8.145 Operational impacts, which inherently include the cumulative schemes, have been shown to be **negligible**.

### **Limitations and Assumptions**

#### **Demolition and Construction**

- 8.146 The demolition and construction dust risk assessment has assumed that measures described in **Appendix 8.6** will be in place.
- 8.147 Consideration is given to emissions from non-road mobile machinery (NRMM) based on the control measures that would be implemented to ensure emissions do not result in significant effects at existing or introduced receptors.

#### **Completed Development**

- 8.148 It is necessary to make a number of assumptions when carrying out an air quality assessment; in order to account for some of the uncertainty in the approach, as described above, assumptions made have generally sought to reflect a realistic worst-case scenario. Key assumptions made in carrying out this assessment include:

- the assumption that the Proposed Development is complete and fully occupied in 2026. This will have overestimated the traffic emissions and hence the 2026 “With Scheme” concentrations. In reality, the development is unlikely to be fully occupied before 2038, thus it will not be generating its full traffic volumes until this year; and
- that the Odiham meteorological monitoring station appropriately represents conditions in the study area (this is discussed further in **Appendix 8.5**).

### Summary of Effects

8.149 A summary of the impacts of the development both pre and post the implementation of the mitigation measures is set out in Error! Reference source not found..

**Table 8.18** – Summary of Development Impacts

| Potential Effect                                                                                         | Nature of Effect (Permanent / Temporary) | Significance (Major/Moderate/Minor) (Beneficial/ Adverse/Negligible) | Mitigation / Enhancement Measures & Monitoring (and how these will be secured)                        | Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/ Negligible) |
|----------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| <b>Construction</b>                                                                                      |                                          |                                                                      |                                                                                                       |                                                                          |
| Construction dust impact upon surrounding properties and particulate matter impacts upon local residents | Temporary                                | N/A                                                                  | Dust mitigation measures as set out in Appendix 8.6                                                   | Negligible                                                               |
| <b>Completed Development</b>                                                                             |                                          |                                                                      |                                                                                                       |                                                                          |
| Emissions from traffic generated by the development on existing sensitive human receptors                | Permanent                                | Negligible                                                           | None required, although measures to minimise transport emissions are set out in Chapter 7 [Transport] | Negligible                                                               |

| Potential Effect  | Nature of Effect<br>(Permanent / Temporary) | Significance<br>(Major/Moderate/Minor)<br>(Beneficial/ Adverse/Negligible) | Mitigation / Enhancement Measures & Monitoring<br>(and how these will be secured) | Residual Effects<br>(Major/Moderate/Minor)<br>(Beneficial/Adverse/ Negligible) |
|-------------------|---------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Cumulative Effect |                                             |                                                                            |                                                                                   |                                                                                |
| Construction      | As above                                    |                                                                            |                                                                                   |                                                                                |
| Operation         | As above                                    |                                                                            |                                                                                   |                                                                                |