AIR QUALITY EXPERTS

# BLOOR HOMES SOUTHERN LTD. AND UNIVERSITY OF READING
# LAND EAST AND WEST OF HYDE END ROAD
# SHINFIELD

## AIR QUALITY ASSESSMENT
## OCTOBER 2025

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| | |
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| **Project Code:** | **1052 – BH.Shinfield.1** |
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**Bloor Homes Southern Ltd. and University of Reading**
**Land East and West of Hyde End Road, Shinfield**
**Air Quality Assessment**

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# 1 Introduction

1.1 Air Quality Experts Limited has been instructed by Bloor Homes (Southern) to undertake an Air Quality Assessment (AQA) in relation to the proposed development on land to the East and West of Hyde End Road, Shinfield.

1.2 The application site covers 10.75 hectares (Ha) and is located on the southern edge of Shinfield, situated approximately 3 miles to the south of Reading and within the authoritative boundary of Wokingham Borough Council (WBC). The site location in relation to the Local Highway Network is illustrated in **Figure 1.1** below.

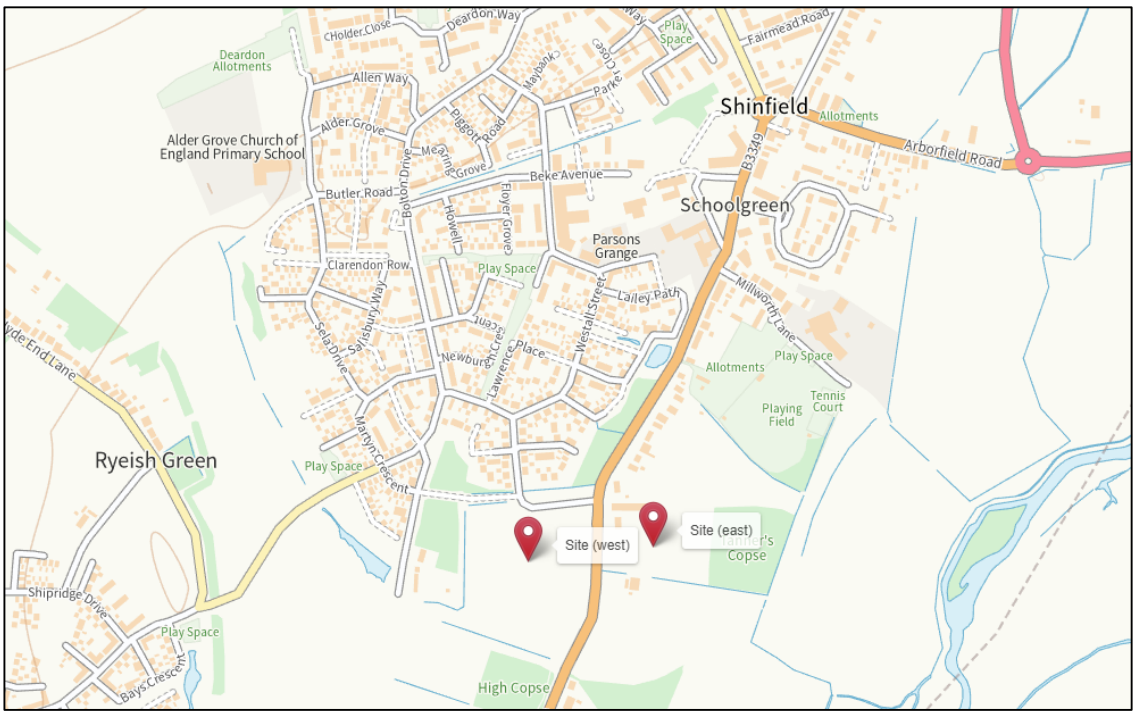


**Figure 1.1: Site Location in Relation to the Local Highway Network**

1.3 The application site is currently in use as farmland. Most of the site is agricultural land with around 0.8ha in farm buildings and access tracks.

1.4 The site comprises two land parcels located east and west of Hyde End Road in Shinfield, just south of recent residential developments at Langley Mead and Shinfield Meadows.

1.5 To the north, older properties line Hyde End Road, while the Langley Mead Suitable Alternative Natural Greenspace (SANG) wraps around the eastern parcel to the south and east.

1.6 The western parcel is partially bordered by Appleton Way, which provides access to Langley Mead and Shinfield Meadows. The eastern parcel adjoins homes along Hyde End Road. To the north of this parcel are allotments and Millworth Lane Recreation Ground.

1.7 The existing red-line boundary is illustrated in **Figure1.2** below.

**Figure 1.2: Existing Red Line Boundary**

1.8 The application to which this AQA relates to is:

*"Full application for the proposed erection of new dwellings (C3 Use Class) together with associated landscaping, open space provision, drainage infrastructure, parking, access and associated works."*

1.9 The proposed site layout is illustrated in **Figure 1.3** overleaf.


**Figure 1.3: Proposed Site Layout**

1.10 This AQA has been undertaken in order to establish whether the site's location is considered suitable for the proposed residential use and to quantify any likely pollution impacts upon the surrounding area or local sensitive receptors as a result of the construction and/or operation of the proposed development.

1.11 In the event where potential impacts are identified, specific mitigation measures will be recommended to minimise significant pollution effects and help safeguard the health and well-being of existing and proposed sensitive receptors within the local area.

1.12 The AQA is divided up into the following sections:

- **Section 2 -** Legislation and Policy Context;
- **Section 3 -** Assessment Methodology and Significance Criteria;
- **Section 4 -** Baseline Site Conditions;
- **Section 5 -** Evaluation of Potential Effects;
- **Section 6 -** Mitigation Measures;
- **Section 7 -** Residual Effects and Conclusions; and
- **Appendix A -** Construction Dust Risk Assessment.

# 2 Legislation and Policy Context

### National Planning Policy

*The Air Quality Strategy*[1]

2.1 The Air Quality Strategy (AQS) fulfils the statutory requirement of the Environment Act 1995 as amended by the Environment Act 2021 to publish an Air Quality Strategy setting out air quality standards, objectives, and measures for improving ambient air quality every 5 years.

2.2 The revised strategy (2023) supersedes Volume 1 of the 2007 air quality strategy in England only. In Northern Ireland and Scotland, the strategy (Volume 1) remains in force.

2.3 The AQS sets out a framework to enable local authorities to deliver for their communities and contribute to the long-term air quality goals, including ambitious new targets for fine particulate matter ($PM_{2.5}$).

2.4 The AQS sets standards and objectives for pollutants to protect human health, vegetation and ecosystems. The pollutant objectives are the dates by which each standard is to be achieved, taking into account economic considerations, practical and technical feasibility.

2.5 Under the Environment Act 2021, 2 new legally-binding long-term targets have been set each with an interim target, in order to reduce concentrations of fine particulate matter, $PM_{2.5}$. The two new targets are:

- 10 µg/m$^3$ annual mean concentration $PM_{2.5}$ nationwide by 2040, with an interim target of 12 µg/m$^3$ by January 2028.
- 35% reduction in average population exposure by 2040, with an interim target of a 22% reduction by January 2028, both compared to a 2018 baseline.

2.6 The new targets should help drive reductions in the worst $PM_{2.5}$ hotspots across the country, whilst ensuring nationwide action to improve air quality.

2.7 The main air quality pollutants of concern with regards to new developments such as the one proposed at this Application Site are the traffic related pollutants of Nitrogen Dioxide ($NO_2$) and Particulate Matter of size 10 and 2.5 microns ($PM_{10}$ and $PM_{2.5}$).

[1] Department for Environment, Food & Rural Affairs (DEFRA), (2023), 'Air Quality Strategy: framework for local authority delivery. Available on: Air quality strategy: framework for local authority delivery - GOV.UK (www.gov.uk)

2.8 The relevant air quality objectives, as they currently apply in the United Kingdom are presented in **Table 2.1** below.

| Pollutant | Air Quality Objectives | | Date to be achieved by (and maintained thereafter) |
|---|---|---|---|
| | Concentration | Measured As | |
| Nitrogen Dioxide ($NO_2$) | 200 µg/m$^3$ | 1-hour mean not to be exceeded more than 18 times per year | 31/12/2005 |
| | 40 µg/m$^3$ | Annual mean | 31/12/2005 |
| Particles ($PM_{10}$) | 50 µg/m$^3$ | 24-hour mean not to be exceeded more than 35 times per year | 31/12/2004 |
| | 40 µg/m$^3$ | Annual mean | 31/12/2004 |
| Particles ($PM_{2.5}$) (UK – Except Scotland) | 20 µg/m$^3$ | Annual mean | 2020 |
| Particles ($PM_{2.5}$) (UK – Urban Areas) | Target of 15% reduction in concentrations at urban background | | Between 2010 and 2020 |
| Particles ($PM_{2.5}$) (England) | 12 µg/m$^3$ | Interim annual mean target to be achieved by 2028 | 2028* |
| | Target of 22% reduction in average population exposure | | |
| | 10 µg/m$^3$ | Legally binding nationwide annual mean target to be achieved by 2040 | 2040** |
| | Target of 35% reduction in average population exposure | | |

*Note: Interim $PM_{2.5}$ targets are to be achieved by 2028

**Note: Legally binding $PM_{2.5}$ targets are to be achieved by 2040

**Table 2.1: Air Quality Objectives in the UK**

*Air Quality Standards Regulations, 2019*[2]

2.9 The air quality limit values set out in EU Directive (2008/50/EC) are transposed into English Law by the Air Quality Standards Regulations (2010) and amended in 2019. This imposes duties on the Secretary of State in relation to achieving the limit values.

[2] UK Parliament, (2019). 'The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019', HMSO, London.

2.10 With regards to dust, it is recognised that major construction works may give rise to dust emissions within the $PM_{10}$ and $PM_{2.5}$ size fraction and it is noted within section 79 of the Environmental Protection Act 1990 that a statutory nuisance is defined as:

*"...b - smoke emitted from premises so as to be prejudicial to health or a nuisance;*

*c - fumes or gases emitted from premises so as to be prejudicial to health or a nuisance;*

*d - any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance..."*.

2.11 In January 2019, 'The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019' amends the Air Quality Standards Regulations 2010 to transpose provisions of the EU Ambient Air Quality Directive (2008/50/EC) concerning the contribution made by natural sources and winter sanding or salting of roads. This amendment states:

*"(1) The Air Quality Standards Regulations 2010(4) are amended as follows.*

*(2) After regulation 17(2) insert—*

> *(3) Where, in accordance with Article 20 of Directive 2008/50/EC, the Commission has been informed that a limit value has been exceeded for a reason attributable to natural sources, that limit value will not be considered to be exceeded for the purposes of these Regulations.*

*(3) After regulation 26(1), insert—*

> *(1A) Where, in accordance with Article 21 of Directive 2008/50/EC, the Secretary of State has designated zones within which limit values for $PM_{10}$ are exceeded due to the re-suspension of particulates following winter sanding or salting of roads, the Secretary of State's duty under paragraph (1) applies to those zones only in so far as the excess is attributable to other sources of $PM_{10}$."*.

*National Planning Policy Framework (NPPF) 2024*[3]

2.12 The NPPF was updated in December 2024 and supersedes all the previous versions. The NPPF was slightly amended on 7 February 2025, only to correct cross-references from

[3] Ministry of Housing, Communities and Local Government, (2024), 'National Planning Policy Framework', London.

footnotes 7 and 8, and amend the end of the first sentence of paragraph 155 to make its intent clear.

2.13 The purpose of the NPPF is to set out the Government's policies in relation to planning for England and how these should be applied.

2.14 Paragraph 8 within Section 2. Achieving Sustainable Development states:

*"Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives): …*

*c) an environmental objective – to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."*

2.15 In relation to the planning conditions and obligations, paragraphs 56 and 57 within Section 4 'Decision-making', states the following:

*"Local planning authorities should consider whether otherwise unacceptable development could be made acceptable through the use of conditions or planning obligations. Planning obligations should only be used where it is not possible to address unacceptable impacts through a planning condition.*

*Planning conditions should be kept to a minimum and only imposed where they are necessary, relevant to planning and to the development to be permitted, enforceable, precise and reasonable in all other respects. Agreeing conditions early is beneficial to all parties involved in the process and can speed up decision- making. Conditions that are required to be discharged before development commences should be avoided, unless there is a clear justification."*.

2.16 Section 9 of the NPPF refers to promoting sustainable transport. In relation to air quality, paragraph 109 states that:

*"Transport issues should be considered from the earliest stages of plan-making and development proposals, using a vision-led approach to identify transport solutions that deliver well-designed, sustainable and popular places. This should involve:*

*... c) understanding and addressing the potential impacts of development on transport networks; ...*

*e) identifying and pursuing opportunities to promote walking, cycling and public transport use; and*

*f) identifying, assessing and taking into account the environmental impacts of traffic and transport infrastructure – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains.*

2.17 Additionally, paragraph 110 states:

*"The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health...."*.

2.18 Section 15 'Conserving and enhancing the natural environment' addresses air quality within a number of paragraphs, this is detailed below.

2.19 Paragraph 187 states;

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

*...e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans;..."*.

2.20 Paragraph 198;

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

2.21 Paragraph 199 adds;

*"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.".*

*Planning Practice Guidance – Air Quality*[4]

2.22 The Planning Practice Guidance (PPG) is used to support the National Planning Policy Framework and is published online. The guidance on air quality was originally published in 2014 and updated in November 2019. The PPG provides various principles on how planning can take account of the impact of new development on air quality.

2.23 The guidance refers to the specific issues that may need to be considered when assessing air quality impacts. It states:

*"Considerations that may be relevant to determining a planning application include whether the development would:*

*Lead to changes (including any potential reductions) in vehicle-related emissions in the immediate vicinity of the proposed development or further afield…*

*Introduce new point sources of air pollution…*

[4]Ministry of Housing, Communities and Local Government, (2019), 'Planning Practice Guidance-Air Quality', Ministry of Housing, Communities and Local Government, London. Available on: https://www.gov.uk/guidance/air-quality--3#history.

*Expose people to harmful concentrations of air pollutants...*

*Give rise to potentially unacceptable impacts (such as dust) during construction for nearby sensitive locations;*

*Have a potential adverse effect on biodiversity...".*

2.24 Guidance on how detailed an air quality assessment need to be is provided and states:

*"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..."*.

2.25 Reference to how air quality can be mitigated states that:

*"Mitigation option 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 the applicants to consider appropriate mitigation so as to ensure new development is appropriate for its location and unacceptable risks are prevented..."*.

**Regional Planning Policy**

*The South East Plan – Regional Spatial Strategy for the South East of England – May 2009*[5]

2.26 Policy NRM9: Air Quality, states the following:

*"Strategies, plans, programmes and planning proposals should contribute to sustaining the current downward trend in air pollution in the region. This will include seeking improvements in air quality so that there is a significant reduction in the number of days of medium and high air pollution by 2026. Local development documents and development control can help to achieve improvements in local air quality through:*

*i. ensuring consistency with Air Quality Management Plans*

*ii. reducing the environmental impacts of transport ,congestion management, and support the use of cleaner transport fuels*

[5] Government Office For The South East (GOFTSE). 2009. The South East Plan – Regional Spacial Strategy for the South East of England. TSO. London.

*iii. Mitigating the impact of development and reduce exposure to poor air quality through design, particularly for residential development in areas which already, or are likely to, exceed national air quality objectives*

*iv. Encouraging the use of best practice during construction activities to reduce the levels of dust and other pollutants*

*v. Assessing the potential impacts of new development and increased traffic levels on internationally designated nature conservation sites, and adopt avoidance and mitigation measures to address these impacts."*

**Local Planning Policy**

*Wokingham Borough Local Development Framework – Adopted Core Strategy Development Plan Document - January 2010*[6]

2.27 The Core strategy sets out the vision for how the borough will develop in the period to 2026 and how the council aims to protect and enhance the good quality of life enjoyed in the borough.

2.28 Core Strategy Policy CP1 – Sustainable development states that:

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

*1) Maintain or enhance the high quality of the environment;*

*2) Minimise the emission of pollutants into the wider environment;*

*…*

*8) Avoid areas where pollution (including noise) may impact upon the amenity of future occupiers; …"*

2.29 Proposed indicator/target CP1- Number of days per annum when air pollution is high/moderate / Reduce over time.

[6] Wokingham Borough Council (WBC). 2010. Wokingham Borough Local Development Framework – Adopted Core Strategy Development Plan. WBC. Wokingham.

*Wokingham Borough Local Development Framework – Sustainable Design and Construction – Supplementary Planning Document – May 2010*[7]

2.30 Sustainability Issue 9: Air, Noise and Light Pollution and Land Affected By Contamination states the following:

*"Sustainability Statements submitted with a planning application will be expected to provide evidence of how the proposal has addressed the issues of air, noise and light pollution to minimise their impact. It should also provide evidence of the measures that will enable developers to meet their obligations in respect of land affected by contamination.*

*Where significant impacts from pollution to or from the proposed development is likely or probable, an assessment of existing levels of pollution will be required to be submitted alongside the planning application."*

**Emerging Policy**

*Wokingham Borough Local Plan Update – 2023-2040*

2.31 The Local Plan Update will put in place a new planning strategy for the period to 2040.

2.32 The plan was submitted to the Secretary of State for examination by an independent Planning Inspector on Friday 28 February 2025. Once adopted, it will replace the current Core Strategy and Managing Development Delivery local plans.

[7] Wokingham Borough Council (WBC). 2010. Wokingham Borough Local Development Framework – Sustainable Design and Construction – Supplementary Planning Document. WBC. Wokingham.

# 3 Assessment Methodology and Significant Criteria

3.1 This section outlines the assessment methodology and the criteria that have been used to assess the magnitude and significance of risk associated with the proposed development.

3.2 **Table 3.1** below summarises the key information sources used in this assessment.

| Source | Details |
|---|---|
| Department for Environment, Food and Rural Affairs (Defra) | **COVID-19 Supplementary Guidance – Local Air Quality Reporting in 2021**[8]<br>Prepared in order to inform local authorities in England of the key changes and points of reference with respect to LAQM duties, as described in Part IV of the Environment Act 1995, for the 2021 reporting year. |
| | **Local Air Quality Management (LAQM) – Technical Guidance (TG22)**[9]<br>The LAQM (TG22) supersedes all previous versions, the most recent being the April 2021 release of LAQM (TG16). It is designed to support local authorities in carrying out their duties under the Environment Act 1995 as amended by the Environment Act 2021, the Environment (Northern Ireland) Order 2002, and subsequent regulations. |
| | **LAQM.TG(22) Supplementary Guidance England excl. London -Determining the impact of air quality improvement measures**[10]<br>This supplementary guidance offers a structured methodology for determining the future impacts of air quality improvement measures. |
| | **The Local Air Quality Management (LAQM)Tools.**[11]<br>Contain information pertaining to monitoring networks across the UK and provides tools, which aid in the data processing and the estimation of pollutant concentrations with reference to the specific year of study. |
| | **LAQM Background Maps (2021 Reference Year)**[12]<br>These provide mapped estimates of background concentrations for specific pollutants ($NO_X$, $NO_2$, $PM_{10}$ and $PM_{2.5}$) using a 1x1 km grid.<br>The maps also provide information on how pollutant concentrations change over time or across a wide area, while allowing for the assessment of new pollutant sources that are introduced into an area and the impact they may have upon local air quality. |

[8] Greater London Authority (GLA). (2021). 'Local Air Quality Management Reporting in 2021 COVID-19 Supplementary Guidance'. GLA, London
[9] Department of Environment, Food and Rural Affairs (DEFRA). (2022). 'Local Air Quality Management Technical Guidance (TG22)'. DEFRA, London
[10] Department of Environment, Food and Rural Affairs (DEFRA). (2024). 'LAQM.TG(22) Supplementary Guidance England excl. London - Determining the impact of air quality improvement measures'. DEFRA, London
[11] https://laqm.defra.gov.uk/air-quality/air-quality-assessment/list-of-available-tools/
[12] Department of Environment, Food and Rural Affairs (DEFRA). (2018), 'Background Mapping data for local authorities – 2018', DEFRA, London. https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018

| | |
|---|---|
| Environmental Protection UK (EPUK) & Institute of Air Quality Management (IAQM) | **Land-Use Planning & Development Control: Planning for Air Quality (2017)**[13] This document provides advice and guidance to ensure that air quality is adequately considered in the land-use planning and development control processes. This is particularly applicable to assessing the effect of changes in exposure of members of the public resulting from residential and mixed-use developments, especially those within urban areas where air quality is poorer. |
| | **Guidance on the assessment of dust from demolition and construction (2024 v.2.2)**[14] The document provides guidance on how to undertake a construction dust impact assessment (including demolition and earthworks). The emphasis in the document is on providing the means for classifying the risk of dust impacts from a construction site, which then allows appropriate mitigation measures to be identified. |
| The National Atmospheric Emissions Inventory (NAEI) | **The UK NAEI**[15] estimates annual pollutant emissions from 1970 to the most current publication year for the majority of pollutants. The NAEI is compiled on an annual cycle, each year the latest set of data are added to the inventory and the full time series is updated to take account of improved data and any advances in the methodology used to estimate the emissions. |
| London Councils | **Air Quality and Planning Guidance**[16] This guidance is aimed at local authorities, developers and their consultants, and provides technical advice on how to deal with planning applications that could have an impact on air quality. Originally developed for London but consistently adopted across the UK with a view of reducing exposure to air pollution. |
| Local Authorities | **Wokingham Borough Council ASR**[17] This Annual Status Report (ASR) highlights the status of the air quality within the Borough, discussing AQMAs, the monitoring strategy and concentrations of pollutants in the air. |

**Table 3.1: Key Information Sources**

### Scope of Air Quality Assessment

3.3 This Air Quality Assessment considers the suitability of the site for the proposed use and assesses whether any significant air quality impacts are anticipated as a result of the construction and/or the operation of the proposed development.

[13] Environmental Protection UK & Institute of Air Quality Management (EPUK & IAQM) (2017) Land-Use Planning & Development Control: Planning for Air Quality, EPUK & IAQM, London
[14] IAQM, (2024). 'Assessment of dust from demolition and construction 2024 v2.2', IAQM, London.
[15] National Atmospheric Emissions Inventory (NAEI). Available from: https://naei.beis.gov.uk/
[16] London Councils. (2007), Air Quality and Planning Guidance, The London Air Pollution Planning and the Local Environment (APPLE) working group, London.
[17] Wokingham Borough Council (WBC), (2024). '2024 Air Quality Annual Status Report (ASR'. (WBC)

3.4 A staged assessment approach has been adopted. This ensures that the approach taken for the assessment of risk is proportional to the risk of an unacceptable impact being caused.

3.5 Where a simple review of the likely impacts associated with the proposed development clearly demonstrates that the risk of a health/annoyance impact is negligible, this will be sufficient to conclude that no further or detailed assessment is necessary.

3.6 In cases where the risk involved cannot be regarded as negligible, a more detailed and quantitative assessment will be undertaken.

3.7 The specific methodology and impact criteria used in this assessment is detailed below.

*Construction Dust Impacts*[18]

3.8 In January 2024, the Institute of Air Quality Management (IAQM) published a revised version (V2.2) of their updated guidance for the *'Assessment of dust from demolition and construction'*.

3.9 This 2024 version is essentially a rewrite of the previously published guidance in 2014, whilst adopting the lessons learnt since.

3.10 The updated guidance supersedes all previously published versions and continues to offer developers, their consultants and environmental health practitioners, a structured approach for carrying out a construction dust impact assessment, determine their significance and identify suitable mitigation measures to remove or minimise impacts.

3.11 The potential dust impacts associated with construction activities have been assessed in accordance with guidance from the IAQM best practice document.

3.12 The IAQM provides guidance on a five-step process to assess the potential impacts of construction dust pre-mitigation, provide mitigation measures specific to the risk and assess the post-mitigation impacts.

3.13 The assessment procedure follows the following framework:

- **Step 1** - Screen the requirement for a more detailed assessment;

[18] IAQM, (2024). 'Assessment of dust from demolition and construction 2024 v2.2', IAQM, London.

- **Step 2** - Assess the risk of dust impacts of the four phases of construction (demolition, earthworks, construction and trackout), taking into account:
    - the scale and nature of the works, which determines the potential Dust Emission Magnitude (**Step 2A**);
    - the sensitivity of the area (**Step 2B**); and
    - These factors are combined to give the risk of dust impacts (**Step 2C**).
- **Step 3** - Determine the site-specific mitigation for the potential activities;
- **Step 4** - Examine the residual effects and determine whether or not these are significant; and
- **Step 5** - Prepare the Construction Dust Risk Assessment.

3.14 In the process of screening the need for a detailed assessment, the following criteria has been used:

*"An assessment will normally be required where there is:*

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

3.15 When defining the sensitivity of an area/receptor, the factors within **Table 3.2** overleaf are used.

| Area Sensitivity | Human Receptors | Ecological Receptors |
|---|---|---|
| **High** | People would be present continuously, >10 dwellings within 20m of the site, exposed over a time period relevant to the air quality objective for $PM_{10}$, very sensitive receptors (e.g. residential properties, hospitals, schools, residential care homes). | International or national designation, locations where there is a community of a particularly dust sensitive species (e.g. Special Area of Conservation SAC). |
| **Medium** | People would not be expected to be present here continuously for extended periods, locations where people exposed are workers and exposure is over a time period relevant to the air quality objective for $PM_{10}$, 1-10 dwellings within 20m of the site, medium sensitive receptors (e.g. office, shop workers). | Locations where there is particularly important plant species, national designation where the features may be affected by dust deposition (e.g. Sites of Special Scientific Interest SSSI). |
| **Low** | People would be expected to be present only for limited periods, human exposure is transient. 1 dwelling within 20m of site. Low sensitivity receptors (e.g. public footpaths, playing fields, parks, shopping streets). | Locations with a local designation where the features may be affected by dust deposition (e.g. Local Nature Reserve). |

**Table 3.2: IAQM Factors for Defining the Sensitivity of an Area/Receptor.**

*Building Emissions*

3.16 Any emissions associated with the proposed energy strategy have been assessed in line with the Energy Strategy Statement undertaken by Briary Energy and the recommendations provided.

*Transport Emissions*

3.17 The EPUK & IAQM Guidance – 'Planning For Air Quality' has been used to assess potential traffic impacts associated with the development.

3.18 **Table 3.3** below provides the criteria used for screening the need for an Air Quality Assessment.

| The Development will: | Indicative Criteria to Proceed to an Air Quality Assessment |
|---|---|
| Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans <3.5t gross vehicle weight). | A change of LDV flows of:<br>- more than 100 AADT within or adjacent to an AQMA<br>- more than 500 AADT elsewhere. |

| | |
|---|---|
| Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses >3.5t gross vehicle weight). | A change of HDV flows of:<br>- more than 25 AADT within or adjacent to an AQMA<br>- more than 100 AADT elsewhere. |
| Realign roads, i.e. changing the proximity of receptors to traffic lanes. | Where the change is 5m or more and the road is within an AQMA. |
| Introduce a new junction or remove an existing junction near to relevant receptors. | Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic lights, or roundabouts. |
| Introduce or change a bus station. | Where bus flows will change by:<br>- more than 25 AADT within or adjacent to an AQMA<br>- more than 100 AADT elsewhere. |
| Have an underground car park with extraction system. | The ventilation extract for the car park will be within 20m of a relevant receptor.<br>Coupled with the car park having more than 100 movements per day (total in and out). |

**Table 3.3: Indicative Criteria for Requiring an Air Quality Assessment**

3.19 If any of the above criteria are met, then the significance of air pollution impacts must be assessed. This may either be a Simple or a Detailed Assessment. In accordance with the EPUK & IAQM Guidance, a Simple Assessment is one relying on already published information and without quantification of impacts, in contrast to a Detailed Assessment that must be completed with the aid of a dispersion model.

*Impact Criteria*

3.20 In the event that the initial screening indicates that there is a potential risk of impact, guidance is provided also by EPUK & IAQM on how to determine the magnitude and the significance of any changes in air pollutant concentrations and/or exposure as a result of a proposed development.

3.21 This process takes the following into account:

- the magnitude of the change (% change of annual mean concentration);
- the concentration relative to the Air Quality Strategy (AQS) objective (above or below the objective); and

- the direction of change (adverse or beneficial).

3.22 The magnitude of an impact should be described by using the criteria set out in **Table 3.4** below. The criteria are based upon the change in pollutant concentration resulting from the proposed development as a percentage of the Air Quality Action Level (AQAL) which in this case is $NO_2$ and $PM_{10}$ annual mean objective levels of 40 µg/m$^3$.

| Change Magnitude | $NO_2$/$PM_{10}$ Annual Mean | No Days $PM_{10}$ >40 µg/m$^3$ |
|---|---|---|
| **Large** | Increase/decrease >10% (>4 µg/m$^3$) | Increase/decrease >4 days |
| **Medium** | Increase/decrease 6-10% (2.4-4 µg/m$^3$) | Increase/decrease 2-4 days |
| **Small** | Increase/decrease 2-5% (0.8-2 µg/m$^3$) | Increase/decrease 1-2 days |
| **Imperceptible** | Increase/decrease <1% (<0.4 µg/m$^3$) | Increase/decrease <1 day |

**Table 3.4: Impact Magnitude for Changes in $NO_2$ and $PM_{10}$ Concentrations**

3.23 The significance of the impact will be dependent upon the magnitude of change in relation to the relevant AQAL. This is set out in **Table 3.5** below.

| Long term average Concentration at receptor in assessment year. | % Change in concentration relative to Air Quality Action Level (AQAL)* | | | |
|---|---|---|---|---|
| | 1 | 2-5 | 6-10 | >10 |
| 75% of less of AQAL (<30 µg/m$^3$) | Negligible | Negligible | Slight | Moderate |
| 76 – 94% of AQAL (30-38 µg/m$^3$) | Negligible | Slight | Moderate | Moderate |
| 95 – 102% of AQAL (38-41 µg/m$^3$) | Slight | Moderate | Moderate | Substantial |
| 103 – 109% of AQAL (41 – 44 µg/m$^3$) | Moderate | Moderate | Substantial | Substantial |
| 110% or more of AQAL (>44 µg/m$^3$) | Moderate | Substantial | Substantial | Substantial |

*Air Quality Action Level – in this case the objective levels.

**Table 3.5: Impact Descriptors for Individual Receptors**

3.24 Therefore, once the magnitude and the significance of the change has been established, the impact at each relevant receptor can be described. The impact magnitude at each receptor location can be described using the changes stated above as being of Imperceptible, Small, Medium or Large magnitude, or Negligible, Slight Moderate or Substantial significance and also as being either Temporary or Permanent.

3.25 The overall significance should be described separately for both the impact of emissions related to the proposed development on existing receptors, and for the impacts of emissions from existing source(s) on new exposure being introduced from the proposed development. This is discussed below.

*Exposure Criteria*

3.26 The London Councils Air Quality and Planning Guidance takes into account the now superseded Planning Policy Statement 23: Planning and Pollution Control and is aimed at developers, their consultants and local authorities in order to ensure consistency in the approach to dealing with Air Quality and planning in London.

3.27 Whilst this guidance has been developed for London it is consistently adopted across the UK with a view of reducing exposure to air pollution.

3.28 When determining both the significance of exposure to air pollution and the levels of mitigation required, consideration should be given to the Air Pollution Exposure Criteria (APEC). The APEC criteria is set out in **Table 3.6** below.

| | Applicable Range Nitrogen Dioxide Annual Mean | Applicable Range $PM_{10}$ | Recommendation |
|---|---|---|---|
| APEC – A | > 5% below national objective | **Annual Mean:** > 5% below national objective **24 hr:** > 1-day less than national objective | No air quality grounds for refusal; however, mitigation of any emissions should be considered. |
| APEC – B | Between 5% below or above national objective | **Annual Mean:** Between 5% above or below national objective **24 hr:** Between 1-day above or below national objective. | May not be sufficient air quality grounds for refusal, however appropriate mitigation must be considered e.g., Maximise distance from pollutant source, proven ventilation systems, parking considerations, winter gardens, internal layout considered, and internal pollutant emissions minimised. |
| APEC – C | > 5% above national objective | **Annual Mean:** > 5% above national objective **24 hr:** > 1-day more than national objective. | Refusal on air quality grounds should be anticipated, unless the Local Authority has a specific policy enabling such land use and ensure best endeavours to reduce exposure are incorporated. Worker exposure in commercial/industrial land uses should be considered further. Mitigation measures must be presented with air quality assessment, detailing anticipated outcomes of mitigation measures. |

**Table 3.6: Air Pollution Exposure Criteria**

3.29 It should be noted that air quality is not well suited to the rigid application of a generic significance matrix to determine the overall significance of a development and individual receptor sensitivity should also be taken into account.

3.30 Therefore, professional judgement should be employed throughout, and the assessment should take into account any site-specific considerations.

3.31 Both the impact and exposure criteria will be applied to the findings of this assessment, where required.

# 4 Baseline Conditions

*Local Air Quality Management*

4.1 The proposed development site falls within the jurisdiction of Wokingham Borough Council (WBC).

4.2 Under the Air Quality Strategy, there is a duty on all Local Authorities to consider the air quality within their boundaries and prepare an annual update report.

4.3 A review of the Air Quality Assessments undertaken by WBC has indicated that air quality within the district is generally good. There is only one Air Quality Management Area (AQMA) declared within the Borough 'Wokingham Town Centre AQMA'. There were two more AQMA's but they have been revoked in January 2025 following improvements to the local air quality.

4.4 The proposed development site is not located within or near the declared AQMA.

4.5 There are no high sensitivity, international or national, ecological receptors within 250 of the site boundary.

*Background*

4.6 The Defra mapping tool (reference year 2021) has been used to establish the pollutant background concentrations. The site falls within two 1x1km grid squares X:472500, Y:167500 and X:473500, Y:167500. An average of the annual mean concentrations for both locations has been calculated and used.

4.7 The $NO_X$, $NO_2$, $PM_{10}$ and $PM_{2.5}$ annual mean background concentrations for 2023 and 2024 are provided in **Table 4.1** below.

| Pollutant | 2023 (µg/m³) | 2024 (µg/m³) |
|---|---|---|
| $NO_X$ | 11.20 | 10.82 |
| $NO_2$ | 8.68 | 8.40 |
| $PM_{10}$ | 12.49 | 12.40 |
| $PM_{2.5}$ | 7.29 | 7.21 |

**Table 4.1: Defra Annual Mean Background Concentrations for 2023 and 2024**

*Local Monitoring*

4.8 In June 2024 WBC published their latest Air Quality Annual Status Report (ASR) which provides annual mean monitoring data up to 2023.

4.9 Monitored results from 2020 and 2021 are likely to have been impacted by the COVID-19 pandemic and are likely to be less representative of the 'true' baseline concentrations. Therefore, in line with the Covid-19 Supplementary Guidance produced by DEFRA and the GLA in 2021, the data from 2020 and 2021 has not been used as reference years within this baseline. Subsequently, this assessment has used 2023 data as the best representative refence year of post-COVID baseline concentrations.

*Automatic Monitoring*

4.10 WBC currently operates two automatic (continuous) monitoring stations within the Borough. The site location in relation to WBC's automatic monitoring locations is illustrated in **Figure 4.1** below.

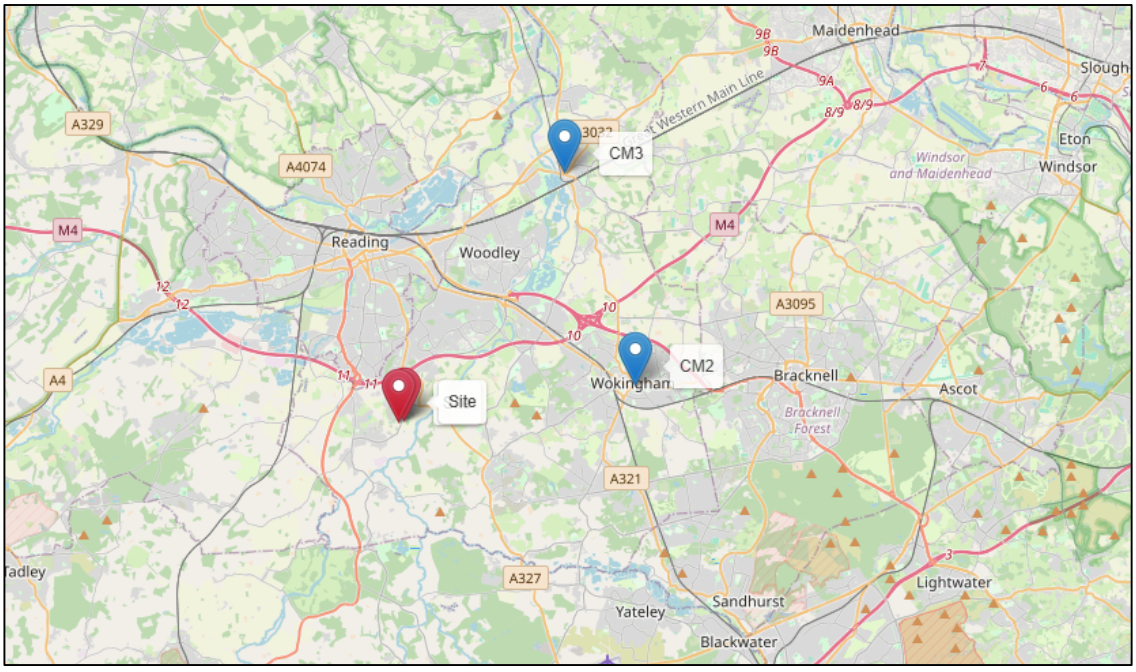


**Figure 4.1: Site Location in Relation to WBC's Automatic Monitoring Locations**

4.11 The $NO_2$ annual mean concentrations for WBC's automatic monitoring locations are provided within **Table 4.2** overleaf. $PM_{10}$ and $PM_{2.5}$ are not currently monitored within WBC.

| ID | Site Name | Co-ordinates (X,Y) | Site Type | Pollutant | Annual Mean $NO_2$ Concentration ($\mu g/m^3$) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 2019 | 2020 | 2021 | 2022 | 2023 |
| CM2 | Peach Street Wokingham | 481348, 168603 | Roadside | $NO_2$ | 33 | 22.3 | 24.2 | 27.1 | 30.6 |
| | | | | $PM_{10}$ | - | - | - | - | - |
| | | | | $PM_{2.5}$ | - | - | - | - | - |
| CM3 | Twyford Crossroads | 478765, 176003 | Kerbside | $NO_2$ | 29.9 | 22.1 | 26.0 | 23.6 | 21.5 |
| | | | | $PM_{10}$ | - | - | - | - | - |
| | | | | $PM_{2.5}$ | - | - | - | - | - |

**Table 4.2: $NO_2$ Annual Mean Concentration for WBC's Automatic Monitoring Locations**

4.12 **Table 4.2** demonstrates that the annual mean concentrations for the automatic monitoring location for $NO_2$ are considerably below their respective annual mean objective.

*Non-Automatic Monitoring*

4.13 WBC currently undertakes non-automatic monitoring of Nitrogen Dioxide ($NO_2$) at 46 locations across the Borough.

4.14 There are no monitoring locations immediately adjacent to the site, the closest non-automatic monitoring locations in relation to the proposed development are in excess of 1.5km to the North, along the M4. This is illustrated in **Figure 4.2** below.

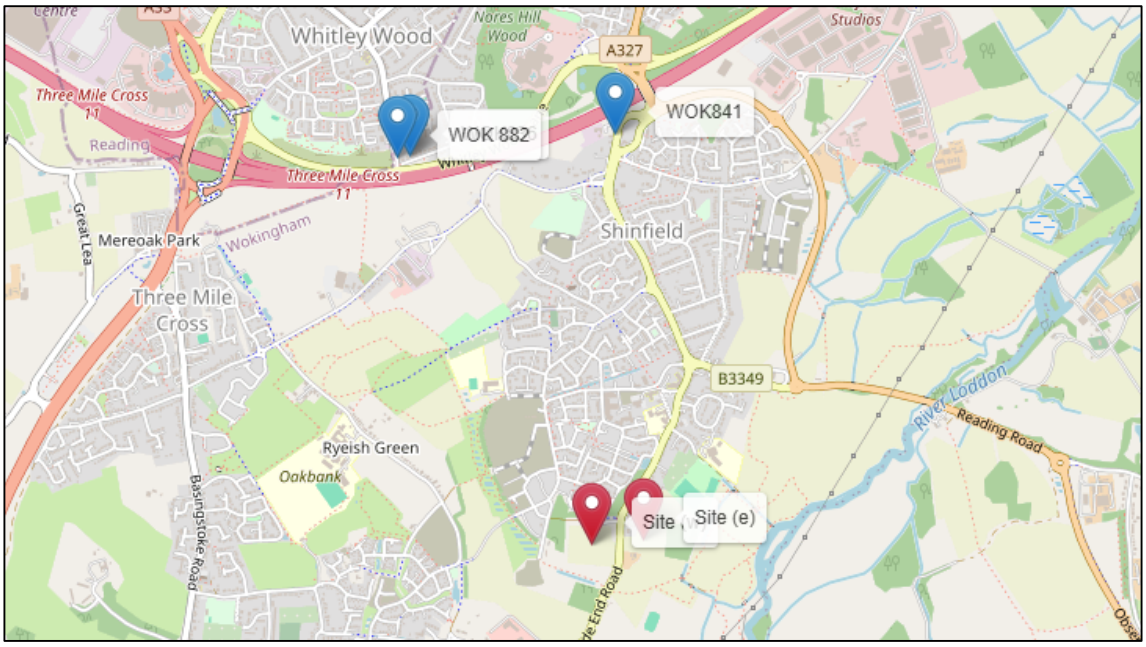


**Figure 4.2: Site Location in Relation to the Closest Non-Automatic Monitoring Locations**

4.15 The latest $NO_2$ annual mean concentrations for the closest non-automatic monitoring locations are provided within **Table 4.3** below.

| ID | Location | Coordinates (X,Y) | Site Type | Annual Mean Concentration (µg/m³) $NO_2$ | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 |
| WOK 836 | 349 Old Whitley Wood Ln | 472346, 168684 | Roadside | 27.0 | 19.3 | 18.7 | 21.5 | 18.9 |
| WOK 841 | Lane End Villas | 473130, 168783 | Kerbside | 33.3 | 20.7 | 23.0 | 24.4 | 20.6 |
| WOK 882 | Sign Whitley Wd Ln | 472299, 168677 | Roadside | 32.6 | 20.7 | 23.8 | 24.9 | 23.9 |

**Table 4.3: Annual Mean $NO_2$ Concentrations for the Closest Non-Automatic Monitoring Locations**

4.16 **Table 4.3** above demonstrates that there were no exceedances of the national annual mean objective for $NO_2$ between 2019 and 2023 for the closest non-automatic monitoring locations. In fact, there were no exceedances recorded at any of the monitoring locations within the Borough since 2019.

4.17 Therefore, all the automatic and non-automatic monitoring locations are >5% below the national annual mean objective for $NO_2$ between 2019 - 2023. Consequently, in accordance with the exposure criteria set out in **Table 3.6,** the proposed development site is likely to fall within APEC – A for site suitability, which states the following:

*"No air quality grounds for refusal; however, mitigation of any emissions should be considered."*

4.18 Suitable mitigation measures have been considered, where required, within **Section 6** of this AQA.

# 5 Evaluation of Potential Effects

**Construction**

*Construction Dust*

5.1 During the construction phases, there is the potential for emissions of dust to cause annoyance, nuisance and health effects to sensitive receptors, both human and ecological located close to the site.

5.2 The site is a greenfield site with a cluster of small farm storage buildings. Therefore, the construction activities associated with the proposed development have been separated into four stages:

- Demolition/Site Clearance (Minor);
- Earthworks;
- Construction; and
- Trackout.

5.3 There are a number of human receptors within 250m of the site boundary. Therefore, a dust assessment has been undertaken in order to evaluate and minimise potential dust effects during the aforementioned four stages.

5.4 The construction dust risk assessment is included in **Appendix A.**

*Construction Traffic and Plant*

5.5 Throughout the construction period, there will be a number of construction vehicles, stationary plant and vehicles used by the construction workforce. These may potentially present an additional source of air pollutants in the vicinity of the proposed development site.

5.6 Any likely pollutant impacts should be addressed through Best Available Techniques (BAT) mitigation measures. Likely BAT are provided in **Section 6**.

### Completed Development

*Development Traffic*

5.7 The Transport Consultants at Abley Letchford prepared the Transport Assessment (TA) for the proposed development.

5.8 They have confirmed that the peak hour and daily traffic flows that would arise from the operation of the proposed development have been established using Wokingham Borough Council's Strategic Transport Model (WSTM), which enables the impact of the development traffic to be appraised on a common and agreed basis that allows for background traffic growth and planned development up to 2032 (completion year).

5.9 It is important to note that the strategic transport modelling needed to be commissioned in advance of the layout being finalised and an initial figure of 210 units was used in order to proceed. The site is now proposed to accommodate 183 units which is 27 units lower than used in the transport modelling. Accordingly, the traffic analysis provides for a worst case representation of the impacts that could arise from the development.

5.10 The resultant AADT flows have been extracted directly from the 2032 'Forecast Base' and 2032 'With Development' model outputs supplied by Wokingham Borough Council. This is presented on **Table 5.1** below.

| ID | Road Link | 2032 Forecast Base | 2032 Base + Development | Net Impact |
|---|---|---|---|---|
| 1 | Appleton Way (East of Site Access) | 2,128 | 2,632 | +504 |
| 2 | Appleton Way (West of Site Access) | 2,128 | 2,304 | +176 |
| 3 | Hyde End Road (north of Appleton Way) | 9,403 | 9,813 | +410 |
| 4 | Hyde End Road (south of Appleton Way) | 11,524 | 11,935 | +411 |
| 5 | Hyde End Road (south of Site) | 11,524 | 11,852 | +328 |
| 6 | Hollow Lane (north of Arborfield Rd) | 14,648 | 14,797 | +149 |
| 7 | Arborfield Road (east of Hollow Lane) | 14,135 | 14,460 | +325 |
| 8 | Arborfield Road (east of Shinfield Eastern Relief Road) | 30,803 | 30,953 | +150 |
| 9 | Shinfield Eastern Relief Road (north of Arborfield Road) | 25,359 | 25,431 | +72 |

| | | | | |
|---|---|---|---|---|
| 10 | Shinfield Eastern Relief Road (north of TVSP Roundabout) | 27,694 | 27,724 | +30 |
| 11 | University M4 Bridge to Shinfield Gyratory | 42,832 | 42,984 | +152 |
| 12 | Basingstoke Road (north of Hyde End Rd) | 7,398 | 7,485 | +87 |
| 13 | Basingstoke Road (south of Hyde End Rd) | 13,731 | 13,913 | +182 |

**Table 5.1: Forecast Baseline and Development Trips for 2032**

5.11 The local road network assessed by the transport assessment (TA) is identified in **Figure 5.1** below.

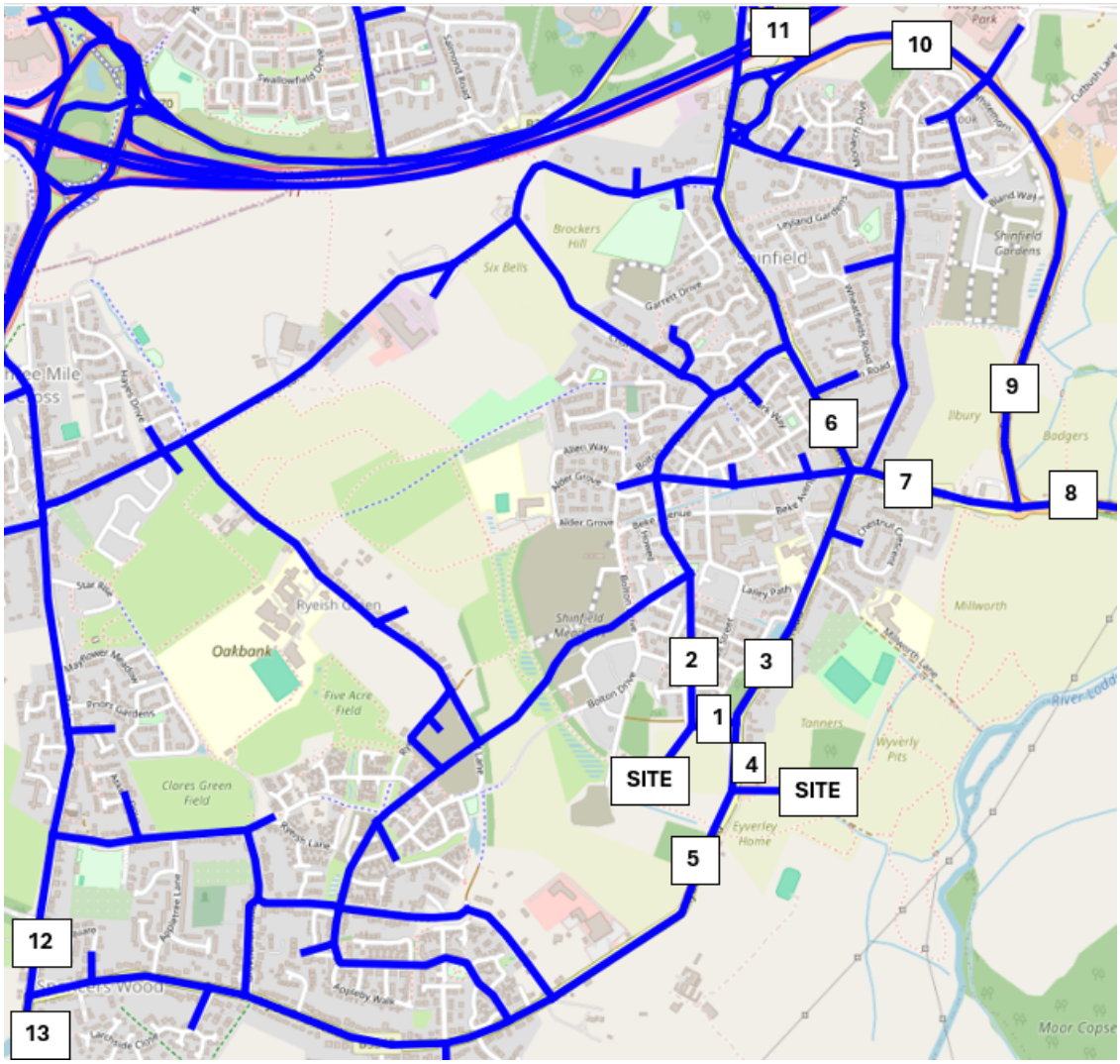


**Figure 5.1: Road Network Assessed by Transport Assessment (TA)**

5.12 **Table 5.1 and Figure 5.1** demonstrate that the daily traffic associated with the operation of the proposed development is unlikely to increase by >500 annual average daily trips (AADT) at all the road links assessed, apart from one.

5.13 The only exception to this being Link ID 1 – Appleton Way located immediately to the East of the site access which identifies AADT of 504. However, as the traffic joins the local road network at Hyde End Road Link ID 3 and 4, the AADT drops below 500.

5.14 Bearing in mind that the transport modelling used an overestimation of 210 units, which is 27 units higher than the proposed number of units, the level of traffic impact associated with the proposed 183 units is unlikely to meet any of the EPUK & IAQM criteria, in **Table 3.3**, for requiring further or more detailed assessment of traffic related impacts.

5.15 Despite this, EPUK & IAQM guidance clearly states that the criteria provided are precautionary and should be treated as indicative, as a sensitive 'trigger' for initiating an assessment in cases where there is a possibility of significant effects arising on local air quality.

5.16 As such, exceeding a screening criterion at one small road link does not automatically lead to the requirement for a detailed assessment using dispersion modelling, especially in areas outside AQMA's and where the baseline pollution concentrations are not close to exceeding any of the national objective levels for any of the pollutants assessed.

5.17 Therefore, it has not been considered necessary to further quantify traffic related impacts as a result of the operation of the proposed development.

5.18 Further details in relation to the traffic generation, associated calculations and methodology used are included within the TA prepared by Abley Letchford.

*Building Emissions*

5.19 The Energy Strategy Statement prepared by Briary Energy has indicated that the associated energy strategy for the Proposed Development will incorporate low carbon air source heat pumps which will be complemented with roof integrated solar PV panels.

5.20 The proposed systems, being fully electric, are not directly associated with any NOx or Particulate emissions.

5.21 Therefore, this would be in accordance with the minimum standard/requirements outlined within the EPUK & IAQM criteria, and no further assessment of building emissions is considered required.

5.22 Compliance with relevant regulations and standards, at this stage, should be secured through planning conditions, where necessary.

# 6 Mitigation Measures

**Construction**

*Construction Dust*

6.1 A construction dust risk assessment has been completed for the proposed development in accordance with IAQM guidance and is presented in **Appendix A**. Within the assessment, site specific mitigation measures have been identified which ensure compliance with relevant standards.

6.2 The role of air quality monitoring within the package of mitigation measures that is proposed has also been considered since monitoring proposals are frequently incorporated into planning conditions.

6.3 The mitigation measures outlined in **Appendix A** should make up part of a Construction Environmental Management Plan (CEMP) that should be implemented to minimise the potential adverse construction dust impacts throughout all the relevant construction stages.

6.4 It is important that attention is paid to any construction activity that takes place in close proximity to the site boundary, potentially at the closest location to sensitive receptors.

*Dust Monitoring:*

6.5 The dust monitoring requirements are usually split in three categories as follows:

- **Negligible/Low risk** category sites - should not normally be necessary to undertake any quantitative air quality monitoring, although in some circumstances it may be applicable to undertake occasional surveys in the vicinity of the site boundary at least once on each working day.
- **Medium risk** category sites - should normally be adequate to undertake surveys of dust flux over the site boundary, and/or dust deposition/soiling rates around the site at nearby receptors, although this may have resource implications, and an approach based on continuous particulate matter monitoring may be preferred.
- **High risk** category sites - normally be necessary to supplement the monitoring for medium risk sites with monitoring of ambient PM concentrations. It is recommended

that priority be assigned to the measurement of $PM_{10}$, as emissions of dust from construction sites are predominantly in the coarser fractions.

6.6 The proposed development site has been classified as having a **low** risk of dust soiling during earthworks, construction and trackout.

6.7 Therefore, dust monitoring, as specified above, should only be undertaken during the relevant stages of construction to ensure that:

- The construction activities do not give rise to any exceedances of the air quality objectives for $PM_{10}$ or $PM_{2.5}$.
- The agreed mitigation measures to control dust emissions are being applied and are effective.
- Any high levels of dust are attributed to specific activities on site to ensure that appropriate corrective measures take place.

6.8 The implementation of the specific mitigation measures given above within the CEMP will ensure that any potential adverse impacts from construction dust during all construction stages are avoided. It is noted by the IAQM that, through the use of effective mitigation, the effects of dust from construction activity will normally not be considered significant.

*Construction Traffic and Plant*

6.9 As previously stated, there is potential for air pollutant impacts to arise from construction plant and vehicles associated with the scheme. The following BAT should still be implemented during the construction phase.

- All vehicles should switch off engines when stationary, no idling vehicles;
- Minimise the movement of construction traffic around the site;
- Maximising efficiency (this may include alternative modes of transport, maximising vehicle utilisation by ensuring full loading and efficient routing);
- Vehicles should be well maintained and kept in a high standard of working order;
- Avoid the use of diesel or petrol powered generators by using mains electricity or battery powered equipment where possible; and
- Locate plant away from boundaries close to residential areas.

**Operational**

*Traffic Emissions*

6.10 The AQA has demonstrated that the predicted net traffic associated with the proposed development is unlikely to result in a detrimental pollution impact upon the local highway network and the local pollution levels.

6.11 Therefore, it is not anticipated that mitigation measures will be required.

*Building Emissions*

6.12 As previously stated, the Energy Strategy Statement prepared by Briary Energy has indicated that the associated energy strategy for the Proposed Development will incorporate low carbon air source heat pumps which will be complemented with roof integrated solar PV panels.

6.13 The proposed systems, being fully electric, are not directly associated with any NOx or Particulate emissions.

6.14 Therefore, this would be in accordance with the minimum standard/requirements outlined within the EPUK & IAQM criteria, and it is not anticipated that mitigation measures would be required.

6.15 Compliance with relevant regulations and standards, at this stage, should be secured through planning conditions, where necessary.

*Site Suitability*

6.16 The monitored annual mean concentrations for all the automatic and non-automatic monitoring locations are >5% below the national annual mean objectives for $NO_2$ in 2023, meaning that the proposed development site is likely to fall within APEC-A for site suitability.

6.17 In accordance with the exposure criteria in **Table 3.6**, APEC-A means that there should be no air quality grounds for refusal and the local air quality should be suitable to safeguard the health and amenity of new residents without mitigation.

# 7 Residual Effects and Conclusions

7.1 The proposed development site falls within the jurisdiction of Wokingham Borough Council (WBC).

7.2 A review of the Air Quality Assessments undertaken by WBC has indicated that air quality within the district is generally good and as a result only one Air Quality Management Area (AQMA) has been declared within the Borough, 'Wokingham Town Centre AQMA'.

7.3 The proposed development site is not located within or near the declared AQMA.

7.4 The latest monitored annual mean concentrations for all the automatic and non-automatic monitoring locations are >5% below the national annual mean objective for $NO_2$, between 2019-2023. Consequently, in accordance with the exposure criteria set out in **Table 3.6,** the proposed development site is likely to fall within APEC – A for site suitability, which states:

"*No air quality grounds for refusal; however, mitigation of any emissions should be considered.*"

7.5 A construction dust risk assessment has been undertaken for the relevant four stages of construction activities associated with the proposed development in accordance with IAQM guidance on the assessment of dust from construction activities (**Appendix A**).

7.6 Mitigation measures have been proposed for construction traffic and stationary plant associated with the proposed development.

7.7 Following the successful implementation of the specific mitigation measures, the residual effects of construction dust and emissions from construction plant/vehicles upon the local area and sensitive receptors although adverse, will be temporary and considered to be 'not significant'.

7.8 The predicted net traffic associated with the operation of the proposed development is unlikely to result in a detrimental pollution impact upon the local highway network and the local pollution levels.

7.9 The proposed energy strategy is not associated with any NOx or Particulate emissions. Therefore, it accords with the minimum standard/requirements outlined within the EPUK & IAQM criteria and no pollution emissions have been identified as a result of the proposed energy strategy.

7.10 Compliance to relevant regulations and standards should be secured through planning conditions, where necessary.

**Conclusion**

7.11 Based on the information available at the time of writing, the proposed development does not raise any significant adverse impacts on the health and/or quality of life for any existing or proposed receptors, as a result of any anticipated changes to air quality.

7.12 It is therefore concluded that the proposed development complies fully with air quality related national and local planning policy and any mitigation can, if considered necessary, be enforced by means of appropriate planning conditions, consistent with paragraphs 55 and 56 of the National Planning Policy Framework.

# APPENDIX A: Construction Dust Risk Assessment

## CONSTRUCTION DUST RISK ASSESSMENT

A.1 The construction dust risk assessment has been completed in accordance with 2024 IAQM guidance and follows the procedures as outlined in Section 3 of this report.

*Screen the Need for a Detailed Assessment*

A.2 The following screening criterion has been applied to the assessment:

*"An assessment will normally be required where there is:*

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

A.3 There are a number of human receptors within 250m of the site boundary. Therefore, a dust assessment is required due to the proposed development location meeting some of the above criteria.

*Assess the Risk of Dust Impacts*

A.4 The site is a greenfield site with a cluster of small farm storage buildings. Therefore, the construction activities associated with the proposed development have been separated into four stages:

- Demolition/Site Clearance (Minor);
- Earthworks;
- Construction; and
- Trackout.

A.5 The assessment of the risk of dust impacts has been completed in two stages:

- Determine the potential dust emission magnitude; and
- Determine the sensitivity of the area to dust impacts.

A.6 The potential dust emission magnitude for all four of the construction stages have been determined to be either Small, Medium or Large according to the criteria presented in **Table A.1** below.

| Construction Activity | Dust Emission Magnitude Scale | | |
|---|---|---|---|
| | **Small** | **Medium** | **Large** |
| **Demolition/Site Clearance** | Total building volume <12,000m$^3$, construction material with low potential for dust release, demolition activities <6m above ground, demolition during wetter months. | Total building volume 12,000m$^3$ – 75,000m$^3$, potentially dusty construction material, demolition activities 6-12m above ground level. | Total building volume >75,000m$^3$, potentially dusty construction material, on-site crushing and screening, demolition activities >12m above ground level. |
| **Earthworks** | Total site area Total site area <18,000m$^2$, soil type with large grain size, <5 heavy earth moving vehicles active at any one time, formation of bunds <3m in height. | Total site area 18,000m$^2$ – 110,000m$^2$, moderately dusty soil type, 5-10 heavy earth moving vehicles active at any one time, formation of bunds 3m - 6m in height. | Total site area >110,000m$^2$ , potentially dusty soil type, >10 heavy earth moving vehicles active at any one time, formation of bunds >6m in height. |
| **Construction** | Total building volume <12,000m$^3$, construction material with low potential for dust release. | Total building volume 12,000m$^3$ – 75,000m$^3$, potentially dusty construction material, on site concrete batching. | Total building volume >75,000m$^3$, on site concrete batching, sandblasting. |
| **Trackout** | <20 HDV* outward movements in any one day, surface material with low potential for dust release, unpaved road length <50m. | 20-50 HDV outward movements in any one day, moderately dusty surface material, unpaved road length 50m – 100m | >50 HDV outward movements in any one day, potentially dusty surface material, unpaved road length >100m. |
| * HDV – Heavy Duty Vehicle (>3.5t),<br>Note – In each case, not all the criteria need to be met, and that other criteria may be used if justified. | | | |

**Table A.1: Dust Emission Magnitude Criteria**

A.7 The completed assessment of Dust Emission Magnitude is shown in **Table A.2** below.

| onstruction Activity | Dust Emission Magnitude | Justification |
|---|---|---|
| **Demolition/Site Clearance** | Small | The existing site clearance will require minor demolition, with a total building volume < 12,000m$^3$ |
| **Earthworks** | Medium | Total site area between 18,000m$^2$ – 110,000m$^2$ (10.75 hectares = 107,500m$^2$) |
| **Construction** | Medium | Total building volume between 12,000m$^3$ - 75,000m$^3$ (Approximately 60,000m$^3$ including roof space.) |
| **Trackout** | Medium | Estimated 22 HDV outward movements in any one day. |

**Table A.2: Dust Emission Magnitude Assessment**

A.8 Due to the scale of the proposed development the magnitude of dust emissions has been assessed as **Small** for demolition/site clearance and **Medium** for earthworks, construction and trackout.

A.9 The sensitivity of the area has been assessed in relation to a number of factors such as; the specific sensitivities of receptors in the area, the proximity and number of those receptors and in the case of $PM_{10}$, the local background concentration and by following the significance criteria in **Tables A.3, A.4** and **A.5** below.

| Receptor Sensitivity | Number of Receptors | Distance from the source (m) | | | |
|---|---|---|---|---|---|
| | | <20 | <50 | <100 | <250 |
| **High** | **>100** | High | High | Medium | Low |
| | **10-100** | High | Medium | Low | Low |
| | **1-10** | Medium | Low | Low | Low |
| **Medium** | **>1** | Medium | Low | Low | Low |
| **Low** | **>1** | Low | Low | Low | Low |

**Table A.3: Sensitivity of the Area to Dust Soiling Effects of People and Property**

| Receptor Sensitivity | Annual Mean $PM_{10}$ Concentration | Number of Receptors | Distance from the source (m) | | | |
|---|---|---|---|---|---|---|
| | | | <20 | <50 | <100 | <250 |
| High | >32 µg/m³ | >100 | High | High | High | Medium |
| | | 10-100 | High | High | Medium | Low |
| | | 1-10 | High | Medium | Low | Low |
| | 28-32 µg/m³ | >100 | High | High | Medium | Low |
| | | 10-100 | High | Medium | Low | Low |
| | | 1-10 | High | Medium | Low | Low |
| | 24-28 µg/m³ | >100 | High | Medium | Low | Low |
| | | 10-100 | High | Medium | Low | Low |
| | | 1-10 | Medium | Low | Low | Low |
| | <24 µg/m³ | >100 | Medium | Low | Low | Low |
| | | 10-100 | Low | Low | Low | Low |
| | | 1-10 | Low | Low | Low | Low |
| Medium | >32 µg/m³ | >10 | High | Medium | Low | Low |
| | | 1-10 | Medium | Low | Low | Low |
| | 28-32 µg/m³ | >10 | Medium | Low | Low | Low |
| | | 1-10 | Low | Low | Low | Low |
| | 24-28 µg/m³ | >10 | Low | Low | Low | Low |
| | | 1-10 | Low | Low | Low | Low |
| | <24 µg/m³ | >10 | Low | Low | Low | Low |
| | | 1-10 | Low | Low | Low | Low |
| Low | - | ≥1 | Low | Low | Low | Low |

**Table A.4: Sensitivity of the Area to Human Health Impacts**

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

**Table A.5: Sensitivity of the Area to Ecological Impacts**

A.10 In addition to **Tables A.3, A.4** and **A.5** any site-specific factors have been taken into account when defining the sensitivity of the area:

- any history of dust generating activities in the area;
- the likelihood of concurrent dust generating activity on nearby sites;
- any pre-existing screening between the source and the receptors; and
- the duration of the potential impact, as a receptor may become more sensitive over time.

A.11 The completed assessment of Sensitivity of the Area in **Table A.6** below.

| Receptor Sensitivity | Sensitivity of the Surrounding Area | | | |
|---|---|---|---|---|
| | Demolition | Earthworks | Construction | Trackout |
| **Dust Soiling** | Low | Low | Low | Low |
| **Human Health** | Low | Low | Low | Low |
| **Ecological** | Negligible | Negligeable | Negligeable | Negligeable |

**Table A.6: Sensitivity of the Surrounding Area Assessment**

A.12 The completed pre-mitigation impact risk assessment incorporating the sensitivity of the area and the dust emissions magnitude for the four construction activities is shown in **Table A.7** below.

| Potential Impact | Risk | | | |
|---|---|---|---|---|
| | Demolition | Earthworks | Construction | Trackout |
| **Dust Soiling** | Low Risk | Low Risk | Low Risk | Low Risk |
| **Human Health** | Low Risk | Low Risk | Low Risk | Low Risk |
| **Ecological** | Negligible Risk | Negligible Risk | Negligible Risk | Negligible Risk |

**Table A.7: Summary of Dust Risk (pre-mitigation)**

A.13 The risk of dust soiling and human health has been considered **low** risk due to the limited number of receptors (human and property) located within 100m from the proposed site and the low $PM_{10}$ background concentrations in the local area for 2024 (12.4µg/$m^3$). There are no high sensitivity ecological sites within 50m of the proposed site, therefore ecological sensitivity has been assessed as **negligible**.

A.14 Additionally, the dust emissions magnitude, pre-mitigation, based on the scale of the development, is considered to be **small** for demolition/site clearance and **medium** for earthworks, construction and trackout.

*Site-specific Mitigation*

A.15 From the identification of the risk of impacts with no mitigation applied in **Table A.7** it is possible to determine the specific mitigation measures that can be applied in relation to the level of risk associated with the construction activity. The mitigation measures described below are suggested as measures that should be included in a site-specific Construction Environmental Management Plan (CEMP). Due to the site being considered **low r**isk for earthworks, construction and trackout, the following mitigation measures are either D=Desirable, H=Highly Recommended or N=Not Required in **Tables A.8**, **A.9**, **A.10, A.11** and **A.12** below.

*Demolition/Site Clearance:*

| Mitigation Measures | Low Risk | Medium Risk | High Risk |
|---|---|---|---|
| Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust). | D | D | H |
| Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground. | H | H | H |
| Avoid explosive blasting, using appropriate manual or mechanical alternatives. | H | H | H |
| Bag and remove any biological debris or damp down such material before demolition. | H | H | H |

**Table A.8: Site Specific Mitigation Measures for Earthwork Activities**

*Earthworks:*

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

**Table A.9: Site Specific Mitigation Measures for Earthwork Activities**

*Construction:*

| Mitigation Measures | Low Risk | Medium Risk | High Risk |
|---|---|---|---|
| Avoid scabbling (roughening of concrete surfaces) if possible. | D | D | H |
| Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. | D | H | H |
| Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos | N | D | H |

| | | | |
|---|---|---|---|
| with suitable emission control systems to prevent escape of material and overfilling during delivery. | | | |
| For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust. | N | D | D |

**Table A.10: Site Specific Mitigation Measures for Construction Activities**

*Trackout:*

| Mitigation Measures | Low Risk | Medium Risk | High Risk |
|---|---|---|---|
| Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. | D | H | H |
| Avoid dry sweeping of large areas. | D | H | H |
| Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. | D | H | H |
| Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. | N | H | H |
| Record all inspections of haul routes and any subsequent action in a site log book. | D | H | H |
| Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned. | N | H | H |
| Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). | D | H | H |
| Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits. | N | H | H |
| Access gates to be located at least 10m from receptors where possible. | N | H | H |

**Table A.11: Site Specific Mitigation Measures for Trackout Activities**

*General Mitigation Measures:*

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

| Mitigation Measures | Low Risk | Medium Risk | High Risk |
|---|---|---|---|
| Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. In London additional measures may be required to ensure compliance with the Mayor of London's guidance. The DMP may include monitoring of dust deposition, dust flux, realtime $PM_{10}$ continuous monitoring and/or visual inspections. | D | H | H |
| Site Management | | | |
| Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. | H | H | H |
| Make the complaints log available to the local authority when asked. | H | H | H |
| Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book. | H | H | H |
| Hold regular liaison meetings with other high risk construction sites within 250 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/ deliveries which might be using the same strategic road network routes. | N | N | H |
| Monitoring | | | |
| Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of site boundary, with cleaning to be provided if necessary. | D | D | H |
| Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked. | H | H | H |
| Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. | H | H | H |
| Agree dust deposition, dust flux, or real-time $PM_{10}$ continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on | H | H | H |

| Mitigation Measures | Low Risk | Medium Risk | High Risk |
|---|---|---|---|
| a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction. | | | |
| Preparing and Maintaining the Site | | | |
| Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. | H | H | H |
| Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site. | H | H | H |
| Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period. | D | H | H |
| Avoid site runoff of water or mud. | H | H | H |
| Keep site fencing, barriers and scaffolding clean using wet methods. | D | H | H |
| Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below. | D | H | H |
| Cover, seed or fence stockpiles to prevent wind whipping. | D | H | H |
| Operating Vehicle/Machinery and Sustainable Travel | | | |
| Ensure all vehicles switch off engines when stationary - no idling vehicles. | H | H | H |
| Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable. | H | H | H |
| Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate). | D | D | H |
| Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials. | N | N | H |
| Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing) | N | D | H |
| Operations | | | |
| Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. | H | H | H |

| Mitigation Measures | Low Risk | Medium Risk | High Risk |
|---|---|---|---|
| Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. | H | H | H |
| Use enclosed chutes and conveyors and covered skips. | H | H | H |
| Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. | H | H | H |
| Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods. | D | H | H |
| Waste Management | | | |
| Avoid bonfires and burning of waste materials. | H | H | H |

**Table A.12: Site Specific Mitigation Measures for General Activities**

A.16 It is important that attention is paid to any construction activity that takes place in close proximity to the site boundary, potentially at the closest location to sensitive receptors.

*Determine Significant Effects*

A.17 Prior to the implementation of any mitigation measures the highest significance of adverse effects was **low** risk for dust soiling during earthworks, construction and trackout, **low** risk for human health and **negligible** risk for ecology, with dust emissions magnitude considered to be small for demolition/site clearance and **medium** for earthworks, construction and trackout.

A.18 The mitigation measures listed above are chosen based on their suitability to the site and to reduce the risk of adverse effects from the four stages of construction.

A.19 Through the implementation of site-specific mitigation measures (secured by planning condition), which are designed to mitigate potential dust impact, will ensure that potential significant adverse dust effects will not occur, and the residual effect will normally be 'not significant'.

*Dust Monitoring:*

A.20 The dust monitoring requirements are usually split in three categories as follows:

- **Negligible/Low risk** category sites - should not normally be necessary to undertake any quantitative air quality monitoring, although in some

circumstances it may be applicable to undertake occasional surveys in the vicinity of the site boundary at least once on each working day.

- **Medium risk** category sites - should normally be adequate to undertake surveys of dust flux over the site boundary, and/or dust deposition/soiling rates around the site at nearby receptors, although this may have resource implications, and an approach based on continuous particulate matter monitoring may be preferred.
- **High risk** category sites - normally be necessary to supplement the monitoring for medium risk sites with monitoring of ambient PM concentrations. It is recommended that priority be assigned to the measurement of $PM_{10}$, as emissions of dust from construction sites are predominantly in the coarser fractions.

A.21 The proposed development site has been classified as having a **low** risk of dust soiling during earthworks construction and trackout.

A.22 Therefore, dust monitoring, as specified above, should be undertaken during the relevant stages of construction to ensure that:

- The construction activities do not give rise to any exceedances of the air quality objectives for $PM_{10}$ or $PM_{2.5}$.
- The agreed mitigation measures to control dust emissions are being applied and are effective.
- Any high levels of dust are attributed to specific activities on site to ensure that appropriate corrective measures take place.

A.23 The implementation of the specific mitigation measures given above within the CEMP will ensure that any potential adverse impacts from construction dust during all construction stages are avoided. It is noted by the IAQM that, through the use of effective mitigation, the effects of dust from construction activity will normally not be considered significant.

A.24 Compliance should be secured through planning conditions, where necessary.

*Conclusions of Construction Dust Risk Assessment*

A.25 The completion of the construction dust risk assessment has shown that the residual effect of the proposed development in the context of construction dust emissions will be 'not significant' after mitigation. This conclusion has been made based on the **medium** dust emissions magnitude for earthworks, construction and

trackout related to the scale of development and the assumption that the suggested mitigation measures will be implemented (secured by planning condition) and is relevant for all sensitive receptors within 250m of the site.

A.26 It should be noted that even with a rigorous CEMP in place, it is not possible to guarantee that all mitigation measures will be effective at all times. If there is an interruption in the water supply used for dust suppression or adverse weather conditions are experienced that exacerbate dust emissions, the receptors may experience occasional, short term dust annoyance.

A.27 However, the likely scale of this would not normally be considered sufficient to change the conclusion of this assessment. It is therefore important to consider all mitigation measures and provide a frequent review and assessment procedure at each stage, to ensure that mitigation measures continue to provide the maximum attenuation level possible.

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