

Report

Southampton Road, Aldebury

## **Air Quality Assessment**

For Simply Planning

23 April 2026

## Document Control

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# 1 Introduction

- 1.1 This report has been prepared by Air Quality Consultants Ltd I Part of Logika Group (AQC). The experience of the authors is summarised in Appendix A1. The report describes the potential air quality impacts associated with proposed development on Southampton Road, Alderbury in Wiltshire. The proposed development is described as:

*"Outline planning permission with all matters reserved, apart from details of access from Southampton Road, for a residential development of up to 28 dwellings, along with associated public open space, landscaping and biodiversity enhancements and a car park to serve the community allotments."*

- 1.2 Air quality needs to be considered to ensure that the development does not generate any unacceptable adverse air quality impacts during its operation and to ensure that new residents are not exposed to exceedances of the air quality objectives.
- 1.3 This report considers air quality in relation to public health. It has been prepared taking into account all relevant local and national guidance and regulations.

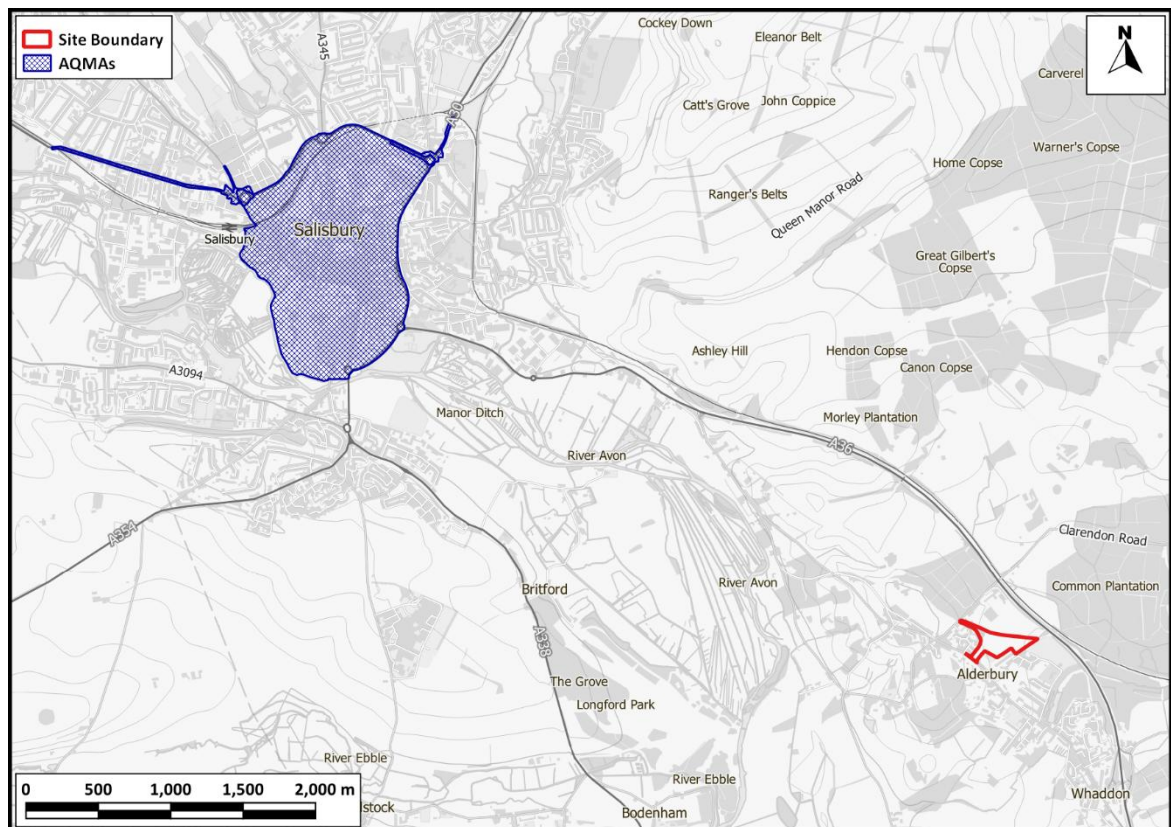
## 2 Policy Context

2.1 The following policy documents have been followed when preparing this document. For details of each, see Appendix A2.

- Air Quality Strategy 2007
- Air Quality Strategy 2023
- Clean Air Strategy 2019
- Environment Act 2021
- Environmental Improvement Plan 2025
- Planning Policy
  - National Planning Policy Framework (NPPF) Paragraphs 8c, 187, 198 and 199, alongside the air quality Planning Practice Guidance (PPG)
  - Wiltshire Council Core Strategy Policies 55 and 60
  - Wiltshire Council Air Quality Supplementary Planning Document (SPD)
- Wiltshire Council Local Transport Plan 4
- National Air Quality Plan
- Local Air Quality Action Plan
- Wiltshire Council Air Quality Strategy

### 3 Description of the Proposed Development

- 3.1 The proposed development is located within Wiltshire Council's local authority area. The application site is bounded by Southampton Road, Clarendon Road and Junction Road, and is set approximately 80 m back from the A36. It currently consists of agricultural land. There are existing residential properties adjacent to the proposed development in all directions.
- 3.2 The site is located approximately 4.5 km away from the Salisbury City Centre Air Quality Management Area (AQMA) declared by Wiltshire Council for exceedances of the annual mean nitrogen dioxide (NO<sub>2</sub>) objective.
- 3.3 The setting of the proposed development is shown in Figure 3-1.



**Figure 3-1: Proposed Development Setting**

Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v3.0.

- 3.4 The proposed development is for 28 dwellings, with associated landscaping and parking provision. Vehicle access to the site will be from Southampton Road, and it is anticipated that electric vehicle (EV) charging will be provided in line with the relevant policy and standards.
- 3.5 The energy strategy is expected to be electric, relying on Air Source Heat Pumps (ASHPs), and as such there will be no significant point sources of emissions within the proposed development.
- 3.6 The expected year of first occupation is 2030.

- 3.7 The potential air quality impacts which require assessing are those from road traffic generated by the operational development. It is also necessary to consider whether future residents will experience acceptable air quality.

## 4 Pollutants of Concern

- 4.1 The main air pollutants of concern in relation to road traffic and in relation to air quality within the proposed development NO<sub>2</sub> and fine particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>). In relation to construction dust, the key pollutants of concern are dust soiling and PM<sub>10</sub> and PM<sub>2.5</sub>.
- 4.2 UK-wide objectives for nitrogen dioxide and PM<sub>10</sub> were to have been achieved by 2005 and 2004 respectively, and continue to apply in all future years thereafter. 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 (Defra, 2022). The annual mean objectives for nitrogen dioxide and PM<sub>10</sub> apply at the façades of residential properties, schools, hospitals etc. The 24-hour mean objective for PM<sub>10</sub> applies 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 nitrogen dioxide applies wherever members of the public might regularly spend 1-hour or more, including outdoor eating locations and pavements of busy shopping streets. 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 objective, it is convention to assess local air quality impacts against the limit value<sup>1</sup>, originally set at 25 µg/m<sup>3</sup> and currently set at 20 µg/m<sup>3</sup>. The relevant air quality criteria for this assessment are provided in Table 4-1.

**Table 4-1: Air Quality Criteria for Nitrogen Dioxide, 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 (Defra, 2022).

<sup>b</sup> There is no numerical PM<sub>2.5</sub> objective for local authorities (see Paragraph 4.2). Convention is to assess against the UK limit value which is currently 20 µg/m<sup>3</sup>.

- 4.3 Defra has also set targets for PM<sub>2.5</sub> concentrations in England under the Environment Act (2021) (Table 4-2). Achieving these targets is the responsibility of Defra. Rather than requiring a quantitative assessment of new developments against these targets, Defra instead advises applicants to provide

<sup>1</sup> EU Directive 2008/50/EC 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 (2010) (as amended through The Air Quality Standards (Amendment) Regulations 2016 and The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020). 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.

evidence that they have considered exposure to PM<sub>2.5</sub> and taken appropriate action to minimise emissions. The most recent interim targets published in the 2025 Environmental Improvement Plan (Defra, 2025a) aim to meet the Annual Mean Concentration Target (AMCT) 10 years early, by December 2030, with the interim Population Exposure Reduction Target (PERT) being a reduction of 30% by December 2030 (Table 4-2).

**Table 4-2: Environment Act PM<sub>2.5</sub> Targets**

| Metric            | Target                                                             | Target year |
|-------------------|--------------------------------------------------------------------|-------------|
| AMCT <sup>a</sup> | Interim target: 10 µg/m <sup>3</sup>                               | 2030        |
|                   | Legally binding target: 10 µg/m <sup>3</sup>                       | 2040        |
| PERT <sup>b</sup> | Interim target: 30% reduction in exposure compared to 2018         | 2030        |
|                   | Legally binding target: 35% reduction in exposure compared to 2018 | 2040        |

<sup>a</sup> Annual Mean Concentration Target.

<sup>b</sup> Population Exposure Reduction Target.

## 5 Assessment

### Impacts of Existing Air Quality on Future Occupants of the Development

#### Industrial Sources

- 5.1 Industrial and waste management sources that may affect the area have been identified using Defra's Pollutant Release and Transfer Register (Defra, 2025b) and through examination of the Council's Air Quality Review and Assessment reports.
- 5.2 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

- 5.3 Wiltshire Council operates three automatic monitoring stations within its area, including the AM1 roadside monitor at Exeter Street, Salisbury, which is approximately 4.5 km northwest of the proposed development. The Council also operates a number of NO<sub>2</sub> monitoring sites using diffusion tubes prepared and analysed by Somerset Scientific Services (using the 20% TEA in water method). The nearest diffusion tubes to the proposed development are in Salisbury. These include one adjacent to Exeter Street close to the AM1 monitor, one further north on Catherine Street, and one at the junction between Rollerstone Street and Blue Boar Row. Annual mean results for the years 2019 to 2024 are summarised in Table 5-1, while results relating to the 1-hour mean objective are summarised in Table 5-2. The monitoring locations are shown in Figure 5-1. The monitoring data for the year 2019 have been taken from Wiltshire Council's 2024 Annual Status Report (ASR) (Wiltshire Council, 2024a), while data for the years 2020 to 2024 have been taken from the Council's 2025 ASR (Wiltshire Council, 2025).

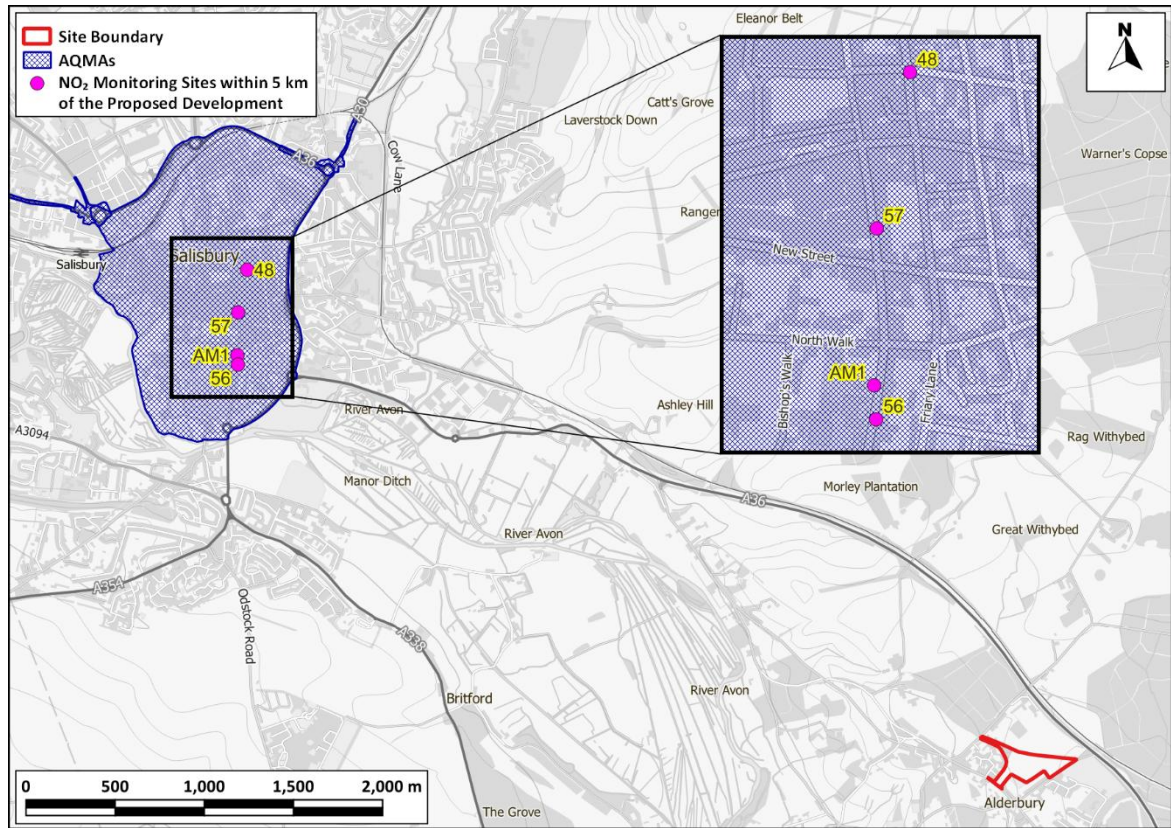
**Table 5-1: Summary of Annual Mean NO<sub>2</sub> Monitoring (2019-2024) (µg/m<sup>3</sup>)**

| Site No.  | Site Type | Location                        | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|-----------|-----------|---------------------------------|------|------|------|------|------|------|
| AM1       | Roadside  | Exeter St, Salisbury            | 30.0 | 26.9 | 27.9 | 25.1 | 21.5 | 21.4 |
| 48        | Roadside  | 16 Winchester Street, Salisbury | 29.7 | 24.1 | 25.7 | 25.1 | 22.9 | 21.4 |
| 56        | Roadside  | 91 Exeter Street, Salisbury     | 34.8 | 27.3 | 31.3 | 29.3 | 24.8 | 24.9 |
| 57        | Roadside  | Catherine Street, Salisbury     | 35.5 | 26.4 | 30.0 | 28.2 | 25.0 | 22.7 |
| Objective |           |                                 | 40   |      |      |      |      |      |

**Table 5-2: Number of Hours With NO<sub>2</sub> Concentrations Above 200 µg/m<sup>3</sup> (2019-2024)**

| Site No.  | Site Type | Location             | 2019                  | 2020 | 2021 | 2022 | 2023 | 2024   |
|-----------|-----------|----------------------|-----------------------|------|------|------|------|--------|
| AM1       | Roadside  | Exeter St, Salisbury | 0                     | 0    | 0    | 0    | 0    | 0 (80) |
| Objective |           |                      | 18 (200) <sup>a</sup> |      |      |      |      |        |

<sup>a</sup> If the period of valid data is less than 75%, the 99.8th percentile of 1-hour means is provided in brackets.



**Figure 5-1: Monitoring Locations**

Additional data sourced from third parties, including public sector information licensed under the Open Government Licence v3.0.

- 5.4 No exceedances of the objectives for NO<sub>2</sub> have been recorded at any of the monitoring sites within 5 km of the proposed development since 2019 and in 2024 all concentrations were well below the annual mean objective. Additionally, concentrations have reduced at all monitoring sites presented in Table 5-1.
- 5.5 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.
- 5.6 The AM1 automatic monitoring station also measures PM<sub>10</sub> and PM<sub>2.5</sub> concentrations. Annual mean results for the years 2019 to 2024 are summarised in Table 5-3, while results relating to the daily mean objective are summarised in Table 5-4. Data capture was low (at 43%) however concentrations (including the 90.4<sup>th</sup> percentile of daily means were well below the objectives.

**Table 5-3: Summary of Annual Mean PM<sub>10</sub> and PM<sub>2.5</sub> Monitoring (2019-2024) (µg/m<sup>3</sup>)**

| Site No.         | Site Type | Location             | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|------------------|-----------|----------------------|------|------|------|------|------|------|
| PM <sub>10</sub> |           |                      |      |      |      |      |      |      |
| AM1              | Roadside  | Exeter St, Salisbury | 22.0 | 21.0 | 19.0 | 20.0 | 20.0 | 22.5 |
| Objective        |           |                      | 40   |      |      |      |      |      |

| Site No.                    | Site Type | Location             | 2019                             | 2020 | 2021 | 2022 | 2023 | 2024 |
|-----------------------------|-----------|----------------------|----------------------------------|------|------|------|------|------|
| PM <sub>2.5</sub>           |           |                      |                                  |      |      |      |      |      |
| AM1                         | Roadside  | Exeter St, Salisbury | 15.4                             | 14.7 | 13.3 | 14.3 | 14.1 | 16.5 |
| Objective/AMCT <sup>b</sup> |           |                      | 20 <sup>a</sup> /10 <sup>b</sup> |      |      |      |      |      |

<sup>a</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.

<sup>b</sup> To be met by 2040

**Table 5-4: Number of Days With PM<sub>10</sub> Concentrations Above 50 µg/m<sup>3</sup> (2019-2024)**

| Site No.  | Site Type | Location             | 2019                 | 2020 | 2021 | 2022 | 2023 | 2024   |
|-----------|-----------|----------------------|----------------------|------|------|------|------|--------|
| AM1       | Roadside  | Exeter St, Salisbury | 5                    | 0    | 3    | 3    | 1    | 3 (44) |
| Objective |           |                      | 35 (50) <sup>a</sup> |      |      |      |      |        |

<sup>a</sup> Values in brackets are 90.4<sup>th</sup> percentiles, which are presented where data capture is <75%.

### Background Concentrations

- 5.7 Background concentrations have been defined using Defra's 2021-based background maps (Defra, 2025c). These cover the whole of the UK on a 1x1 km grid. The background annual mean NO<sub>2</sub> maps have been calibrated against concurrent measurements (AQC, 2025). The calibration factor has also been applied to future year backgrounds. Mapped background concentrations of PM<sub>10</sub> and PM<sub>2.5</sub> have not been adjusted.
- 5.8 Estimated background concentrations at the proposed development are set out in Table 5-5 and are all well below the objectives.

**Table 5-5: Estimated Annual Mean Background Pollutant Concentrations in 2024 and 2030 (µg/m<sup>3</sup>)**

| Year              | NO <sub>2</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> |
|-------------------|-----------------|------------------|-------------------|
| 2024              | 5.5             | 10.3             | 6.3               |
| 2030              | 4.4             | 9.8              | 5.8               |
| Objective         | 40              | 40               | 20 <sup>a</sup>   |
| AMCT <sup>b</sup> | -               | -                | 10                |

<sup>a</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.

<sup>b</sup> To be met by 2040

### Assessment

- 5.9 The proposed development is 80 m away from the busy A36, in an area where pollutant concentrations would be expected to be close to background levels. Background concentrations

at the site are well below the objectives (see Table 5-5). On this basis, it can be concluded that there is no risk of an exceedance of the objectives for nitrogen dioxide, PM<sub>10</sub> or PM<sub>2.5</sub>.

- 5.10 There is no need for more detailed assessment. Future users of the proposed development will experience acceptable air quality.

### Impacts on Existing Air Quality

- 5.11 The energy strategy for the proposed development is for all energy supply to be electric; there will be no centralised combustion plant and thus there will be no significant point sources of emissions within the proposed development.
- 5.12 The proposed development is expected to generate a total of 129 daily light vehicle trips, of which approximately 95 will travel north on Southampton Road, and 44 will travel south; these daily trip rates are below the screening threshold of 500 LDVs recommended for use outside of an AQMA in the EPUK/IAQM guidance (Moorcroft and Barrowcliffe et al, 2017) (see Appendix A3). In addition, the 90 vehicles travelling north along Southampton Road in the direction of the Salisbury City Centre AQMA are below the screening threshold of 95 AADT for LDVs recommended for use within an AQMA.
- 5.13 The proposed development will generate very few operational heavy vehicle trips.
- 5.14 Because the relevant screening thresholds will not be exceeded, there is no requirement for a detailed assessment of road traffic impacts. The proposed development will not have a significant effect on local roadside air quality.

## 6 Mitigation and Good Design

### Consideration of Air Quality in the Development Design

- 6.1 The EPUK/IAQM guidance (Moorcroft and Barrowcliffe et al, 2017) advises that good design and best practice measures should be considered, whether or not more specific mitigation is required. Furthermore, Defra have set out in their Interim Planning Guidance (2024) two questions designed to consider whether a development supports the targets for PM<sub>2.5</sub> concentrations set under the Environment Act (2021) (see Section 4). The first question is “How has exposure to PM<sub>2.5</sub> been considered when selecting the development site?”, whilst the second question is “What actions and/or mitigations have been considered to reduce PM<sub>2.5</sub> exposure for development users and nearby receptors (houses, hospitals, schools etc.) and to reduce emissions of PM<sub>2.5</sub> and its precursors?”.
- 6.2 The proposed development is currently seeking outline planning permission, and as such some details regarding its design are still to be determined. It is recommended that the design of this development takes account of multiple factors, including aesthetics, economics and sustainability. It is usually preferable to include measures with cross-cutting benefits (e.g. via travel plans) rather than measures which only benefit air quality and have other disbenefits (e.g. filtered ventilation when it negatively affects sustainability). Measures which have been included within the development design include:
- adoption of a Dust Management Plan (DMP) or Construction Environmental Management Plan (CEMP) to minimise the environmental impacts of the construction works;
  - provision of pedestrian access to the site within the scheme;
  - retention the majority of existing trees between the site and any surrounding roads, which can act as a barrier between pollution sources and residential properties within the site;
  - preparation of a Residential Travel Plan Statement for the proposed development, setting out measures to encourage sustainable travel for future residents;
  - provision of EV charging in line with the relevant policy and standards; and
  - use of an all electric energy strategy with ASHPs to avoid the need for on-site combustion.
- 6.3 The background concentrations of PM<sub>2.5</sub> at the application site presented in Table 5-5 are well below the PERT to be achieved by 2040 in both 2024 and 2030.
- 6.4 Opportunities to benefit air quality within a development such as this are necessarily limited, but the authors of this report consider that appropriate measures have been included (see Appendix A1 for the professional experience of those authors). The development complies with EPUK/IAQM guidance that good design and best practice measures should be considered. It also complies with the requirements to deliver achievement of the Environment Act (2021) PM<sub>2.5</sub> targets.

### Additional Mitigation

- 6.5 The overall air quality effect of the proposed development will be ‘not significant’; 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.

- 6.6 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).

## 7 Conclusions

- 7.1 The assessment has considered the impacts of the proposed development on local air quality during its operation. It has also identified the air quality conditions that future residents will experience.
- 7.2 Air quality conditions for future occupants of the proposed development will be acceptable, with concentrations well below the air quality objectives throughout the site.
- 7.3 There will be no on-site combustion plant and therefore no significant sources of emissions within the development itself. Furthermore, operation of the proposed development will not generate sufficient traffic to have a significant effect on roadside air quality.
- 7.4 The overall operational air quality effects of the proposed development, during both the construction and operation phase, are judged to be 'not significant', and no additional mitigation is required for the proposed development during its operation.
- 7.5 Taking into account these conclusions, it is judged that the proposed development is consistent with Paragraph 198 of the NPPF, being appropriate for its location both in terms of its effects on local air quality and the air quality conditions for future residents. It is also consistent with Paragraph 199, as it will not affect compliance with relevant limit values or national objectives.
- 7.6 In line with Core Policy 55 of Wiltshire Council's Core Strategy, the proposed development is not likely to exacerbate existing areas of poor air quality. Additionally, the measures within the Residential Travel Plan Statement will support Core Policy 60 by encouraging sustainable transportation to and from the proposed development. Further, by providing EV charging in line with the relevant policy and standards, the proposed development will be consistent with Wiltshire Council's SPD on Air Quality, as it will meet the Council's EV charging requirements.
- 7.7 The development complies with the requirements to deliver achievement of the AMCT and PERT by 2040 as it is judged that appropriate action has been taken to minimise emissions of PM<sub>2.5</sub> and its precursors as far as is reasonably practicable.

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## 9 Glossary

|                   |                                                                                                                                                                                                                                                                                                     |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AADT              | Annual Average Daily Traffic                                                                                                                                                                                                                                                                        |
| AMCT              | Annual Mean Concentration Target (for PM <sub>2.5</sub> )                                                                                                                                                                                                                                           |
| AQAL              | Air Quality Assessment Level                                                                                                                                                                                                                                                                        |
| AQC               | Air Quality Consultants                                                                                                                                                                                                                                                                             |
| AQMA              | Air Quality Management Area                                                                                                                                                                                                                                                                         |
| CEMP              | Construction Environmental Management Plan                                                                                                                                                                                                                                                          |
| Defra             | Department for Environment, Food and Rural Affairs                                                                                                                                                                                                                                                  |
| DfT               | Department for Transport                                                                                                                                                                                                                                                                            |
| DMP               | Dust Management Plan                                                                                                                                                                                                                                                                                |
| EPUK              | Environmental Protection UK                                                                                                                                                                                                                                                                         |
| EV                | Electric Vehicle                                                                                                                                                                                                                                                                                    |
| Exceedance        | A period of time when the concentration of a pollutant is greater than the appropriate air quality objective. This applies to specified locations with relevant exposure                                                                                                                            |
| HDV               | Heavy Duty Vehicles (> 3.5 tonnes)                                                                                                                                                                                                                                                                  |
| HGV               | Heavy Goods Vehicles                                                                                                                                                                                                                                                                                |
| HMSO              | His Majesty's Stationery Office                                                                                                                                                                                                                                                                     |
| IAQM              | Institute of Air Quality Management                                                                                                                                                                                                                                                                 |
| LAQM              | Local Air Quality Management                                                                                                                                                                                                                                                                        |
| LDV               | Light Duty Vehicles (<3.5 tonnes)                                                                                                                                                                                                                                                                   |
| µg/m <sup>3</sup> | Microgrammes per cubic metre                                                                                                                                                                                                                                                                        |
| NO <sub>2</sub>   | Nitrogen dioxide                                                                                                                                                                                                                                                                                    |
| NO <sub>x</sub>   | Nitrogen oxides (taken to be NO <sub>2</sub> + NO)                                                                                                                                                                                                                                                  |
| NPPF              | National Planning Policy Framework                                                                                                                                                                                                                                                                  |
| OEP               | Office for Environmental Protection                                                                                                                                                                                                                                                                 |
| Objectives        | A nationally defined set of health-based concentrations for nine pollutants, seven of which are incorporated in Regulations, setting out the extent to which the standards should be achieved by a defined date. There are also vegetation-based objectives for sulphur dioxide and nitrogen oxides |
| PERT              | Population Exposure Reduction Target (for PM <sub>2.5</sub> )                                                                                                                                                                                                                                       |

|                   |                                                                                                                                                                                     |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PM <sub>10</sub>  | Small airborne particles, more specifically particulate matter less than 10 micrometres in aerodynamic diameter                                                                     |
| PM <sub>2.5</sub> | Small airborne particles less than 2.5 micrometres in aerodynamic diameter                                                                                                          |
| SPD               | Supplementary Planning Document                                                                                                                                                     |
| Standards         | A nationally defined set of concentrations for nine pollutants based on assessment of the effects of each pollutant on human health, including the effects on sensitive sub-groups. |
| TEA               | Triethanolamine – used to absorb nitrogen dioxide                                                                                                                                   |

## 10 Appendices

## A1 Professional Experience

### **Dr Jessica Muirhead, BSc (Hons), MSc, PhD, CSci, MEnvSci, MIAQM**

Dr Muirhead is an Associate Director with AQC with over 18 years experience in Air Quality consultancy. Prior to joining AQC in 2024, she spent eleven years at AECOM leading the Air Quality Team's Urban Regeneration and Solar Farm work streams. She has been responsible for delivering numerous air quality assessments for planning applications and Development Consent Orders (DCOs) including Environmental Impact Assessments (EIAs) across London and the UK. She spent a year as Technical Advisor to the Greater London Authority delivering training workshops to the London Boroughs, reviewing referable planning applications and responding to queries on air quality positive and air quality neutral. Jess also has extensive experience providing technical peer reviews for a number of Planning Authorities in the UK, and for The Royal Commission for Al Ula in Saudi Arabia. Jess is a current member of the IAQM Committee.

### **Meg Saunders, BSc (Hons) MSc, AMEnvSc, AMIAQM**

Miss Saunders is an Assistant Consultant with AQC and joined the company in 2023 where she has delivered on numerous air quality impact assessments. These include assessments of road traffic, combustion plants and construction dust throughout the UK for both standalone assessments and for EIAs to support planning applications and has carried out BREEAM assessments covering air quality for new developments. Previously she completed her MSc degree in Sustainability Science and Practice at Stanford University and went on to complete a summer internship focussed on developing the foundations for an open-source methodology for urban air quality modelling in collaboration with community partners in the Bay Area.

## A2 Policy

### Air Quality Strategy 2007

- A2.1 The Air Quality Strategy (Defra, 2007) 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 sets out how the different sectors: industry, transport and local government, can contribute to achieving the air quality objectives.

### Air Quality Strategy 2023

- A2.2 The Air Quality Strategy: Framework for Local Authority Delivery 2023 (Defra, 2023a) 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

- A2.3 The Clean Air Strategy (Defra, 2019) sets out a wide range of actions by which the UK Government, in partnership with the Governments of Scotland, Wales and Northern Ireland, 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.

### Environment Act 2021

- A2.4 The UK's new legal framework for protection of the natural environment, the Environment Act (2021) 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.
- A2.5 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 Section 4.

### Environmental Improvement Plan 2025

- A2.6 Defra published its 25 Year Environment Plan in 2018 (Defra, 2018a). The Environment Act (2021) requires Defra to review this Plan at least every five years. The Environmental Improvement Plan 2025 (Defra, 2023b) is the second iteration, building upon the first iteration in 2023. This outlines the progress made since 2018 and adds detail to the goals defined in the 2018 Plan, and subsequent Environmental Improvement Plan 2023, including that of achieving clean air.
- A2.7 The Environmental Improvement Plan 2025 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 Section 4, include the long-term targets in the Statutory Instrument described in Paragraph A2.5, and revised interim targets to be achieved by 2030.
- A2.8 The 2025 Plan outlines the role of local authorities in helping it meet both its targets and existing commitments. It also reiterates the respective roles of industry, agricultural sectors, and the DfT in providing the coordinated action required to meet both its new, and pre-existing targets and commitments.

## Planning Policy

### NPPF

- A2.9 The NPPF (Ministry of Housing, Communities & Local Government, 2024) sets out planning policy for England. It states that the purpose of the planning system is to contribute to the achievement of 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".*

- A2.10 To prevent unacceptable risks from air pollution, Paragraph 187 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 and water quality, taking into account relevant information such as river basin management plans".*

- A2.11 Paragraph 198 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".*

- A2.12 More specifically on air quality, Paragraph 199 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."*

- A2.13 The NPPF is supported by Planning Practice Guidance (PPG) (Ministry of Housing, Communities & Local Government, 2019), which includes guiding principles on how planning can take account of the impacts of new development on air quality.

- A2.14 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".*

### Local Policies

- A2.15 The Wiltshire Core Strategy (Wiltshire Council, 2015) was adopted in January 2015, and within this there are two policies which refer to air quality. Core Policy 55 refers to air quality and states that:

*"Development proposals, which by virtue of their scale, nature or location are likely to exacerbate existing areas of poor air quality, will need to demonstrate that measures can be taken to effectively mitigate emission levels in order to protect public health, environmental quality and amenity. Mitigation measures should demonstrate how they will make a positive contribution to the aims of the*

*Air Quality Strategy for Wiltshire and where relevant, the Wiltshire Air Quality Action Plan. Mitigation may include:*

- i. landscaping, bunding or separation to increase distance from highways and junctions*
- ii. possible traffic management or highway improvements to be agreed with the local authority*
- iii. abatement technology and incorporating site layout/separation and other conditions in site planning*
- iv. traffic routing, site management, site layout and phasing*
- v. where appropriate, contributions will be sought toward the mitigation of the impact a development may have on levels of air pollutants."*

A2.16 Core Policy 60 on Sustainable Transport states that "The Council will use its planning and transport powers to help reduce the need to travel particularly by private car, and support and encourage the sustainable, safe and efficient movement of people and goods within and through Wiltshire." Measures for achieving this include "planning developments in accessible locations" and "assessing and, where necessary, mitigating the impact of developments on transport users, local communities and the environment."

A2.17 The Wiltshire Core Strategy is currently under review to develop an emerging local plan for Wiltshire covering the years to 2038 (Wiltshire Council, 2023a). Within the new Local Plan, Core Policy 55 from the Core Strategy will be retained as Policy 101, with minor updates. Core Policy 60 will be 8 of 36 September 2024 J10/14556A/10 Southampton Road, Alderbury Air Quality Assessment combined with Core Policy 63 as Policy 70 in the new Local Plan, which will be updated "to incorporate electric vehicle charging infrastructure."

A2.18 In addition, Wiltshire Council has published a Supplementary Planning Document (SPD) dealing with Air Quality (Wiltshire Council, 2023b), which states that any development within Wiltshire Council's area which does not exceed the 100 housing units (as is the case with the proposed development) is required to provide the following supporting documents with the planning application:

*"Evidence of good base design including EV charging that meets our minimum EV charging requirements*

*Construction Environmental Management Plan (CEMP)*

*Exposure Mitigation (if applicable)."*

## Local Transport Plan

A2.19 Wiltshire Council's Local Transport Plan 4 (LTP4) Core LTP4 Strategy incorporates a number of measures relevant to new development, including Measure A1.3 "Planning for HGV deliveries in new developments", Measure A2.3 "Ensure design requirements are met for new developments", and Measure 11.2 "Encourage and facilitate EV charging provision in new developments and refurbishments."

## Air Quality Action Plans

### National Air Quality Plan

A2.20 Defra has produced an Air Quality Plan to tackle roadside nitrogen dioxide concentrations in the UK (Defra, 2017); a supplement to the 2017 Plan (Defra, 2018b) 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. 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

A2.21 Wiltshire Council's Air Quality Action Plan (Wiltshire Council, 2024b) sets out a series of measures by which they will seek to achieve the air quality objectives in their AQMAs. Measure S12 on "Delivering Air Quality Improvements through the Planning System" speaks to the importance of the new SPD alongside the new Local Plan in providing clarity to developers regarding what is expected from them in terms of air quality and notes the emerging Local Plan.

A2.22 Additionally, Wiltshire Council's Air Quality Strategy for the years 2019-2024 (Wiltshire Council, 2019) states:

*"We will work with Development Control and Developers to ensure development does not lead to future air quality problems. This may be through design and layout or through financial contributions to specific projects that promote better air quality."*

A2.23 The Strategy includes four strategic policies, three of which are relevant to the proposed development:

- *"Strategic priority 1: Secure air quality objectives in the eight Air Quality Management Areas (AQMA). The poorest areas of air quality have been identified and Wiltshire Council is committed to working with communities, partner agencies and other services to secure the necessary improvements within the Local Air Quality Management Framework"*
- *Strategic priority 2: Maintaining good air quality across the county. Preventing the deterioration of air quality in the first place is the most cost effective strategy to ensure a vibrant local economy, and that Wiltshire is a place where people wish to live, work and visit.*
- *Strategic priority 4: Communication and information dissemination. Good communication and information dissemination are key to shaping policy and plans, keeping communities informed, and assisting those professionals tasked with planning new development."*

## A3 EPUK & IAQM Planning for Air Quality Guidance

A3.1 The guidance issued by EPUK and IAQM (Moorcroft and Barrowcliffe et al, 2017) is comprehensive in its explanation of the place of air quality in the planning regime. Key sections of the guidance not already mentioned above are set out below.

### Air Quality as a Material Consideration

*“Any air quality issue that relates to land use and its development is capable of being a material planning consideration. The weight, however, given to air quality in making a planning application decision, in addition to the policies in the local plan, will depend on such factors as:*

- the severity of the impacts on air quality;
- the air quality in the area surrounding the proposed development;
- the likely use of the development, i.e. the length of time people are likely to be exposed at that location; and
- the positive benefits provided through other material considerations”.

### Recommended Best Practice

A3.2 The guidance goes into detail on how all development proposals can and should adopt good design principles that reduce emissions and contribute to better air quality management. It states:

*“The basic concept is that good practice to reduce emissions and exposure is incorporated into all developments at the outset, at a scale commensurate with the emissions”.*

A3.3 The guidance sets out a number of good practice principles that should be applied to all developments that:

- include 10 or more dwellings;
- where the number of dwellings is not known, residential development is carried out on a site of more than 0.5 ha;
- provide more than 1,000 m<sup>2</sup> of commercial floorspace;
- are carried out on land of 1 ha or more.

A3.4 The good practice principles are that:

- New developments should not contravene the Council's Air Quality Action Plan, or render any of the measures unworkable;
- Wherever possible, new developments should not create a new “street canyon”, as this inhibits pollution dispersion;
- Delivering sustainable development should be the key theme of any application;
- New development should be designed to minimise public exposure to pollution sources, e.g. by locating habitable rooms away from busy roads;

- The provision of at least 1 Electric Vehicle (EV) "rapid charge" point per 10 residential dwellings and/or 1000 m<sup>2</sup> of commercial floorspace. Where on-site parking is provided for residential dwellings, EV charging points for each parking space should be made available;
- Where development generates significant additional traffic, provision of a detailed travel plan (with provision to measure its implementation and effect) which sets 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;
- All gas-fired boilers to meet a minimum standard of <40 mgNO<sub>x</sub>/kWh;
- Where emissions are likely to impact on an AQMA, all gas-fired CHP plant to meet a minimum emissions standard of:
  - i) Spark ignition engine: 250 mgNO<sub>x</sub>/Nm<sup>3</sup>;
  - ii) Compression ignition engine: 400 mgNO<sub>x</sub>/Nm<sup>3</sup>;
  - iii) Gas turbine: 50 mgNO<sub>x</sub>/Nm<sup>3</sup>.

A3.5 A presumption should be to use natural gas-fired installations. Where biomass is proposed within an urban area it is to meet minimum emissions standards of 275 mgNO<sub>x</sub>/Nm<sup>3</sup> and 25 mgPM/Nm<sup>3</sup>.

A3.6 The guidance also outlines that offsetting emissions might be used as a mitigation measure for a proposed development. However, it states that:

*"It is important that obligations to include offsetting are proportional to the nature and scale of development proposed and the level of concern about air quality; such offsetting can be based on a quantification of the emissions associated with the development. These emissions can be assigned a value, based on the "damage cost approach" used by Defra, and then applied as an indicator of the level of offsetting required, or as a financial obligation on the developer. Unless some form of benchmarking is applied, it is impractical to include building emissions in this approach, but if the boiler and CHP emissions are consistent with the standards as described above then this is not essential".*

A3.7 The guidance offers a widely used approach for quantifying costs associated with pollutant emissions from transport. It also outlines the following typical measures that may be considered to offset emissions, stating that measures to offset emissions may also be applied as post assessment mitigation:

- Support and promotion of car clubs;
- Contributions to low emission vehicle refuelling infrastructure;
- Provision of incentives for the uptake of low emission vehicles;
- Financial support to low emission public transport options; and
- Improvements to cycling and walking infrastructures.

## Screening

### Impacts of the Local Area on the Development

*"There may be a requirement to carry out an air quality assessment for the impacts of the local area's emissions on the proposed development itself, to assess the exposure that residents or users might experience. This will need to be a matter of judgement and should take into account:*

- the background and future baseline air quality and whether this will be likely to approach or exceed the values set by air quality objectives;
- the presence and location of Air Quality Management Areas as an indicator of local hotspots where the air quality objectives may be exceeded;
- the presence of a heavily trafficked road, with emissions that could give rise to sufficiently high concentrations of pollutants (in particular nitrogen dioxide), that would cause unacceptably high exposure for users of the new development; and
- the presence of a source of odour and/or dust that may affect amenity for future occupants of the development".

### Impacts of the Development on the Local Area

A3.8 The guidance sets out two stages of screening criteria that can be used to identify whether a detailed air quality assessment is required, in terms of the impact of the development on the local area. The first stage is that you should proceed to the second stage if any of the following apply:

- 10 or more residential units or a site area of more than 0.5 ha residential use; and/or
- more than 1,000 m<sup>2</sup> of floor space for all other uses or a site area greater than 1 ha.

A3.9 Coupled with any of the following:

- the development has more than 10 parking spaces; and/or
- the development will have a centralised energy facility or other centralised combustion process.

A3.10 If the above do not apply then the development can be screened out as not requiring a detailed air quality assessment of the impact of the development on the local area. If they do apply then you proceed to stage 2, which sets out indicative criteria for requiring an air quality assessment. The stage 2 criteria relating to vehicle emissions are set out below:

- the development will lead to a change in LDV flows of more than 100 AADT within or adjacent to an AQMA or more than 500 AADT elsewhere;
- the development will lead to a change in HDV flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere;
- the development will lead to a realigning of 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;
- the development will introduce a new junction or remove an existing junction near to relevant receptors, and the junction will cause traffic to significantly change vehicle acceleration/deceleration, e.g. traffic lights or roundabouts;

- the development will introduce or change a bus station where bus flows will change by more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere; and
- the development will have an underground car park with more than 100 movements per day (total in and out) with an extraction system that exhausts within 20 m of a relevant receptor.

A3.11 The criteria are more stringent where the traffic impacts may arise on roads where concentrations are close to the objective. The presence of an AQMA is taken to indicate the possibility of being close to the objective, but where whole authority AQMAs are present and it is known that the affected roads have concentrations below 90% of the objective, the less stringent criteria are likely to be more appropriate.

A3.12 On combustion processes (including standby emergency generators and shipping) where there is a risk of impacts at relevant receptors, the guidance states that:

*"Typically, any combustion plant where the single or combined NO<sub>x</sub> emission rate is less than 5 mg/sec is unlikely to give rise to impacts, provided that the emissions are released from a vent or stack in a location and at a height that provides adequate dispersion. As a guide, the 5 mg/s criterion equates to a 450 kW ultra-low NO<sub>x</sub> gas boiler or a 30kW CHP unit operating at <95mg/Nm<sup>3</sup>."*

*In situations where the emissions are released close to buildings with relevant receptors, or where the dispersion of the plume may be adversely affected by the size and/or height of adjacent buildings (including situations where the stack height is lower than the receptor) then consideration will need to be given to potential impacts at much lower emission rates.*

*Conversely, where existing nitrogen dioxide concentrations are low, and where the dispersion conditions are favourable, a much higher emission rate may be acceptable".*

A3.13 Should none of the above apply then the development can be screened out as not requiring a detailed air quality assessment of the impact of the development on the local area, provided that professional judgement is applied; the guidance importantly states the following:

*"The criteria provided are precautionary and should be treated as indicative. They are intended to function as a sensitive 'trigger' for initiating an assessment in cases where there is a possibility of significant effects arising on local air quality. This possibility will, self-evidently, not be realised in many cases. The criteria should not be applied rigidly; in some instances, it may be appropriate to amend them on the basis of professional judgement, bearing in mind that the objective is to identify situations where there is a possibility of a significant effect on local air quality".*

A3.14 Even if a development cannot be screened out, the guidance is clear that a detailed assessment is not necessarily required:

*"The use of a Simple Assessment may be appropriate, where it will clearly suffice for the purposes of reaching a conclusion on the significance of effects on local air quality. The principle underlying this guidance is that any assessment should provide enough evidence that will lead to a sound conclusion on the presence, or otherwise, of a significant effect on local air quality. A Simple Assessment will be appropriate, if it can provide this evidence. Similarly, it may be possible to conduct a quantitative assessment that does not require the use of a dispersion model run on a computer".*

A3.15 The guidance also outlines what the content of the air quality assessment should include, and this has been adhered to in the production of this report.

## Assessment of Significance

- A3.16 There is no official guidance in the UK in relation to development control on how to describe the nature of air quality impacts, nor how to assess their significance. The approach within the EPUK/IAQM guidance has, therefore, been used in this assessment. This approach involves a two stage process:
- a qualitative or quantitative description of the impacts on local air quality arising from the development; and
  - a judgement on the overall significance of the effects of any impacts.
- A3.17 The guidance recommends that the assessment of significance should be based on professional judgement, with the overall air quality impact of the development described as either 'significant' or 'not significant'. In drawing this conclusion, the following factors should be taken into account:
- the existing and future air quality in the absence of the development;
  - the extent of current and future population exposure to the impacts;
  - the influence and validity of any assumptions adopted when undertaking the prediction of impacts;
  - the potential for cumulative impacts and, in such circumstances, several impacts that are described as '*slight*' individually could, taken together, be regarded as having a significant effect for the purposes of air quality management in an area, especially where it is proving difficult to reduce concentrations of a pollutant. Conversely, a '*moderate*' or '*substantial*' impact may not have a significant effect if it is confined to a very small area and where it is not obviously the cause of harm to human health; and
  - the judgement on significance relates to the consequences of the impacts; will they have an effect on human health that could be considered as significant? In the majority of cases, the impacts from an individual development will be insufficiently large to result in measurable changes in health outcomes that could be regarded as significant by health care professionals.
- A3.18 The guidance is clear that other factors may be relevant in individual cases. It also states that the effect on the residents of any new development where the air quality is such that an air quality objective is not met will be judged as significant. For people working at new developments in this situation, the same will not be true as occupational exposure standards are different, although any assessment may wish to draw attention to the undesirability of the exposure.
- A3.19 A judgement of the significance should be made by a competent professional who is suitably qualified. A summary of the professional experience of the staff contributing to this assessment is provided in Appendix A1.