

Report

Main Avenue, Cowlersley

## **Air Quality Assessment**

For Thirteen Housing Group

14 March 2025

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# 1 Introduction

- 1.1 This report describes the potential air quality impacts associated with the proposed development of 57 residential dwellings on land off Main Avenue, Cowlesley. It will generate additional traffic on local roads, which may impact on air quality at existing residential properties along the affected road network. The main air pollutants of concern related to road traffic emissions are nitrogen dioxide (NO<sub>2</sub>) and fine particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>).
- 1.2 The location and setting of the proposed development are shown in Figure 1-1.



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

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- 1.3 The new homes within the proposed development will be provided with heat and hot water by Air Source Heat Pumps (ASHPs) or individual boilers within each unit; there will be no centralised combustion plant and thus no significant point sources of emissions within the proposed development.
- 1.4 This report describes existing local air quality conditions (base year 2023), and those in the earliest possible year of occupation (2027).
- 1.5 This report has been prepared taking into account all relevant local and national guidance and regulations.

## 2 Policy Context

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

### Air Quality Strategy 2007

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

### Air Quality Strategy 2023

- 2.3 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

- 2.4 The Clean Air Strategy (Defra, 2019) sets out a wide range of actions by which the UK Government will seek to reduce pollutant emissions and improve air quality. Actions are targeted at four main sources of emissions: Transport, Domestic, Farming and Industry. At this stage, there is no straightforward way to take account of the expected future benefits to air quality within this assessment.

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

- 2.5 The Office for Low Emission Vehicles (OLEV) and Department for Transport (DfT) published a Policy Paper (DfT, 2018) in July 2018 outlining how the government will support the transition to zero tailpipe emission road transport and reduce tailpipe emissions from conventional vehicles during the transition. This paper affirms the Government's pledge to end the sale of new conventional petrol and diesel cars and vans by 2040, and states that the Government expects the majority of new cars and vans sold to be 100% zero tailpipe emission and all new cars and vans to have significant zero tailpipe emission capability by this year, and that by 2050 almost every car and van should have zero tailpipe emissions. It states that the Government wants to see at least 50%, and as many as 70%, of new car sales, and up to 40% of new van sales, being ultra-low emission by 2030.
- 2.6 The paper sets out a number of measures by which Government will support this transition, but is clear that Government expects this transition to be industry and consumer led. The Government's 'Zero Emission Vehicle' (ZEV) mandate requires that 80% of new cars and 70% of new vans sold in Great Britain must be zero exhaust emission by 2030, increasing to 100% by 2035. If these ambitions are realised then road traffic-related NO<sub>x</sub> emissions can be expected to reduce significantly over the

coming decades, likely beyond the scale of reductions forecast in the tools utilised in carrying out this air quality assessment.

## Environment Act 2021

- 2.7 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.
- 2.8 The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (SI 2023 No. 96) sets two new targets for future concentrations of PM<sub>2.5</sub>. These targets are described in Paragraph 3.4.

## Environmental Improvement Plan 2023

- 2.9 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 2023 (Defra, 2023b) is the first revision. This outlines the progress made since 2018 and adds detail to the goals defined in the 2018 Plan, including that of achieving clean air.
- 2.10 The Environmental Improvement Plan 2023 sets out the new air quality targets which have been set for concentrations of PM<sub>2.5</sub>. These targets, which are described in more detail in Paragraph 3.4, include the long-term targets in the Statutory Instrument described in Paragraph 2.8, and interim targets to be achieved by 2028.
- 2.11 The 2023 Plan outlines the role of local authorities in helping it meet both its targets and existing commitments. It also outlines the respective roles of industry, agricultural sectors, and the DfT in providing the coordinated action required to meet both its new, and pre-existing targets and commitments.

## Planning Policy

### National Policies

- 2.12 The National Planning Policy Framework (NPPF) (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”.*

- 2.13 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”.*

- 2.14 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”.*

2.15 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. 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”.*

2.16 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. The PPG states that:

*“Defra carries out an annual national assessment of air quality using modelling and monitoring to determine compliance with Limit Values. It is important that the potential impact of new development on air quality is taken into account where the national assessment indicates that relevant limits have been exceeded or are near the limit, or where the need for emissions reductions has been identified”.*

2.17 Regarding plan-making, the PPG states:

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

2.18 The role of the local authorities through the LAQM regime is covered, with the PPG stating that a local authority Air Quality Action Plan *“identifies measures that will be introduced in pursuit of the objectives and can have implications for planning”.*

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

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

2.20 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”.*

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

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

### Local Policies

2.22 The Kirklees Council Local Plan (Kirklees Council, 2019a) was adopted in February 2019, and covers the period between 2013 and 2031. The Local Plan includes the following policies relevant to air quality:

2.23 Policy LP20, 'Sustainable travel', states that:

*"The council will support demand management measures which discourage single occupancy car travel within new development and encourage the use of low emission vehicles to improve areas with low levels of air quality. Proposals should include measures to encourage the use of sustainable travel options, including public transport, the promotion of personal journey planning, walking, cycling, car sharing, electronic communication and home working."*

2.24 Policy LP47, 'Healthy, active and safe lifestyles', states that:

*"The council will, with its partners, create an environment which supports healthy, active and safe communities and reduces inequality.*

*Healthy, active and safe lifestyles will be enabled by:*

*...g. ensuring that the current air quality in the district is monitored and maintained and, where required, appropriate mitigation measures include as part of new development proposals..."*

2.25 Policy LP51, 'Protection and improvement of local air quality', which states:

*"1. Development will be expected to demonstrate that it is not likely to result, directly or indirectly, in an increase in air pollution which would have an unacceptable impact on the natural and built environment or to people.*

*2. Proposals that have the potential to increase local air pollution either individually or cumulatively must be accompanied by evidence to show that the impact of the development has been assessed in accordance with the relevant guidance. Development which has the potential to cause levels of local air pollution to increase must incorporate sustainable mitigation measures that reduce the level of this impact. If sustainable measures cannot be introduced the development will not be permitted.*

*3. Where the development introduces new receptors into Air Quality Management Areas or Areas of Concern or near other areas of relatively poor air quality, for example near roads or junctions, the development must incorporate sustainable mitigation measures that protect the new receptors from unacceptable levels of air pollution. Where sustainable mitigation measures cannot be introduced which prevent receptors from being exposed to unsafe levels of air pollution, development will not be permitted."*

2.26 Kirklees Council are currently updating the Local Plan to cover the period up to 2043.

2.27 Kirklees Council has also adopted the West Yorkshire Low Emission Group Air Quality and Emissions Technical Planning Guidance (West Yorkshire Low Emission Group, n.d.), which sets out a process for assessing air quality impacts and determining an appropriate level of mitigation. The guidance states that a calculation of pollutant emissions costs, and an associated mitigation plan, is required for major developments. The proposed development is classified as a medium development as, although it will

provide more than 50 residential units, it does not meet any of the additional trigger criteria for major developments; thus, an emissions costs calculation and mitigation plan are not required.

## Building Standards

- 2.28 Part F(1) of Schedule 1 of the Building Regulations 2010 as amended June 2022 (Ministry of Housing, Communities & Local Government, 2022) places a duty on building owners, or those responsible for relevant building work<sup>1</sup>, to ensure adequate ventilation is provided to building occupants.
- 2.29 Approved Document F (HM Government, 2021a), which accompanies the Building Regulations, explains that care should be taken to minimise entry of external air pollutants. Specific steps should be taken to manage ventilation intakes where the building is near to a significant source of emissions, or if local ambient concentrations exceed values set in the Air Quality Standards Regulations 2010 (see Paragraph 3.9, later). These steps include maximising the distance between emission source and air intake, considering likely dispersion patterns, and considering the timing of pollution releases when designing the ventilation system.
- 2.30 Part S(1) of Schedule 1, and Regulation 44D, of the Building Regulations 2010 (Ministry of Housing, Communities & Local Government, 2022) define a requirement for the provision of infrastructure for charging electric vehicles. Precise requirements are explained further within Approved Document S (HM Government, 2021b) and depend on the overall number of parking spaces provided and the average financial cost of installation.
- 2.31 Compliance with the Building Regulations is not required for planning approval, but it is assumed that the Regulations will be complied with in the completed development.

## Air Quality Action Plans

### National Air Quality Plan

- 2.32 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. Alongside a package of national measures, the 2017 Plan and the 2018 Supplement require those identified English Local Authorities (or the GLA in the case of London Authorities) to produce local action plans and/or feasibility studies. These plans and feasibility studies must have regard to measures to achieve the statutory limit values within the shortest possible time, which may include the implementation of a Clean Air Zone (CAZ). There is currently no straightforward way to take account of the effects of the 2017 Plan or 2018 Supplement in this assessment; however, consideration has been given to whether there is currently, or is likely to be in the future, a limit value exceedance in the vicinity of the proposed development. This assessment has principally been carried out in relation to the air quality objectives, rather than the limit values that are the focus of the Air Quality Plan.

### Local Air Quality Action Plan

- 2.33 Kirklees Council's Air Quality Action Plan (Kirklees Council, 2019b) sets out a series of measures by which they will seek to achieve the air quality objectives and improve air quality in Kirklees between April 2019 and March 2024. The measure of relevance to this assessment is the requirement for

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<sup>1</sup> Building work is a legal term for work covered by the Building Regulations. With limited exemptions, the Regulations apply to all significant building work, including erecting or extending a building.

planning applications to take account of the West Yorkshire Low Emission Group Air Quality and Emissions Technical Planning Guidance.

### 3 Assessment Criteria

- 3.1 The Government has established a set of air quality standards and objectives to protect human health. The 'standards' are based on assessment of the effects of each pollutant on human health, including the effects on sensitive sub-groups. The 'objectives' set out the extent to which the Government expects the standards to be achieved *taking account of practical considerations*. The objectives for use by local authorities are prescribed within the Air Quality (England) Regulations (2000) and the Air Quality (England) (Amendment) Regulations (2002).
- 3.2 The 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. Measurements across the UK have shown that the 1-hour mean nitrogen dioxide objective is unlikely to be exceeded at roadside locations where the annual mean concentration is below 60 µg/m<sup>3</sup> (Defra, 2022). Measurements have also shown that the 24-hour mean PM<sub>10</sub> objective could be exceeded at roadside locations where the annual mean concentration is above 32 µg/m<sup>3</sup> (Defra, 2022).
- 3.3 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> are considered to apply at the façades of residential properties, schools, hospitals etc.; they do not apply at hotels. The 24-hour mean objective for PM<sub>10</sub> is considered to apply at the same locations as the annual mean objective, as well as in gardens of residential properties and at hotels. The 1-hour mean objective for 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.
- 3.4 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 (see Paragraph 3.9), originally set at 25 µg/m<sup>3</sup> and currently set at 20 µg/m<sup>3</sup>.
- 3.5 Defra has also set two new targets, and two new interim targets, for PM<sub>2.5</sub> concentrations in England. One set of targets focuses on absolute concentrations. The long-term target is to achieve an annual mean PM<sub>2.5</sub> concentration of 10 µg/m<sup>3</sup> by the end of 2040 (referred to as the annual mean concentration target or AMCT), with the interim target being a value of 12 µg/m<sup>3</sup> by the start of 2028<sup>2</sup>. The second set of targets relate to reducing overall population exposure to PM<sub>2.5</sub>. By the end of 2040, overall population exposure to PM<sub>2.5</sub> should be reduced by 35% compared with 2018 levels (referred to as the population exposure reduction target or PERT), with the interim target being a reduction of 22% by the start of 2028 (Table 3-1).

**Table 3-1: Environment Act PM<sub>2.5</sub> Targets**

Metric	Target	Target year
AMCT	Interim target: 12 µg/m <sup>3</sup>	2028
	Legally binding target: 10 µg/m <sup>3</sup>	2040
PERT	Interim target: 22% reduction in exposure compared to 2018	2028

<sup>2</sup> Meaning that it will be assessed using measurements from 2027. The 2040 target will be assessed using measurements from 2040. National targets are assessed against concentrations expressed to the nearest whole number, for example a concentration of 10.4 µg/m<sup>3</sup> would not exceed the 10 µg/m<sup>3</sup> target.

Metric	Target	Target year
	Legally binding target: 35% reduction in exposure compared to 2018	2040

3.6 In 2024, Defra published Interim Planning Guidance on the PM<sub>2.5</sub> targets (Defra, 2024). This states that:

*“The purpose of the targets is to improve air quality by reducing levels of PM<sub>2.5</sub> across the country, therefore improving public health. While achievement of the targets will be assessed at relevant monitoring sites, the targets apply to ambient (outdoor) air throughout England. Applicants and Local Planning Authorities should therefore consider the impact of developments on air quality in all ambient air, whether a monitor is present or not.”*

3.7 In order to address the new targets, it is not sufficient to assess solely whether a scheme is likely to lead to an exceedance of a legal limit. Instead, developments need to implement appropriate mitigation measures from the design stage, ensuring the minimum amount of pollution is emitted and that exposure is minimised.

3.8 Pending publication of the new guidance, Defra advises applicants to provide evidence that they have identified key sources of air pollution within the scheme and taken appropriate action to minimise emissions of PM<sub>2.5</sub> and its precursors as far as possible. More detailed assessment is expected for development closer to populations and/or having higher emissions. Defra has posed two questions to be used as prompts to support the interim assessment process:

*“How has exposure to PM<sub>2.5</sub> been considered when selecting the development site?; and*

*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?”*

3.9 EU Directive 2008/50/EC (The European Parliament and the Council of the European Union, 2008) sets limit values for nitrogen dioxide, PM<sub>10</sub> and PM<sub>2.5</sub>, and is implemented in UK law through the Air Quality Standards Regulations (2010)<sup>3</sup>. The limit values for nitrogen dioxide and PM<sub>10</sub> are the same numerical concentrations as the UK objectives, but achievement of the limit values is a national obligation rather than a local one and concentrations are reported to the nearest whole number. In the UK, only monitoring and modelling carried out by UK Central Government meets the specification required to assess compliance with the limit values. Central Government does not normally recognise local authority monitoring or local modelling studies when determining the likelihood of the limit values being exceeded, unless such studies have been audited and approved by Defra and DfT’s Joint Air Quality Unit (JAQU).

3.10 The relevant air quality criteria for this assessment are provided in Table 3-2.

**Table 3-2: Air Quality Criteria for Nitrogen Dioxide, PM<sub>10</sub> and PM<sub>2.5</sub>**

Pollutant	Time Period	Value
Nitrogen Dioxide	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

<sup>3</sup> As amended through The Air Quality Standards (Amendment) Regulations 2016 and The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020.

Pollutant	Time Period	Value
	Annual Mean	40 µg/m <sup>3</sup>
PM <sub>2.5</sub>	Annual Mean	20 µg/m <sup>3</sup> <sup>a</sup>

<sup>a</sup> There is no numerical PM<sub>2.5</sub> objective for local authorities (see Paragraph 3.4). Convention is to assess against the UK limit value which is currently 20 µg/m<sup>3</sup>.

## Road Traffic Screening Criteria

- 3.11 Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM)<sup>4</sup> recommend a two-stage screening approach (Moorcroft and Barrowcliffe et al, 2017) to determine whether emissions from road traffic generated by a development have the potential for significant air quality impacts. The approach, as described in Appendix A1, first considers the size and parking provision of a development; if the development is residential and is for fewer than ten homes or covers less than 0.5 ha, or is non-residential and will provide less than 1,000 m<sup>2</sup> of floor space or cover a site area of less than 1 ha, and will provide ten or fewer parking spaces, then there is no need to progress to a detailed assessment.
- 3.12 The second stage then compares the changes in vehicle flows on local roads that a development will lead to against specified screening criteria. The screening thresholds (described in full in Appendix A1) inside an AQMA are a change in flows of more than 25 Heavy Duty Vehicles (HDVs) or 100 Light Duty Vehicles (LDVs) per day; outside of an AQMA the thresholds are 100 HDVs or 500 LDVs. Where these criteria are exceeded, a detailed assessment is likely to be required, although the guidance advises that *"the criteria provided are precautionary and should be treated as indicative"*, and *"it may be appropriate to amend them on the basis of professional judgement"*.

<sup>4</sup> The IAQM is the professional body for air quality practitioners in the UK.

## 4 Assessment Approach

### Existing Conditions

- 4.1 Existing sources of emissions and baseline air quality conditions within the study area have been defined using a number of approaches:
- industrial and waste management sources that may affect the area have been identified using Defra's Pollutant Release and Transfer Register (Defra, 2025a);
  - local sources have been identified through examination of the Council's Air Quality Review and Assessment reports;
  - information on existing air quality has been obtained by collating the results of representative monitoring carried out by the local authority;
  - background concentrations have been defined using Defra's 2021-based background maps (Defra, 2025b). These cover the whole of the UK on a 1x1 km grid. The background annual mean nitrogen dioxide 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; and
  - whether or not there are any exceedances of the annual mean limit value for nitrogen dioxide, PM<sub>10</sub> and PM<sub>2.5</sub> in the study area has been identified using Defra's Compliance data (2025c).

### Road Traffic Impacts

- 4.2 The first step in considering the road traffic impacts of the proposed development has been to screen the development and its traffic generation against the criteria set out in the EPUK/IAQM guidance (Moorcroft and Barrowcliffe et al, 2017), as described in Paragraph 3.11 and detailed further in Appendix A1. Where impacts can be screened out there is no need to progress to a more detailed assessment.
- 4.3 The impacts of nitrogen dioxide, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations on new residents of the development have been assessed qualitatively, taking account of any available local air quality monitoring data, background concentrations, and proximity to local roads.

### Assessment of Significance

- 4.4 There is no official guidance in the UK in relation to development control on how to assess the significance of air quality impacts. The approach developed jointly by EPUK and IAQM (Moorcroft and Barrowcliffe et al, 2017) has therefore been used. The overall significance of the air quality impacts is determined using professional judgement; the experience of the consultants preparing the report is set out in Appendix A2. Full details of the EPUK/IAQM approach are provided in Appendix A1.

## 5 Baseline Conditions

### Relevant Features

- 5.1 The proposed development is located on the southern edge of Cowlersley, approximately 3.6 km to the south west of Huddersfield town centre. The application site currently consists of scrub land and is bounded by residential properties and a school to the north, west and east, and by further scrub land to the south.

### Industrial Sources

- 5.2 No significant industrial sources have been identified that are likely to affect the proposed development, in terms of air quality.

### Local Air Quality Monitoring

- 5.3 Kirklees Council operates one automatic monitoring station within its area, however, this is located over 14 km away from the proposed development. The Council also operates a number of nitrogen dioxide monitoring sites using diffusion tubes prepared and analysed by the Socotec Laboratory (using the 50% TEA in acetone method). This includes site K53, within 1 km of the proposed development. Annual mean results for the years 2019 to 2023 for this location are summarised in Table 5-1. Exceedances of the objectives are shown in bold. The monitoring location is shown in Figure 5-1. The monitoring data have been taken from Kirklees Council's 2024 Air Quality Annual Status Report (Kirklees Council, 2024).

**Table 5-1: Summary of Annual Mean NO<sub>2</sub> Monitoring (2019-2023) (µg/m<sup>3</sup>)<sup>a</sup>**

Site No.	Site Type	Location	2019	2020	2021	2022	2023
K53	Roadside	Yates Lane, Milnsbridge	<b>53.7</b>	24.6	30.6	28.0	23.7 <sup>b</sup>
Objective			40				

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

<sup>b</sup> Annualised by the Council due to low data capture.

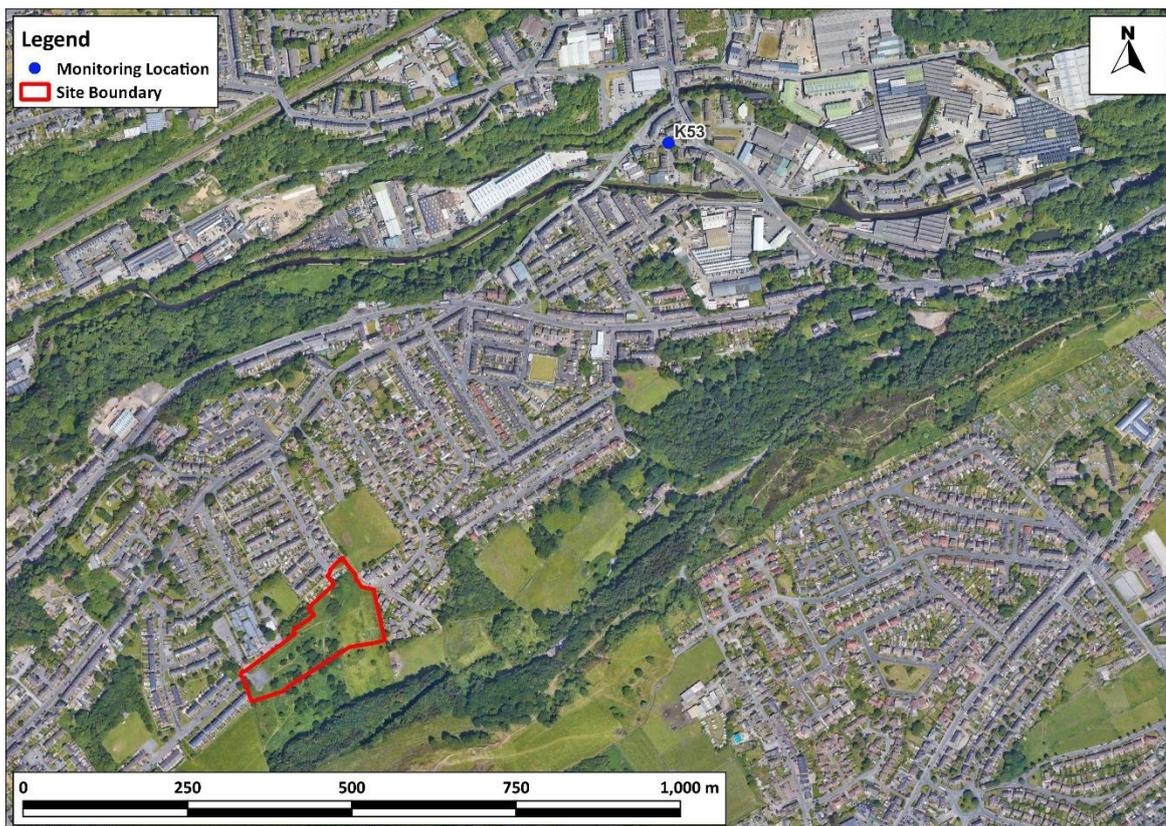


Figure 5-1: Monitoring Location

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- 5.4 Concentrations last exceeded the objective in 2019. There is a downward trend in measured concentrations over the past five years. Measured concentrations have been below 60 µg/m<sup>3</sup> and therefore it is unlikely that the 1-hour mean objective has been exceeded at this monitoring location (Paragraph 3.2).
- 5.5 The CM1 urban background automatic monitoring station, located approximately 14.5 km north east of the proposed development in Dewsbury since 2022, measures PM<sub>10</sub> and PM<sub>2.5</sub> concentrations. Measured concentrations of PM<sub>10</sub> and PM<sub>2.5</sub> were 12 µg/m<sup>3</sup> and 7 µg/m<sup>3</sup> respectively in 2023, which are well below the relevant objectives, and also below the AMCT.

### Exceedances of Limit Value

- 5.6 Defra has not identified any exceedances of the annual mean or 1-hour mean limit values in 2023 in Kirklees' area (Defra, 2025c). As such, there is not considered to be a risk of a limit value exceedance in the vicinity of the proposed development by the time that it is operational.
- 5.7 As discussed in Paragraph 2.32, Defra has produced an Air Quality Plan (Defra, 2017) to tackle roadside nitrogen dioxide concentrations in the UK. Within this Plan, Kirklees Council is identified as having limit value exceedances in or beyond 2017, but not beyond 2020, thus the Plan does not require the authority to undertake any further action. However, a High Court judgement (Royal Courts of Justice, 2018) declared the Plan unlawful with regard to its application to the 45 local authority areas in which exceedances were projected beyond 2017, but not beyond 2020. The judgement required the 33 local authorities where exceedances were projected beyond 2018, of which Kirklees Council is one, to also “develop and implement a plan designed to deliver compliance in the shortest

*time possible*". Kirklees Council was on this list due to exceedances of the limit value being identified alongside a road link which is less than 100 m long; this road link has since been removed from the model.

## Background Concentrations

5.8 The maximum estimated background concentrations within the proposed development are set out in Table 5-2 and are all well below the objectives.

**Table 5-2: Estimated Annual Mean Background Pollutant Concentrations in 2023 and 2027 ( $\mu\text{g}/\text{m}^3$ )**

Year	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
2023	10.3	10.6	6.5
2027	8.4	10.3	6.3
Objective	40	40	20 <sup>a</sup>
AMCT	-	-	10 <sup>b</sup>

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

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

## 6 Impact Assessment

### Impacts at Existing Receptors

- 6.1 TPS Transport Consultants, who have undertaken the transport assessment for the proposed development, have advised that the proposed development is expected to generate a total of 310 vehicles, which will distribute across the local road network. This daily trip rate is below the screening threshold of 500 LDVs recommended for use outside an AQMA in the EPUK/IAQM guidance (Moorcroft and Barrowcliffe et al, 2017) (see Paragraph 3.12). The proposed development will generate very few operational heavy vehicle trips. As such, it is judged that the relevant screening thresholds will not be exceeded and there is no requirement for a detailed assessment of road traffic impacts at existing receptors; it can be concluded that the proposed development will not have a significant impact on local roadside air quality.

### Impacts of Existing Sources on Future Residents of the Development

- 6.2 The proposed development is located well away from any busy roads, 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 5-2), thus it can be concluded that future residents will experience acceptable air quality, and there is no need for more detailed assessment.

### Significance of Operational Air Quality Effects

- 6.3 The operational air quality effects without mitigation are judged to be 'not significant'. This professional judgement is made in accordance with the methodology set out in Appendix A1, and takes account of the assessment that:
- pollutant concentrations within the proposed development will all be well below the objectives, thus future residents will experience acceptable air quality; and
  - the proposed development will generate traffic well below industry screening thresholds.

## 7 Mitigation

### Good Design and Best Practice

7.1 The EPUK/IAQM guidance advises that good design and best practice measures should be considered, whether or not more specific mitigation is required. Furthermore, the West Yorkshire Low Emission Group Air Quality and Emissions Technical Planning Guidance (West Yorkshire Low Emission Group, n.d.) requires that medium developments include the following mitigation measures, where appropriate:

- one electric vehicle charging point per dwelling with dedicated parking or one point per ten spaces for unallocated parking;
- provision of a Travel Plan including agreed mechanisms for discouraging high emission vehicle use and encouraging modal shift (i.e. towards public transport, cycling and walking) as well as the uptake of low emission fuels and technologies;
- improved pedestrian links to public transport stops;
- provision of new bus stop infrastructure including shelters, raised kerbing, and information displays;
- provision of subsidised or free ticketing (i.e. Metrocards);
- site layout to include improved pedestrian pathways to encourage walking; and
- improved convenient and segregated cycle paths to link to the local cycle network.

7.2 The proposed development incorporates the following good design and best practice measures:

- provision of electric vehicle charging points at all plots;
- provision of a Travel Plan setting out measures to encourage sustainable means of transport (public transport, cycling and walking);
- appointment of a Travel Plan Coordinator to manage a Travel Choices Programme, which aims to engage with new residents to raise awareness of the options available to them, to encourage a switch from the use of cars. This includes provision of maps and timetables, and personalised advice in the form of Personal Journey Plans;
- as part of the Travel Choices Programme, offering a range of offers and discounts on related products and services, including at local cycle retailers; and
- provision of pedestrian and cycle access to the new development, including cycle storage for all plots.

7.3 These measures are consistent with the measures set out in the West Yorkshire Low Emission Group Air Quality and Emissions Technical Planning Guidance.

### Recommended Mitigation

7.4 The assessment has demonstrated that 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.

- 7.5 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).

## 8 Achieving Compliance with the PM<sub>2.5</sub> Targets

- 8.1 The monitoring data described in Paragraph 5.5 demonstrate that annual mean PM<sub>2.5</sub> concentrations are currently below the AMCT, which is to be met by 2040. Background concentrations at the proposed development are also well below the AMCT in 2040 (Table 5-2).
- 8.2 Defra have set out in their Interim Planning Guidance (2024) two questions designed to consider whether a development supports the AMCT and PERT PM<sub>2.5</sub> targets. 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?”.
- 8.3 Exposure to PM<sub>2.5</sub> and ways to minimise PM<sub>2.5</sub> emissions have been considered in the following ways:
- location of the development site on the edge of the town, away from existing pollution sources;
  - information on sustainable transport modes will be provided via a Travel Plan and Travel Plan Coordinator, including Personal Journey Plans, to enable residents to plan journeys to minimise emissions;
  - residents will be provided with discounts at local retailers to purchase bicycles and cycle equipment; and
  - cycle storage will be provided for all plots.
- 8.4 It is considered that the development complies with the requirements to deliver achievement of the AMCT and PERT by 2040 as appropriate action has been taken to minimise emissions of PM<sub>2.5</sub> and its precursors as far as is reasonably practicable.

## 9 Conclusions

- 9.1 The assessment has considered the impacts of the proposed development on local air quality in terms of emissions from road traffic generated by the completed and occupied development. It has also identified the air quality conditions that future residents will experience.
- 9.2 Air quality conditions for future residents of the proposed development have been shown to be acceptable, with concentrations well below the air quality objectives throughout the site. The assessment has also demonstrated that the proposed development will not have a significant impact on local roadside air quality.
- 9.3 The overall operational air quality effects of the proposed development are judged to be 'not significant'.
- 9.4 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 the local air quality environment 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. It is considered that the development complies with the requirements to deliver achievement of the AMCT and PERT by 2040 as appropriate action has been taken to minimise emissions of PM<sub>2.5</sub> and its precursors.
- 9.5 The proposed development is consistent with Policy LP20 of Kirklees Council's Local Plan, as it includes measures to encourage the use of sustainable travel options, and Policy LP47, as the current air quality in the district will be maintained. It is also consistent with Policy LP51 as it will not result in an unacceptable increase in air pollution, nor introduce new receptors into an areas of poor air quality.

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## 11 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
CAZ	Clean Air Zone
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
EPUK	Environmental Protection UK
EU	European Union
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)
HMSO	Her Majesty's Stationery Office
IAQM	Institute of Air Quality Management
JAQU	Joint Air Quality Unit
LAQM	Local Air Quality Management
LDV	Light Duty Vehicles (<3.5 tonnes)
µg/m <sup>3</sup>	Microgrammes per cubic metre
NO	Nitric oxide
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

OLEV	Office for Low Emission Vehicles
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
PPG	Planning Practice Guidance
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

## 12 Appendices

## A1 EPUK & IAQM Planning for Air Quality Guidance

A1.1 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

A1.2 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”.*

A1.3 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.

A1.4 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:
  - Spark ignition engine: 250 mgNO<sub>x</sub>/Nm<sup>3</sup>;
  - Compression ignition engine: 400 mgNO<sub>x</sub>/Nm<sup>3</sup>;
  - Gas turbine: 50 mgNO<sub>x</sub>/Nm<sup>3</sup>.
- 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>.

A1.5 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”.*

A1.6 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

A1.7 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.

A1.8 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.

A1.9 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.

A1.10 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.

A1.11 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”.*

A1.12 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”.*

A1.13 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”.*

A1.14 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

- A1.15 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.
- A1.16 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.
- A1.17 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.
- A1.18 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 A2.

## A2 Professional Experience

### Dr Denise Evans, BSc (Hons) PhD MEnvSc MIAQM

Dr Evans is a Technical Director with AQC, with more than 25 years' relevant experience. She has prepared air quality review and assessment reports for local authorities, and has appraised local authority air quality assessments on behalf of the UK governments, and provided support to the Review and Assessment helpdesk. She has extensive modelling experience, completing air quality and odour assessments to support applications for a variety of development sectors including residential, mixed use, urban regeneration, energy, commercial, industrial, and road schemes, assessing the effects of a range of pollutants against relevant standards for human and ecological receptors. Denise has acted as an Expert Witness and is a Member of the Institute of Air Quality Management.

### Dr Imogen Heard, BSc (Hons) MSc PhD

Dr Heard is an Associate of AQC with over 12 years' experience in the field of air quality. She has been involved in numerous development projects including road schemes, energy from waste facilities, urban extensions and energy centres. These have included the use of ADMS-5 and ADMS-Roads dispersion models to study the impacts of a variety of pollutants, including nitrogen dioxide, PM<sub>10</sub> and PM<sub>2.5</sub>, and the preparation of air quality assessment reports and air quality chapters for Environmental Statements. She also has experience in undertaking construction dust risk assessments, Air Quality Neutral assessments and human health risk assessments, as well as in preparing local authority reports. Prior to joining AQC she worked as a scientist in the Atmospheric Dispersion and Air Quality area at the UK Met Office for four years, modelling the dispersion of a range of pollutants over varying spatial and temporal scales.



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