



## **Air Quality Assessment: Edwina Mountbatten House, Romsey**

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May 2023



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management & assessment

## Document Control

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## Executive Summary

The air quality impacts associated with the proposed redevelopment of Edwina Mountbatten House on Broadwater Road in Romsey, Test Valley have been assessed. The proposals are for the redevelopment of the site to form 47 retirement apartments with associated parking, landscaping and communal space.

Air quality conditions in Romsey are good, and the assessment has demonstrated that future residents of the development will experience acceptable air quality, with pollutant concentrations below the air quality objectives. Whilst the development will lead to changes in vehicle flows on the local road network, these flows are well below industry screening thresholds and thus the impacts on local air quality will be negligible.

Overall, the air quality effects are judged to be 'not significant'.

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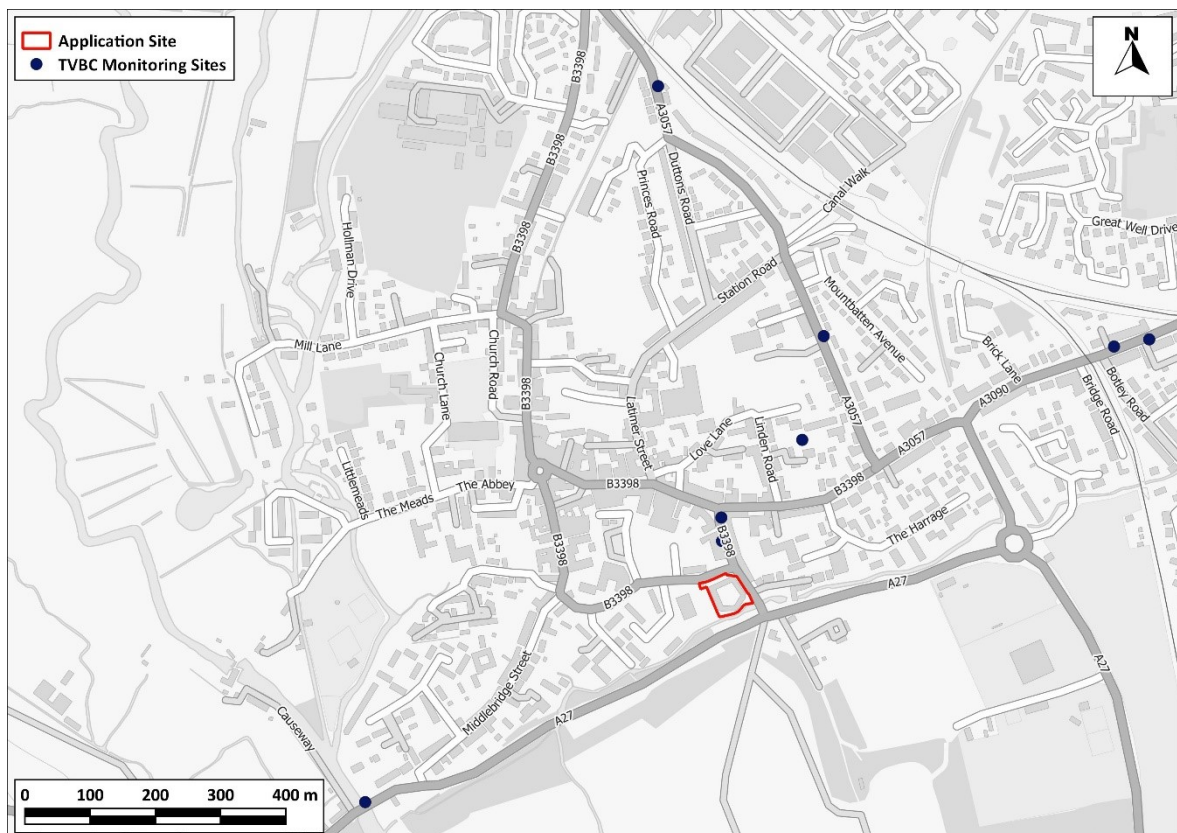
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# 1 Introduction

- 1.1 This report describes the potential air quality impacts associated with the proposed redevelopment of Edwina Mountbatten House on Broadwater Road in Romsey, Test Valley. The proposals are for the redevelopment of the site to form 47 retirement apartments with associated parking, landscaping and communal space.
- 1.2 The location and setting of the proposed development are shown in Figure 1, along with the air quality monitoring sites operated by Test Valley Borough Council (TVBC) in Romsey.



**Figure 1: Proposed Development Setting**

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- 1.3 The proposed development is bounded by the B3398 and the A27 Romsey bypass, thus an assessment is required to determine the air quality conditions that future residents will experience. The proposed development will also lead to changes in vehicle flows 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>).

- 1.4 Heat, hot water and electricity will be provided via electrical means, including photovoltaic panels; there will be no centralised combustion plant within the proposed development for the provision of energy, and thus no significant point sources of emissions associated with its operation.
- 1.5 This report describes existing local air quality conditions and those in the earliest possible year of occupation (2025). The 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 Air Quality Action Plan (AQAP) 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 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 it is clear that Government expects this transition to be industry and consumer led. The Government has since announced that the phase-out date for the sale of new petrol and diesel cars and vans will be brought forward to 2030 and that all new cars and vans must be fully zero emission at the tailpipe from 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.

### **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 3.5.

### **Environmental Improvement Plan 2023**

- 2.9 Defra published its 25 Year Environment Plan in 2018 (Defra, 2018b). 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 3.5, 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 notes that an Air Quality Strategy will be published to provide guidance on how local authorities should assist. The Plan makes clear that this will focus on reducing emissions from sources within a local authority's control, including through traffic management and planning powers. This focus on emissions, as opposed to directly requiring local authorities to assess PM<sub>2.5</sub> concentrations against the new targets, recognises that PM<sub>2.5</sub> is a cross-boundary issue; most PM<sub>2.5</sub> within a local authority's area is not, by and large, emitted within that local authority. The 2023 Plan also outlines the respective roles of industry, agricultural sectors, and the Department for Transport



in providing the coordinated action required to meet both its new, and pre-existing targets and commitments.

## Planning Policy

### National Policies

- 2.12 The National Planning Policy Framework (NPPF) (2021) 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 174 of the NPPF states that:

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

- 2.14 Paragraph 185 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 186 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 Test Valley Borough Revised Local Plan Development Plan Document 2011-2029 was adopted in January 2016 and contains policies for determining planning applications and identifying strategic allocations for housing, employment and other uses (Test Valley Borough Council, 2016). Within the Plan, 'Policy E8: Pollution' is relevant to air quality and states:

*“Development will be permitted provided that it does not result in pollution which would cause unacceptable risks to human health, the natural environment or general amenity.*

*Development that would or could potentially generate pollution will only be permitted if it can be demonstrated that there would not be any adverse impact on human health, the natural environment or general amenity.*

*Development which is sensitive to pollution will only be permitted if the intended users are not subject to unacceptable impact from existing nearby uses having taken account of proposed mitigation measures.”*

- 2.23 TVBC is currently preparing a new Local Plan which will cover the period up to 2040 and will guide future development within the Test Valley area; once adopted it will replace the current Local Plan. The Local Plan will cover a range of matters such as housing, employment, town centres, countering climate change and conserving and enhancing the local environment and heritage.

## Building Standards

- 2.24 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.
- 2.25 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 3.8, 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.
- 2.26 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

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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.

(HM Government, 2021b) and depend on the overall number of parking spaces provided and the average financial cost of installation.

- 2.27 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***

- 2.28 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, 2018a) 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 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***

- 2.29 TVBC has not declared any AQMAs and thus has not prepared an AQAP.

### 3 Assessment Criteria

- 3.1 The Government has established a set of air quality standards and objectives to protect human health. The 'standards' are set as concentrations below which effects are unlikely even in sensitive population groups, or below which risks to public health would be exceedingly small. They are based purely upon the scientific and medical evidence of the effects of an individual pollutant. The 'objectives' set out the extent to which the Government expects the standards to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility and timescale. The objectives for use by local authorities are prescribed within the Air Quality (England) Regulations (2000) and the Air Quality (England) (Amendment) Regulations (2002).
- 3.2 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.
- 3.3 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).
- 3.4 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 3.8), originally set at 25 µg/m<sup>3</sup> and currently set at 20 µg/m<sup>3</sup>.
- 3.5 Defra has also recently 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, 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

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<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.

reduced by 35% compared with 2018 levels, with the interim target being a reduction of 22% by the start of 2028.

- 3.6 Defra will assess compliance with the population exposure targets by averaging concentrations measured at its own background monitoring stations. This will not consider small changes over time to precisely where people are exposed (such as would relate to exposure introduced by a new development). Furthermore, as explained in Paragraph 2.11, all four new targets provide metrics against which central Government can assess its own progress. While local authorities have an important role delivering the required improvements, the actions required of local authorities, which will be clarified within a future Air Quality Strategy, relate to controlling emissions and not to directly assessing PM<sub>2.5</sub> concentrations against the targets.
- 3.7 Development control decisions can most effectively support Defra to achieve all four targets by optimising new developments to reduce their total emissions. The ambient concentrations to which occupants of new developments are exposed will have no effect on the ability to meet these targets. Similarly, where a new development causes an increase in local concentrations, this must be viewed in the context that all four targets relate to concentrations across England as a whole; there will be very few locations where a localised impact could alter the date by which the target is achieved in England.
- 3.8 European Union (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).
- 3.9 The relevant air quality criteria for this assessment are provided in Table 1.

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

**Table 1: 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
	Annual Mean	40 µg/m <sup>3</sup>
PM <sub>2.5</sub>	Annual Mean	20 µg/m <sup>3</sup> <sup>a</sup>
		12 µg/m <sup>3</sup> before 2028 <sup>b</sup>
		10 µg/m <sup>3</sup> by 2040 <sup>b</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>.

<sup>b</sup> Expressed to the nearest whole number. Defra has explained in the 2023 Environmental Improvement Plan (Defra, 2023b) that local authority responsibilities in relation to these targets relate to controlling emissions and not determining concentrations.

## Screening Criteria

- 3.10 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 effects. 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.
- 3.11 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) outside of an AQMA are 100 Heavy Duty Vehicles (HDVs) or 500 Light Duty Vehicles (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 sources that may affect the area have been identified using Defra's Pollutant Release and Transfer Register (Defra, 2023c);
- information on existing air quality has been obtained by collating the results of monitoring carried out by TVBC (2022); and
- whether or not there are any exceedances of the annual mean limit value for nitrogen dioxide in the study area has been identified using the maps of roadside concentrations published by Defra (2020; 2023d). These are the maps used by the UK Government, together with the results from national Automatic Urban and Rural Network (AURN) monitoring sites that operate to the required data quality standards, to identify and report exceedances of the limit value. The national maps of roadside PM<sub>10</sub> and PM<sub>2.5</sub> concentrations (Defra, 2023d), which are available for the years 2009 to 2019, show no exceedances of the limit values anywhere in the UK in 2019.

### Road Traffic Impacts of the Proposed Development

4.2 Road traffic impacts of the proposed development have been considered by screening the development traffic generation against the criteria set out in the EPUK/IAQM guidance (Moorcroft and Barrowcliffe et al, 2017), as described in Paragraph 3.10 and detailed further in Appendix A1.

4.3 Where impacts can be screened out there is no need to progress to a more detailed assessment, as has been the case for this development.

### Impacts of Road Traffic Emissions on Future Residents of the Proposed Development

4.4 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 local air quality monitoring data.

4.5 The assessment examines air quality conditions in 2019<sup>5</sup> and assumes these are representative of air quality conditions at the time the development is occupied; this assumption is considered to be

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<sup>5</sup> The latest year of available monitoring prior to the impact of restrictions introduced as a result of the Covid-19 pandemic; the influence of the pandemic was generally to reduce concentrations of the pollutants considered in this assessment.



worst-case as it is generally expected that nitrogen dioxide, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations will decline in future years.

### **Assessment of Significance**

- 4.6 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 the IAQM (Moorcroft and Barrowcliffe et al, 2017) has therefore been used.
- 4.7 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 in the southwest of Romsey and is bounded by the B3398 to the north and east, Tadburn Lake waterway to the south, and Crosfield Hall to the west. The A27 Romsey Bypass Road is approximately 18 m beyond the waterway, shielded by a row of trees. The site was formerly occupied by a residential care home for 23 residents, which closed in 2022.

### Industrial Sources

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

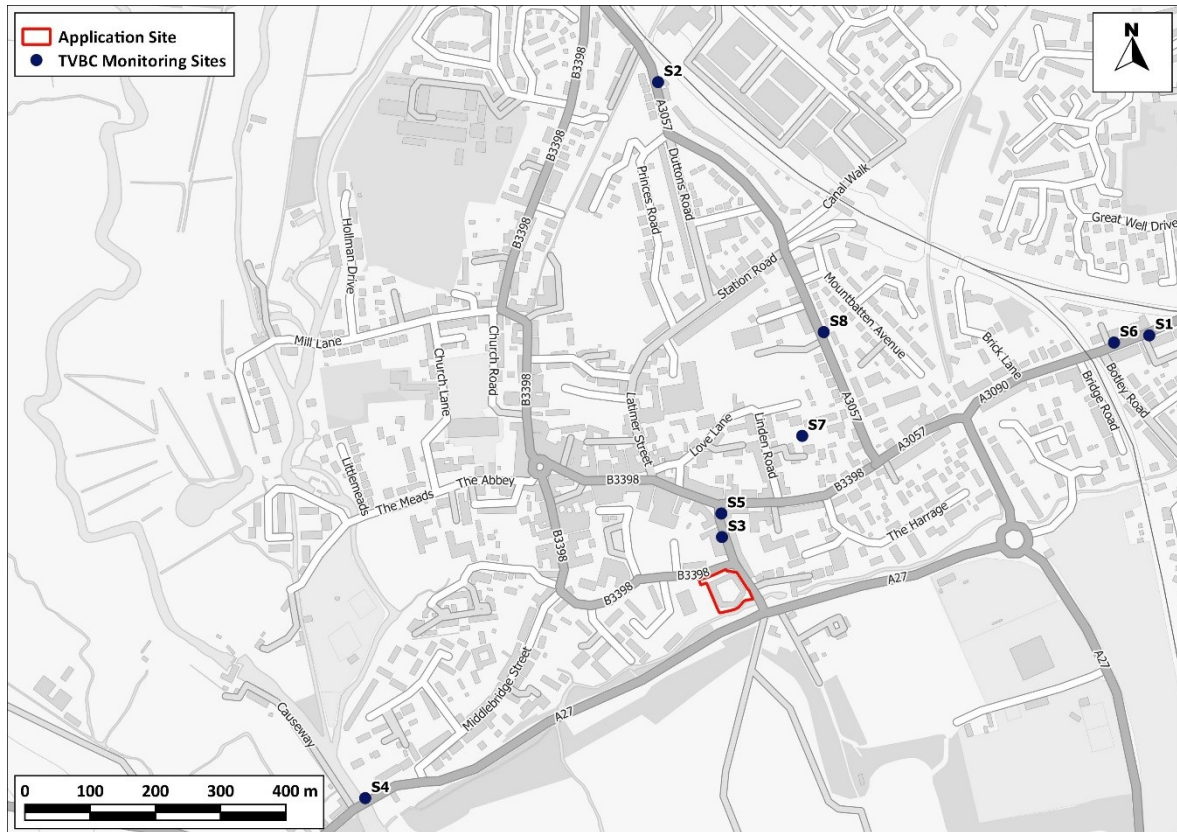
### Local Air Quality Monitoring

- 5.3 TVBC operates a number of nitrogen dioxide monitoring sites using diffusion tubes prepared and analysed by Socotec Laboratories (using the 50% TEA in acetone method). These include eight deployed in Romsey within 1 km of the proposed development.
- 5.4 Annual mean results for the years 2017 to 2021<sup>6</sup> are summarised in Table 2, whilst the monitoring locations are shown in Figure 2. The monitoring data have been taken from TVBC's 2022 Annual Status Report (Test Valley Borough Council, 2022).

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

Site ID	Site Type	Location	2017	2018	2019	2020	2021
S1	Roadside	Winchester Road – East	-	-	35.3	32.2	28.3
S2	Roadside	Duttons Road	-	-	24.5	21.8	21.9
S3	Roadside	Palmerstons Street - West	30.7	29.3	30.1	23.9	23.2
S4	Roadside	Romsey (A27) Bypass	-	-	22.5	18.6	17.8
S5	Roadside	Palmerstons Street – East	-	-	25.4	21.8	19.6
S6	Roadside	Winchester Road – West	26.3	25.6	27.9	21.8	26.3
S7	Roadside	Alma Road – South	26.4	26.6	24.4	18.8	19.6
S8	Roadside	Alma Road - North	26.6	25.9	25.1	18.9	19.2
<b>Objective</b>			<b>40</b>				

<sup>6</sup> 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.



**Figure 2: Monitoring Locations**

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- 5.5 Measured concentrations have been below the annual mean objective at all roadside sites across Romsey. In addition, concentrations are well below  $60 \mu\text{g}/\text{m}^3$ , indicating an exceedance of the 1-hour mean objective is unlikely.
- 5.6 No monitoring of  $\text{PM}_{10}$  or  $\text{PM}_{2.5}$  concentrations is undertaken in TVBC.

### Exceedances of Limit Value

- 5.7 There are no AURN (Defra, 2023e) monitoring sites within the study area with which to identify exceedances of the annual mean nitrogen dioxide limit value. Defra's roadside annual mean nitrogen dioxide concentrations (Defra, 2023d), which are used to identify and report exceedances of the limit value, do not identify any exceedances within the study area in 2019. As such, there is considered to be no risk of a limit value exceedance in the vicinity of the proposed development by the time that it is operational.

## 6 Impact Assessment

### Impacts at Existing Receptors

- 6.1 The transport consultants (Paul Basham Associates) have advised that prior to its closure, the site generated a total of 92 trips daily. The proposed development is expected to generate a total of 125 trips per day, the majority of which will be LDVs associated with staff movements, resulting in an increase of 31 daily trips on the local road network.
- 6.2 These additional daily trip rates are well below the screening threshold recommended for use in the EPUK/IAQM guidance of 500 LDV / 100 HDV movements outside of an AQMA (Moorcroft and Barrowcliffe et al, 2017) (see Paragraph 3.11).
- 6.3 As such, there is no requirement for a detailed assessment of road traffic impacts at existing receptors; it can be concluded that the proposed development will have a negligible impact on local roadside air quality.

### Impacts on Future Residents of the Development

- 6.4 Measured annual mean nitrogen dioxide concentrations at all roadside monitoring sites in Romsey have consistently been below the objective ( $40 \mu\text{g}/\text{m}^3$ ). Since annual mean concentrations are well below  $60 \mu\text{g}/\text{m}^3$ , an exceedance of the short-term objective is also therefore highly unlikely (see Paragraph 3.3). In addition, new units within the application site are set back from the major A road network; there is, therefore, considered to be no risk of an exceedance of the nitrogen dioxide objectives at the proposed development.
- 6.5 In terms of  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$  concentrations, since TVBC has not declared any AQMAs, it is reasonable to expect concentrations across the district to be below the respective objectives. Furthermore, across the UK, no exceedances of the  $\text{PM}_{10}$  or  $\text{PM}_{2.5}$  objectives have been caused by road traffic emissions where the annual mean nitrogen dioxide objective has not also been exceeded. As nitrogen dioxide concentrations are expected to be below the objectives, it can be expected that concentrations of  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$  will also be below the current objectives.
- 6.6 It is judged that concentrations at the proposed development were well below the statutory objectives in 2019.
- 6.7 National measures, including the promotion of the uptake of low and zero emission vehicles, will assist with reducing concentrations, such that conditions are likely to have improved further by the time the development is operational in 2025.
- 6.8 It is judged that future users will experience acceptable air quality conditions in the opening year.

## Significance of Operational Air Quality Effects

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 below the objectives, thus future residents will experience acceptable air quality; and
- the proposed development will generate traffic well below industry screening thresholds thus will have a negligible impact on local air quality conditions.

## 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.
- 7.2 The EPUK/IAQM guidance predates the recent publication by Defra of long-term air quality targets for PM<sub>2.5</sub>. As explained in Paragraph 3.5, meeting the new target will require positive action from many different sectors. While it is not appropriate to determine individual planning applications based on whether future PM<sub>2.5</sub> concentrations in an area will be above or below the concentration target, it is nevertheless appropriate that new development contributes to meeting the national targets by ensuring that air quality is taken into account in development design.
- 7.3 The proposed development incorporates the following good design and best practice measures:
- provision of four active electric vehicle charging points (equivalent to 25% of the total provision), with passive provision for the remainder;
  - provision of pedestrian, cycling and buggy access to the new development, including a covered buggy store and cycle parking space;
  - use of photovoltaic panels for the provision of heating to the proposed development, to avoid the need for on-site combustion; and
  - planting strategy around the perimeter of the development to act as a buffer between the adjacent road network.

### 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 effect on local air quality. It is, therefore, not considered appropriate to propose 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 Conclusions

- 8.1 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.

### Impacts and Significance

- 8.2 Air quality conditions for future residents of the proposed development have been shown to be acceptable, with concentrations below the air quality objectives throughout the site.
- 8.3 The proposed development does not incorporate any on-site combustion plant for the provision of energy, and additional vehicle trips generated by the scheme will be well below published screening criteria; as such, it will have a negligible impact on local air quality.
- 8.4 Overall, the air quality effect is concluded to be 'not significant' and thus no mitigation is required.

### Policy Implications

- 8.5 Taking into account these conclusions, it is judged that the proposed development is consistent with Paragraph 185 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 186, as it will not affect compliance with relevant limit values or national objectives.
- 8.6 The proposed development is also compliant with Policy E8 of TVBC's Local Plan, since it will neither result in unacceptable risks to human health, nor will future residents be exposed to unacceptable impacts from the adjacent road network.

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## 10 Glossary

<b>AADT</b>	Annual Average Daily Traffic
<b>AQC</b>	Air Quality Consultants
<b>AQMA</b>	Air Quality Management Area
<b>AURN</b>	Automatic Urban and Rural Network
<b>CAZ</b>	Clean Air Zone
<b>Defra</b>	Department for Environment, Food and Rural Affairs
<b>DfT</b>	Department for Transport
<b>EPUK</b>	Environmental Protection UK
<b>EU</b>	European Union
<b>EV</b>	Electric Vehicle
<b>Exceedance</b>	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
<b>HDV</b>	Heavy Duty Vehicles (> 3.5 tonnes)
<b>HMSO</b>	Her Majesty's Stationery Office
<b>IAQM</b>	Institute of Air Quality Management
<b>JAQU</b>	Joint Air Quality Unit
<b>LAQM</b>	Local Air Quality Management
<b>LDV</b>	Light Duty Vehicles (<3.5 tonnes)
<b>µg/m<sup>3</sup></b>	Microgrammes per cubic metre
<b>NO<sub>2</sub></b>	Nitrogen dioxide
<b>NPPF</b>	National Planning Policy Framework
<b>OEP</b>	Office for Environmental Protection
<b>Objectives</b>	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
<b>OLEV</b>	Office for Low Emission Vehicles

<b>PM<sub>10</sub></b>	Small airborne particles, more specifically particulate matter less than 10 micrometres in aerodynamic diameter
<b>PM<sub>2.5</sub></b>	Small airborne particles less than 2.5 micrometres in aerodynamic diameter
<b>PPG</b>	Planning Practice Guidance
<b>Standards</b>	A nationally defined set of concentrations for nine pollutants below which health effects do not occur or are minimal
<b>TEA</b>	Triethanolamine – used to absorb nitrogen dioxide
<b>TVBC</b>	Test Valley Borough Council

## 11 Appendices

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## 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 an Associate Director with AQC, with more than 23 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 Frances Marshall, MSci PhD MEnvSc MIAQM**

Dr Marshall is a Principal Consultant with AQC with ten years' relevant experience. Prior to joining AQC, she spent four years carrying out postgraduate research into atmospheric aerosols at the University of Bristol. Dr Marshall has experience preparing air quality assessments for a range of projects, including residential and commercial developments, road traffic schemes, energy centres, energy from waste schemes and numerous power generation schemes. She has experience in producing air quality assessments for EIA schemes, and has also assessed the impacts of Local Plans on designated ecological areas, prepared Annual Status Reports for Local Authorities, and undertaken diffusion tube monitoring studies. She is a Member of both the Institute of Air Quality Management and the Institution of Environmental Sciences.