Air Quality Assessment:
Coverack Road Phase 2, Newport

December 2024

Experts in air quality management & assessment

Document Control

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Executive Summary

The air quality impacts associated with the proposed residential development on Coverack Road in Newport have been assessed. The proposals involve the construction of a single five-storey building comprising 40 apartments, and forms Phase 2 of the wider development of Coverack Road.

The assessment has demonstrated that future residents will experience acceptable air quality, with pollutant concentrations below the air quality objectives. The proposed development will not generate a significant number of additional vehicle movements, and heat and hot water will be provided by Air Source Heat Pumps, supplemented by photovoltaic panels. Thus, the proposed development will not generate any significant emissions.

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

Contents

Tables

Figures

1 Introduction

1.1 This report describes the potential air quality impacts associated with the proposed residential development on Coverack Road in Newport. The proposals involve the construction of a single five-storey building comprising 40 apartments, and forms Phase 2 of the wider development of Coverack Road.

1.2 The proposed development lies close to two Air Quality Management Areas (AQMAs) (on George Street, 500 m south, and Corporation Road, 650 m north) declared by Newport City Council (NCC) for exceedances of the annual mean nitrogen dioxide (NO_2) objective. The location and setting of the proposed development relative to the two AQMAs are shown in Figure 1.

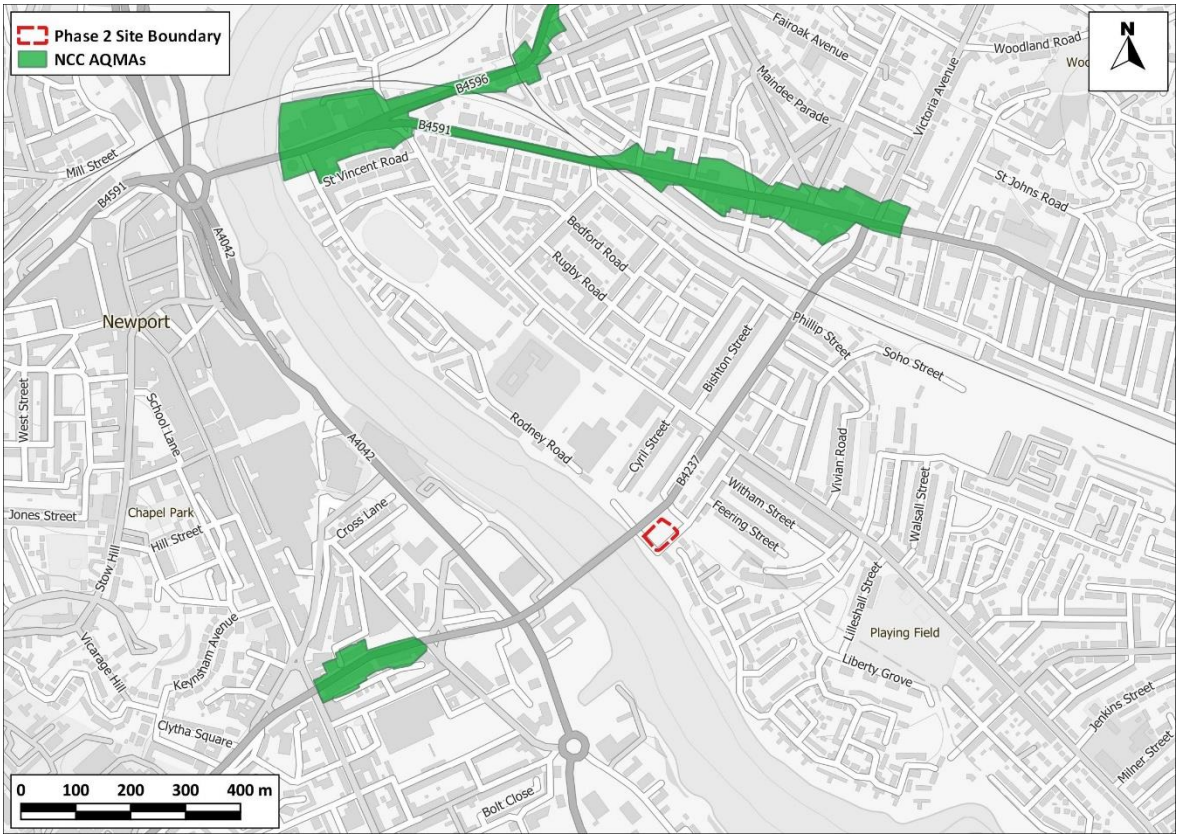

Figure 1: Proposed Development Setting in the Context of Air Quality

1.3 The proposed development will lead to changes in vehicle flows on local roads, including within the AQMAs, 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

and fine particulate matter (PM_{10} and $PM_{2.5}$). An assessment of the suitability of the site for residential development is also required to ensure that future residents are exposed to acceptable air quality conditions.

1.4 The energy strategy is based on the installation of Air Source Heat Pumps (ASHPs) and photovoltaic panels which do not have any associated local emissions to air. There are, therefore, no centralised combustion sources that require consideration within the assessment.

1.5 This report describes existing local air quality conditions in 2022 and considers those in the earliest possible year of operation (2027).

1.6 This report has been prepared taking into account all relevant local and national guidance and regulations, and follows a methodology agreed with NCC.

2 Policy Context and Assessment Methodology

Policy Context

2.1 Relevant national and local air quality policy is described in Appendix A1. The key policy aims with respect to air quality are to ensure that new development will not significantly contribute to adverse air quality impacts and poor air quality and will not introduce new exposure (e.g. residential dwellings) into areas of existing poor air quality.

Assessment Criteria

2.2 The Welsh 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 Welsh 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 (Wales) Regulations (2000) and the Air Quality (Amendment) (Wales) Regulations (2002).

2.3 The UK-wide objectives for nitrogen dioxide and PM_{10} 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 nitrogen dioxide objective is unlikely to be exceeded at roadside locations where the annual mean concentration is below 60 µg/m^3 (Defra, 2022). Measurements have also shown that the 24-hour mean PM_{10} objective could be exceeded at roadside locations where the annual mean concentration is above 32 µg/m^3 (Defra, 2022).

2.4 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 and the Devolved Administrations 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_{10} 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_{10} 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.

2.5 For $PM_{2.5}$, 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 2.6), originally set at 25 µg/m^3 and currently set at 20 µg/m^3.

2.6 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_{10} and $PM_{2.5}$, and is implemented in UK law through the Air Quality Standards Regulations (2010)[1]. The limit values for nitrogen dioxide and PM_{10} 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).

2.7 The relevant air quality criteria for this assessment are provided in Table 1.

Table 1: Air Quality Criteria for Nitrogen Dioxide, PM_{10} and $PM_{2.5}$

Pollutant	Time Period	Value
Nitrogen Dioxide	1-hour Mean	200 µg/m^3 not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m^3
PM_{10}	24-hour Mean	50 µg/m^3 not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m^3
$PM_{2.5}$	Annual Mean	20 µg/m^3 [a]

[a] There is no numerical $PM_{2.5}$ objective for local authorities (see Paragraph 2.5). Convention is to assess against the UK limit value which is currently 20 µg/m^3.

Assessment Approach

Consultation

2.8 The assessment follows a methodology agreed with NCC via email correspondence between Steve Manning (Senior Scientific Officer at NCC) and Ben Collier (Air Quality Consultants) in April 2024. Specifically, the following key points were agreed:

- Traffic generated by the scheme will not exceed industry-published criteria, and therefore a qualitative assessment of air quality impacts as a result of traffic generated by the proposed development will suffice;
- the development will be provided heat, hot water, and electricity by all-electric technologies, thus there will be no emissions associated with the energy strategy; and

[1] As amended through The Air Quality Standards (Amendment) Regulations 2016 and The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020.

- the suitability of the site will be assessed qualitatively, based on local monitoring data from 2022.

2.9 Whilst the Officer broadly accepted the methodology, the Officer did specify that a section should be included in the report discussing measures embedded in the design of the development to minimise emissions in the locality; this is included as part of Section 4.

Existing Conditions

2.10 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, 2024a);
- local sources have been identified through examination of NCC's Air Quality Review and Assessment reports;
- information on existing air quality has been obtained by collating the results of monitoring carried out by NCC; 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; 2024b). 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_{10} and $PM_{2.5}$ concentrations (Defra, 2024b), 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

2.11 Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM)[2] 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 A2, 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^2 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.

[2] The IAQM is the professional body for air quality practitioners in the UK.

2.12 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 A2) 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"*.

2.13 The first step in considering the road traffic impacts of the proposed development has been, therefore, to screen the development and its traffic generation against the criteria. Where impacts can be screened out there is no need to progress to a more detailed assessment, as has been the case in this assessment.

Impacts of Road Traffic on Future Residents of the Proposed Development

2.14 The impacts of nitrogen dioxide, PM_{10} and $PM_{2.5}$ concentrations on new residents of the development have been assessed qualitatively, taking account of local air quality monitoring data and proximity to local roads.

2.15 The assessment examines air quality conditions in 2022 and assumes these are representative of air quality conditions at the time the development is occupied in 2027; this assumption is considered to be worst-case as it is expected that nitrogen dioxide, PM_{10} and $PM_{2.5}$ concentrations will decline in future years.

Assessment of Significance

2.16 There is no official guidance in the UK in relation to development control on how to assess the significance of air quality impacts.

2.17 The overall significance of the air quality impacts is determined based on traffic generation, and comparison between the likely concentrations at the development, determined using professional judgement, and the air quality objectives. Where concentrations remain below the objectives and traffic generated by the proposed development is below published thresholds, it can be concluded that the overall effect will be 'not significant'. The experience of the consultants preparing the report is set out in Appendix A3.

3 Impact Assessment

Relevant Features

3.1 The proposed development is located approximately 1 km to the northwest of Newport city centre. The application site is bounded by car parking and the access road associated with Phase 1 to the north, and Coverack Road to the east, south and west. The elevated George Street Bridge is located to the north of the application site, and separates the proposed development from Phase 1, whilst the River Usk runs parallel to the western boundary of the site.

3.2 The site is currently unoccupied, and largely consists of scrubland and tarmacked areas. There is an existing residential estate to the southeast, on the opposite side of Coverack Road, whilst there are also further residential properties to the northeast, beyond Morris Street.

3.3 The proposed development is located in between two AQMAs, as highlighted in Figure 1 and Figure 2.

Industrial Sources

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

Local Air Quality Monitoring

3.5 NCC operates two automatic monitoring stations within its area adjacent to the M4, however, both of these are nearly 2 km from the application site.

3.6 The Council also operates a number of nitrogen dioxide monitoring sites using diffusion tubes prepared and analysed by SOCOTEC (using the 50% TEA in acetone method). These include five deployed on Corporation Road, approximately 200 m to the north of the site, and four deployed on George Street in the AQMA, approximately 580 m southwest of the site.

3.7 Annual mean results for the years 2018 to 2022[3] are summarised in Table 2. The monitoring locations are shown in Figure 2. The monitoring data have been taken from NCC's 2023 Annual Progress Report (Newport City Council, 2023a).

[3] 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.

Table 2: Summary of Annual Mean NO_2 Monitoring ($\mu g/m^3$) [a]

Site ID	Site Type	Location	2018	2019	2020	2021	2022
NCC 5	Roadside	276 Corporation Road	27.3	28.3	27.0	28.0	26.6
NCC 9D	Roadside	182 Corporation Road	27.5	29.3	26.8	26.1	26.5
NCC 12A	Façade	73 George Street	35.1	36.4	28.1	29.1	30.2
NCC 20C	Roadside	222 Corporation Road	32.5	35.3	28.8	30.8	30.8
NCC 44B	Roadside	175/177 Corporation Road	27.2	29.5	22.2	23.0	22.5
NCC 45B	Roadside	201 Corporation Road	29.2	31.2	24	24.7	24.9
NCC 51	Façade	81 George Street	37.5	**41.1**	32.8	31.9	32.9
NCC 62	Façade	17 George Street	32.3	35.4	25.5	28.0	33.6
NCC 72A	Façade	6 George Street	33.5	33.6	27.5	28.3	28.8
Objective			**40**				

[a] An exceedance of the annual mean objective is shown in bold.

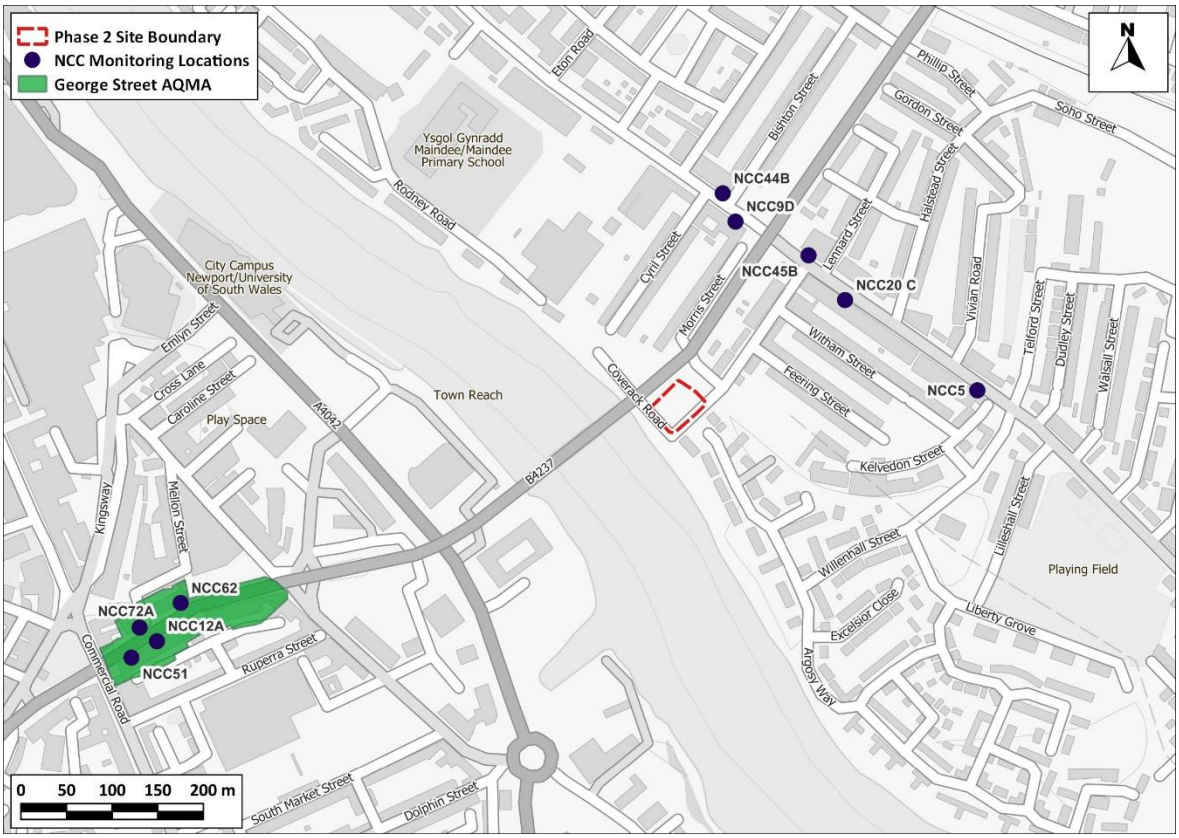

Figure 2: Monitoring Locations

3.8 As shown in Table 2, an exceedance of the annual mean objective was measured at one site (NCC 51) in 2019; at all other sites concentrations have been below the annual mean objective in all years. In addition, concentrations have been well below 60 µg/m^3, indicating an exceedance of the 1-hour mean objective is unlikely; this is consistent with measurements at the automatic monitors (Newport City Council, 2023a).

3.9 One of the automatic monitors adjacent to the M4 (AN1) also measures PM_{10} and $PM_{2.5}$ concentrations; measured concentrations were well below the objectives between 2018 and 2022.

Exceedances of Limit Value

3.10 There are no AURN (Defra, 2024c) monitoring sites within 1 km of the application site with which to identify exceedances of the annual mean nitrogen dioxide limit value. Defra's roadside annual mean nitrogen dioxide concentrations (Defra, 2024b), which are used to identify and report exceedances of the limit value, do not identify any exceedances within 1 km of the application site in either 2022 or 2027.

3.11 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.

Assessment of Development-Generated Road Traffic Emissions

3.12 The Transport Consultants (Acstro Limited) have advised that the proposed development will generate 100 additional vehicles movements daily, of which one will be generated by an HDV.

3.13 These additional trips are well below the screening threshold of 500 LDV / 100 HDV movements recommended for use in the EPUK/IAQM guidance outside of an AQMA (Moorcroft and Barrowcliffe et al, 2017) (see Paragraph 2.13).

3.14 The Transport Consultants have also advised that at the junction with Coverack Road and Corporation Road, the trips will split, such that no more than 75% of the trips travel west toward the George Street and Caerleon Road AQMAs. These additional trips are, therefore, also below the screening thresholds for inside an AQMA (100 LDV / 25 HDV movements).

3.15 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.

Assessment of Air Quality at Receptors Within the Development

3.16 Coverack Road is a minor no through road, and the proposed development is not located within an AQMA; as such, the measured concentrations at monitoring locations on Corporation Road are judged to be most representative of conditions at ground level within the development. Measured annual mean concentrations of nitrogen dioxide in 2022 at these sites were well below the objective

and ranged between 22.5 µg/m^3 and 30.8 µg/m^3 (see Table 2); based on the annual mean concentrations, exceedances of 1-hour mean are also unlikely (see Paragraph 2.3).

3.17 Nonetheless, the third and fourth storeys of the proposed development will be comparable in height to the George Street Bridge, with the nearest carriageway approximately 14 m from the building façade. Whilst there are no monitoring sites located on the bridge itself adjacent to the proposed development, the diffusion tubes in the George Street AQMA, approximately 500 m away, are located on the same road (B4237), and will therefore likely experience similar traffic flows. These monitoring sites are, however, located on the facades of the buildings and within 6 m of the carriageway. Concentrations will reduce with distance from the emission source, such that the concentrations on the upper storeys of the proposed development (which are set back by 14 m) will likely be lower than measured at the monitoring sites. Measured concentrations in 2022 were below the objective within the AQMA, it is therefore anticipated that concentrations at the proposed development will also be below the objective, and exceedances of the 1-hour mean are also unlikely (see Paragraph 2.3).

3.18 Taking the above points into consideration, it is reasonable to conclude that existing concentrations of nitrogen dioxide at the site will be below the annual mean and 1-hour mean objectives.

3.19 In terms of PM_{10} and $PM_{2.5}$, monitoring at the automatic monitor has demonstrated that concentrations are consistently well below the respective objectives (see Paragraph 5.10), such that it is anticipated concentrations at the site will also be below the objectives.

3.20 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 continue to improve by the time the development is fully operational in 2027.

3.21 It is, therefore, judged that future residents will experience acceptable air quality.

Significance of Operational Air Quality Effects

3.22 The operational air quality effects without mitigation are judged to be ‘not significant’. This professional judgement 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;
- the proposed development will generate traffic below industry screening thresholds, and thus will have a negligible impact on local air quality conditions; and
- the proposed development does not incorporate any onsite combustion plant for the routine provision of energy.

4 Mitigation

Good Design and Best Practice

4.1 The EPUK/IAQM guidance advises that good design and best practice measures should be considered, whether or not more specific mitigation is required.

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

- provision of electric vehicle charging points in line with NCC guidance;
- adoption of anti-idling schemes where combustion engines are accessing the site;
- comprehensive landscaping package and use of Green Infrastructure, including species and plants that facilitate clean air and act as barriers to pollution;
- provision of a detailed travel plan setting out measures to encourage sustainable means of transport (public, cycling and walking);
- provision of pedestrian and cycle access to the new development, including cycle parking; and
- use of electric technologies for heating and hot water to avoid the need for on-site combustion.

Recommended Mitigation

4.3 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.

4.4 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).

5 Conclusions

5.1 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.

5.2 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.

5.3 The proposed development does not incorporate any on-site combustion plant for the provision of energy, and additional vehicle trips generated by the development will be below published industry screening criteria. As such, the proposed development will have a negligible impact on local air quality.

5.4 Overall, the air quality effect is concluded to be 'not significant' and thus no mitigation is required.

Policy Implications

5.5 Taking into account these conclusions, it is judged that the proposed development is consistent with Planning Policy Wales, as it does not contribute to a worsening of local air quality.

5.6 The proposed development is also consistent with NCC's General Development Principles since the proposals will not lead to an adverse impact on air quality (Principles 2 and 7), has embedded mitigation measures to minimise its emissions footprint (Principle 4), and will implement a Travel Plan, such that it is consistent with Strategic Policy 14 in encouraging sustainable modes of transport.

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7 Glossary

AADT	Annual Average Daily Traffic
AQC	Air Quality Consultants
AQMA	Air Quality Management Area
AURN	Automatic Urban and Rural Network
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	His Majesty's Stationery Office
IAQM	Institute of Air Quality Management
JAQU	Joint Air Quality Unit
LDV	Light Duty Vehicles (<3.5 tonnes)
µg/m^3	Microgrammes per cubic metre
NCC	Newport City Council
NO	Nitric oxide
NO_2	Nitrogen dioxide
NOx	Nitrogen oxides (taken to be NO_2 + NO)
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
PM_{10}	Small airborne particles, more specifically particulate matter less than 10 micrometres in aerodynamic diameter

$PM_{2.5}$	Small airborne particles less than 2.5 micrometres in aerodynamic diameter
PPW	Planning Policy Wales
SPG	Supplementary Planning Guidance
Standards	A nationally defined set of concentrations for nine pollutants below which health effects do not occur or are minimal
TAN	Technical Advice Note
TEA	Triethanolamine – used to absorb nitrogen dioxide

8 Appendices

A1 Policy Context

A1.1 All European legislation referred to in this report is written into UK law and remains in place.

Air Quality Strategy 2007

A1.2 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 AQMA, and prepare an Air Quality Action Plan (AQAP) which identifies appropriate measures that will be introduced in pursuit of the objectives.

Clean Air Strategy 2019

A1.3 The Clean Air Strategy (Defra, 2019) sets out a wide range of actions by which the UK Government, in partnership with the Governments of Scotland, Wales and Northern Ireland, will seek to reduce pollutant emissions and improve air quality. Actions are targeted at four main sources of emissions: Transport, Domestic, Farming and Industry. At this stage, there is no straightforward way to take account of the expected future benefits to air quality within this assessment.

The Clean Air Plan for Wales

A1.4 In August 2020, the Welsh Government published the Clean Air Plan for Wales (Welsh Government, 2020), which aims to *"improve air quality and reduce the* impacts *of air pollution on human health, biodiversity, the natural environment and our economy"*. The Plan sets out the following four themes, around which the plan is structured, with actions in order to enable collaborative approaches to reducing air pollution:

- People: Protecting the health and well-being of current and future generations;
- Environment: Taking action to support our natural environment, ecosystems and biodiversity;
- Prosperity: Working with industry to reduce emissions, supporting a cleaner and more prosperous Wales; and
- Place: Creating sustainable places through better planning, infrastructure and transport.

A1.5 The Welsh Government subsequently published an Update Report on progress against the actions set out in the Clean Air Plan in April 2023 (Welsh Government, 2023).

A1.6 The Plan details intentions to publish a Clean Air Zone Framework in Spring 2021, stating an expectation *"to see Clean Air Zones established in towns and cities throughout Wales to reduce the impact of transport emissions on health. Some of these may be supported by a charging element. Clean Air Zones, where appropriate, would enable a range of co-ordinated actions to deliver significant reductions in public and environmental exposure to harmful airborne pollutants from all sources".* This action has, however, been delayed to enable joint policy development of wider Road User Charging policy with Transport for Wales.

A1.7 The Plan also includes plans to *"introduce LAQM policy changes by 2023 to ensure the regime is public health focused and proactively finding and tackling areas of pollution".* These changes include a focus on the human health impacts of $PM_{2.5}$, stating *"In the current regime, monitoring of $PM_{2.5}$ is encouraged but not mandatory. In the context of the known health impacts associated with $PM_{2.5}$, we propose to investigate the extent to which Local Authorities can support monitoring, reporting and action on $PM_{2.5}$ as part of their existing LAQM functions".* In 2024, the Environment (Air Quality and Soundscapes) (Wales) Act (Senedd Cymru, 2024) was passed by the Senedd, which sets out the changes to the LAQM regime, discussed in Paragraph A1.13.

A1.8 The Plan states that the Welsh Government will *"publish and consult on a White Paper on a Clean Air Act for Wales before the end of this Senedd Term",* which will include:

- *"New powers for smoke control linked to tackling air pollution from domestic burning ($PM_{2.5}$)*
- *A requirement for a Clean Air Plan / Strategy to be published / reviewed every 5 years*
- *Potential new air quality targets (for example, taking account of WHO guidelines for air quality)*
- *Clarified and strengthened local air quality management legislation*
- *Strengthened powers to address road vehicle idling*
- *Consolidated powers to implement Clean Air Zones / Low Emission Zones*
- *Focused powers to protect vulnerable groups from the effects of air pollution*
- *Enhanced air quality monitoring and modelling*
- *A potential new duty on public bodies to adhere to guidance encouraging different ways of working and actions to reduce air pollution and support decarbonisation."*

Reducing Emissions from Road Transport: Road to Zero Strategy

A1.9 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.

A1.10 The paper sets out a number of measures by which Government will support this transition, but is clear that Government expects this transition to be industry and consumer led. The Government has recently announced that 80% of new cars and 70% of new vans sold in Great Britain must be zero emission by 2030, increasing to 100% by 2035. If these ambitions are realised then road traffic-related NOx emissions can be expected to reduce significantly over the coming decades, likely beyond the scale of reductions forecast in the tools utilised in carrying out this air quality assessment.

Environment Act 2021

A1.11 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.

Environment (Air Quality and Soundscapes) (Wales) Act

A1.12 The Act (Senedd Cymru, 2024), which was given Royal Assent in February 2024, requires the Welsh Ministers to set a long-term target for any one of the following pollutants: ammonia, PM_{10}, ozone, nitrogen dioxide, carbon monoxide and sulphur dioxide. In addition, the Act specifies that the Welsh Ministers must set at least one target in relation to annual mean $PM_{2.5}$ concentrations. The Act also sets out the process that Ministers must follow to set a target, and how targets will be reported and reviewed.

A1.13 In addition to National Targets, the Act sets out a series of other provisions in relation to:

- *promoting awareness about air quality;*
- *promoting active travel;*
- *the National Air Quality Strategy;*
- *consultation on the existing air quality regulations;*
- *Local Air Quality Management;*
- *smoke control in Wales;*
- *Road charging schemes; and*

- *fixed penalties for stationary idling.*

A1.14 With respect to the LAQM regime, the Act sets out the requirements for Local Authorities to carry out annual reviews on air quality, and prepare an Action Plan, that will be approved by Welsh Ministers, and which sets out the means by which the Local Authority will ensure the standards and objectives are met in the area.

Planning Policy

National Policies

A1.15 Land-use planning policy in Wales is established within the policy document Planning Policy Wales (PPW12) (Welsh Government, 2024), which provides the strategic policy framework for the effective preparation of local planning authority development plans. With regard to pollution and health effects, in Paragraphs 3.21 to 3.23 it states:

"3.21 Planning authorities have a role to play in the prevention of physical and mental illnesses caused, or exacerbated, by pollution, disconnection of people from social activities (which contributes to loneliness) as well as the promotion of travel patterns which facilitate active lifestyles. The planning system must consider the impacts of new development on existing communities and maximise health protection and well-being and safeguard amenity. This will include considering the provision of, and access to, community and health assets, such as community halls, libraries, doctor's surgeries and hospitals. Health impacts should be minimised in all instances, and particularly where new development could have an adverse impact on health, amenity and well-being. In such circumstances, where health or amenity impacts cannot be overcome satisfactorily, development should be refused".

"3.22 Planning authorities should develop and maintain places that support healthy, active lifestyles across all age and socio-economic groups, recognising that investment in walking and cycling infrastructure can be an effective preventative measure which reduces financial pressures on public services in the longer term. The way a development is laid out and arranged can influence people's behaviours and decisions and can provide effective mitigation against air and noise pollution. Effective planning can provide calming, tranquil surroundings as well as stimulating and sensory environments, both of these make an important contribution to successful places"

"3.23 Green infrastructure can be an effective means of enhancing health and well-being, through linking dwellings, workplaces and community facilities and providing high quality, accessible green spaces. In all development and in public spaces especially, there should be sensitive management of light, and exposure to airborne pollution should be kept as low as reasonably practicable. The compatibility of land uses will be a key factor in addressing air quality and creating appropriate soundscapes which are conducive to, and reflective of, particular social and cultural activities and experiences, particularly in busy central areas of towns and cities. Equally, the provision of quiet,

tranquil areas which provide peaceful sanctuaries in otherwise noisy environments can help to reduce general levels of pollution and promote both mental and physical well-being".

A1.16 PPW12 places a general presumption in favour of sustainable development, stressing the importance of local development plans, and states that the planning system should perform an environmental role to minimise pollution. Local development plans should enable consideration of the effects that the proposed development may have on air quality, as well as the effect that air quality may have on the proposed development. To prevent unacceptable risks from air pollution, planning decisions should ensure that new development is appropriate for its location, and states:.

"Development should prevent problems from occurring or getting worse such as the generation of carbon emissions, poor air quality and waste and the depletion of our natural resources which will need to be managed for many years to come."

A1.17 PPW12 also places considerable emphasis on the Well-being of Future Generations Act (Welsh Government, 2015) with the intention to improve the social, economic, environmental and cultural well-being of Wales, and outlines how this can be achieved through the concept of 'Placemaking'.

A1.18 PPW12 is supported by a series of Technical Advice Notes (TANs) and National Assembly for Wales Circulars. Local planning authorities have to take PPW, TANs and Circulars into account when preparing Development Plans.

A1.19 With respect to planning policy guidance, TAN 18 on transport (Welsh Government, 2007) makes reference to local air quality and the need for Air Quality Action Plans to be prepared for any Air Quality Management Areas declared.

A1.20 The need for compliance with any statutory air quality limit values and objectives is stressed, and the presence of AQMAs must be accounted for in terms of the cumulative impacts on air quality from individual sites in local areas. New developments in AQMAs should be consistent with local air quality action plans.

Local Transport Plan

A1.21 Section 3 of the NCC Local Transport Plan (Newport City Council, 2015a) sets out the program of projects for delivery in the period between 2015 and 2020. The *'Air Quality improvements'* scheme refers to air quality, describing that the scheme shall provide:

"…traffic management measures to improve air quality within Air Quality Management Areas."

A1.22 Additionally, a longer-term aspiration of the NCC Local Transport Plan is also linked to air quality and aims to *"Ensure that air quality improvement is considered on new and improvement transport schemes and undertake feasibility studies to improve air quality".*

Local Policies

A1.23 The NCC Local Development Plan (Newport City Council, 2015b) was adopted in January 2015; NCC is aiming to adopt a Replacement Local Development Plan, however until this is adopted (targeted in 2026), the existing Plan remains in place. Within the existing Plan, Objective 9 of the Local Development Plan relates to Health and Well-being:

"Many of the factors that contribute to health and well-being have some basis in the planning system…These include locating development near safe, accessible and sustainable travel routes; attention to air quality issues…"

A1.24 Within the Plan there are four General Development Principles (GDP) which refer to air quality:

- GDP 2 refers to general amenity and states that:

  "Development will be permitted where, as applicable:

  i) There will not be a significant averse effect on local amenity, including in terms of noise, disturbance, privacy, overbearing, light, odours and air quality…"

- GDP 4 refers to highways and accessibility, stating:

  "Development proposals should…. Be designed to avoid or reduce…air pollution."

- GDP 7 relates to environmental protection and public health, and states:

  "Development will not be permitted which would cause or result in unacceptable harm to health because of…air…or any other identified risk to environment, local amenity or public health and safety."

- Strategic Policy 14 on transport proposals states:

  "Transport proposals will be supported where they…encourage the use of public transport and other modes which reduce…pollution".

A1.25 In addition, NCC has Supplementary Planning Guidance (SPG) dealing with air quality (Newport City Council, 2018), which sets out the *"Circumstances when an assessment for air quality purposes is required and clarifies the appropriate minimum amount of information required…Mitigation measures and off-setting of impacts through compensation are also provided"*.

Building Standards

A1.26 Part F(1) of Schedule 1 of the Building Regulations 2010 as amended June 2022 (Welsh Government, 2017) places a duty on building owners, or those responsible for relevant building work[4], to ensure adequate ventilation is provided to building occupants.

A1.27 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 2.6). 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.

A1.28 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.

A1.29 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

A1.30 Defra has produced an Air Quality Plan to tackle roadside nitrogen dioxide concentrations in the UK (Defra, 2017); the Welsh Government produced a supplemental plan to the 2017 UK plan for tackling roadside nitrogen dioxide concentrations (Welsh Government, 2018). The document sets out the work done to date to identify how the Welsh Government will reduce concentrations of nitrogen dioxide around roads where levels are above legal limits. The plan expands on Section 7.6 (Additional Actions in Wales) of the 2017 UK plan for tackling roadside nitrogen dioxide concentrations and sets out how the Welsh Government will comply within the shortest possible time with the limit values for nitrogen dioxide.

A1.31 The supplement plan identified that the annual mean limit value for nitrogen dioxide was exceeded between Junctions 25 and 26 of the M4 in Newport. As the relevant highway authority, exceedances

[4] 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.

on motorways and trunk roads are the responsibility of the Welsh Ministers, rather than the local authority.

A1.32 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

A1.33 NCC's Air Quality Action Plan (Newport City Council, 2023b) sets out a series of measures by which it will seek to achieve the air quality objectives in its AQMAs. None of the policies are especially relevant to this assessment, being focussed on locations outside of the immediate assessment area (i.e. within the AQMAs) or being focussed on the impact of transport on air quality.

A2 EPUK & IAQM Planning for Air Quality Guidance

A2.1 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

A2.2 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".

A2.3 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^2 of commercial floorspace;
- are carried out on land of 1 ha or more.

A2.4 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^2 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 mgNOx/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 mgNOx/Nm^3;
    - Compression ignition engine: 400 mgNOx/Nm^3;
    - Gas turbine: 50 mgNOx/Nm^3.
- 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 mgNOx/Nm^3 and 25 mgPM/Nm^3.

A2.5 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".

A2.6 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

A2.7 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^2 of floor space for all other uses or a site area greater than 1 ha.

A2.8 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.

A2.9 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.

A2.10 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.

A2.11 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 NOx 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 NOx gas boiler or a 30kW CHP unit operating at <95mg/Nm^3.

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".

A2.12 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".

A2.13 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".

A2.14 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

A2.15 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.

A2.16 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.

A2.17 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.

A2.18 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 A3.

A3 Professional Experience

Dr Jessica Muirhead, BSc (Hons), MSc, PhD, CSci MIEnvSc MIAQM

Dr Muirhead is an Associate Director with AQC and has over 18 years' experience in air quality, responsible for delivering numerous air quality assessments for planning applications including Environmental Impact Assessments (EIAs) across the UK. She has fulfilled the role of air quality expert on a range of schemes, including providing (oral and written) evidence at planning and at planning appeal hearings. She engages in a confident and open manner with technical officers representing key stakeholders and has successfully represented her clients in discussions to agree common ground on proportionate air pollution mitigation.

She has experience of working for a Local Authority and has been a technical advisor for the Greater London Authority (GLA) Air Quality team, and is able to apply her knowledge of the expectations and requirements of the GLA to developments in London. She also has extensive experience providing technical peer reviews for a number of Planning Authorities in the UK, and for The Royal Commission for Al Ula in Saudi Arabia. She has delivered training to the London Boroughs on Air Quality Neutral and Air Quality Positive assessments.

Dr Muirhead is experienced in delivering projects of all sizes, from small standalone dust management plans to large multi-disciplinary DCO applications.

Dr Frances Marshall, MSci PhD MIEnvSc 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.

Ben Collier, BSc (Hons)

Mr Collier is an Assistant Consultant with AQC and joined the company in 2023. Throughout his BSc Environmental Science degree at the University of the West of England, he developed an interest in planetary processes and impacts, in particular those in relation to air quality. During his studies, Mr Collier completed several atmospheric-related projects, with topics varying from the impact of urban air pollution to the potential of renewable energy to improve air quality; many of these included GIS based analysis.