RUSHMOOR BOROUGH COUNCIL

2024 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995 Local Air Quality Management, as amended by the Environment Act 2021

Date: June, 2024

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Executive Summary: Air Quality in Our Area

Air Quality in Rushmoor Borough

Breathing in polluted air affects our health and costs the NHS and our society billions of pounds each year. Air pollution is recognised as a contributing factor in the onset of heart disease and cancer and can cause a range of health impacts, including effects on lung function, exacerbation of asthma, increases in hospital admissions and mortality. In the UK, it is estimated that the reduction in healthy life expectancy caused by air pollution is equivalent to 29,000 to 43,000 deaths a year¹.

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Additionally, people living in less affluent areas are most exposed to dangerous levels of air pollution².

Table ES 1 provides a brief explanation of the key pollutants relevant to Local Air Quality Management and the kind of activities they might arise from.

Pollutant	Description
Nitrogen Dioxide (NO ₂)	Nitrogen dioxide is a gas which is generally emitted from high- temperature combustion processes such as road transport or energy generation.
Sulphur Dioxide (SO ₂)	Sulphur dioxide (SO ₂) is a corrosive gas which is predominantly produced from the combustion of coal or crude oil.
Particulate Matter (PM ₁₀ and PM _{2.5})	Particulate matter is everything in the air that is not a gas. Particles can come from natural sources such as pollen, as well as human made sources such as smoke from fires, emissions from industry and dust from tyres and brakes. PM ₁₀ refers to particles under 10 micrometres. Fine particulate matter or PM _{2.5} are particles under 2.5 micrometres.

Table ES 1 - Description of Key Pollutants

¹ UK Health Security Agency. Chemical Hazards and Poisons Report, Issue 28, 2022.

² Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

Rushmoor Borough Council has been investigating air quality in the borough since 1999, following the guidance provided in the Local Air Quality Management process, as part of the requirements of the Environment Act 1995. This review and assessment of air quality over the years has identified that the main pollutant of concern is nitrogen dioxide. Monitoring of nitrogen dioxide (NO2) levels in Rushmoor has continued, with 27 monitoring sites across the borough in 2023 with recent results showing a continuing improvement, in line with national trends. Air quality objectives are being achieved and the designation of an Air Quality Management Area within the Borough is not required.

Whilst monitoring across the borough shows that the relevant air quality objectives are being met, further improvements in air quality is always desirable, particularly close to main roads that experience a high volume of traffic. Rushmoor Borough Council will continue to work closely with Hampshire County Council and Highways England, who ultimately have direct responsibility for these roads, to seek continuing improvements to air quality in these areas.

Rushmoor and Surrey Heath Borough Councils, along with Hampshire and Surrey County Councils, working as the Blackwater Valley Group, were directed by the Secretary of State to implement a Local Plan to achieve air quality improvements along the A331, and to bring about compliance with the NO₂ EU limit value in the shortest possible time. A speed restriction of 50mph along a 1.8 km section of the A331, between Coleford Bridge and Frimley was implemented in 2019. Ongoing monitoring has demonstrated compliance with the NO₂ EU limit value Group are now developing an Exit Plan that will demonstrate success and enable the Secretary of State to confirm the direction has been met.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, there are some areas where local action is needed to protect people and the environment from the effects of air pollution.

The Environmental Improvement Plan³ sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term targets for fine particulate matter (PM_{2.5}), the pollutant of most harmful to human health. The Air

³ Defra. Environmental Improvement Plan 2023, January 2023

Quality Strategy⁴ provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

The Road to Zero⁵ details the Government's approach to reduce exhaust emissions from road transport through a number of mechanisms, in balance with the needs of the local community. This is extremely important given that cars are the most popular mode of personal travel and the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Rushmoor Borough Council have undertaken several measures to improve air quality across our region:

- The Rushmoor Local Plan, adopted February 2019, will guide the location, scale and type of future development in Rushmoor up to 2032 and contains detailed policies to protect air quality. These are designed to prevent future developments from impacting local air quality negatively, ensuring continued compliance with national air quality objectives. All significant applications for development require the submission of a comprehensive air quality assessment.
- A Local Air Quality Plan has been produced and a speed restriction implemented along the A331 to reduce concentrations of NO₂. Rushmoor Borough Council has received funding to monitor and evaluate the effectiveness of this measure in delivering compliance with the NO₂ EU limit value.
- Rushmoor Borough Council declared a Climate Emergency in 2019, and our Climate Change Strategy was approved in November 2020. The Climate Change Action Plan has been revised and is being presented to Cabinet for approval in July 2023. The Climate Change Action Plan 2023-2026 contains 12 priority actions that have the potential to reduce the Council's carbon emissions by over 40% by 2030. Whilst this revised Action Plan is predominantly focused on reducing the Council's own carbon footprint, it also includes actions which support the objective of achieving a greener and more sustainable Rushmoor.

⁴ Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

⁵ DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

Conclusions and Priorities

During 2023, there were no exceedances of the nitrogen dioxide (NO₂) annual mean air quality objective of $40\mu g/m^3$ recorded at any monitoring location within the borough. Concentrations at all long-established sites remain significantly down on levels monitored before Covid-19. The overall trend on average remains one of gradual reduction since 2002.

Rushmoor Borough Council will continue to monitor NO₂ using passive diffusion tubes and will continue to periodically review this monitoring regime in order to identify areas at risk from poor air quality and to ensure monitoring is representative of the whole borough.

Planning applications with the potential to impact air quality in Rushmoor will continue to be carefully considered. All significant applications for development will require submission of a comprehensive air quality assessment.

Rushmoor will continue to respond and investigate potential statutory nuisance issues associated with smoke and emissions in order to address particulate emissions.

Monitoring along the A331 will continue until written approval from the Secretary for State is received confirming compliance with the NO₂ EU limit value and that no further action is required.

Rushmoor Borough Council's priorities for the coming year are to continue implementation of the Council's Climate Change Action Plan, and to demonstrate compliance with the EU Limit value for NO₂. An Exit Plan will be submitted to the Secretary for State to demonstrate that the terms of the Ministerial Direction issued in 2019 has been met. Rushmoor Borough Council will also work with Hampshire County Council and other stakeholders in exploring and assessing what resources are available to enable the development a local Air Quality Strategy.

Local Engagement and How to get Involved

Road traffic emissions are the main source of pollution in the borough, so there are a number of ways in which residents and businesses locally can help to improve air quality in the area. Reducing energy use in the home, at work and whilst travelling all can have a beneficial impact on local air quality, whilst saving money and reducing carbon emissions.

Reducing fuel use is easy and individual minor changes can collectively make a significant contribution to improving local air quality:

- Walk or cycle for shorter journeys when you can. Not only is this good for the environment but it's also good for your health and wellbeing: https://myjourneyhampshire.com/
- Use public transport where possible: <u>http://www.travelinesw.com/</u>
- Car sharing is an easy way to reduce emission and fuel costs:
 <u>https://liftshare.com/uk</u>
- Improving your driving style can save lots of fuel: <u>https://myjourneyhampshire.com/drive/eco-driving/</u>

Further details of air quality in the Borough can be found on the Council's webpages at:

Air quality - Rushmoor Borough Council

For some simple ways to reduce your carbon footprint, visit: <u>Reducing your carbon</u> <u>footprint - Rushmoor Borough Council</u>

Information on wood burning stoves and open fires is available on the defra website:

Open fires and wood-burning stoves - a practical guide (defra.gov.uk)

To decrease emissions from the burning of garden waste, Rushmoor Council encourage residents to consider composting: <u>Composting - Rushmoor Borough Council</u>

Alternatively a garden waste collection service is available: <u>Garden waste recycling -</u> <u>Rushmoor Borough Council</u>

Useful information on air quality at home can also be found on the Hampshire County

Council Clean Air at Home webpage: Clean air at home | My Journey Hampshire

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Control and Pollution Team of Rushmoor Borough Council with the support and agreement of the following officers and departments:

Colin Alborough, Service Manager, Place, Operational Services.

Sophie Rogers, Climate Change Apprentice, Democracy and Community.

This ASR has been approved by:

LAQM Annual Status Report 2024

Councillor Becky Williams – Neighbourhood Services portfolio

James Duggin – Executive Head of Operations

This ASR has not been signed off by a Director of Public Health. However, a copy has

been sent to them for comment.

If you have any comments on this ASR please send them to Richard Ward at:

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1 Local Air Quality Management

This report provides an overview of air quality in Rushmoor during 2023. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in order to achieve and maintain the objectives and the dates by which each measure will be carried out. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Rushmoor Borough Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England are presented in Table E.1.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 18 months. The AQAP should specify how air quality targets will be achieved and maintained, and provide dates by which measures will be carried out.

Rushmoor Borough Council currently does not have any declared AQMAs. A local Air Quality Strategy will be developed to prevent and reduce polluting activities.

2.2 Progress and Impact of Measures to address Air Quality in Rushmoor

Defra's appraisal of last year's ASR concluded the report was well structured, detailed and provided the information specified in the Guidance. On the basis of the evidence provided by the local authority the conclusions reached in the report are accepted for all sources and pollutants.

Rushmoor Borough Council has taken forward a number of direct measures during the current reporting year of 2023 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.1. 11 measures are included within Table 2.1, with the type of measure and the progress Rushmoor have made during the reporting year of 2023 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.1.

More detail on these measures can be found in their respective Action Plans

- Blackwater Valley Local NO₂ Plan
- Rushmoor Local Plan
- Hampshire Local Transport Plan (LTP4)
- Rushmoor Local Cycling and Walking Infrastructure Plan 2023
- Rushmoor Borough Transport Statement 2013
- Hampshire County Council Cycling September 2015
- Hampshire County Council's Electric Vehicle Charging Framework
- Farnborough and Aldershot Town Access Plans
- Hampshire County Council Climate Change Strategy and Action Plan 2020-2025
- Rushmoor's Climate Change Strategy 2020-2030
- Rushmoor's Climate Change Action Plan 2023-2026

Key completed measures are:

 Hampshire County Council published their Local Transport Plan (LTP4) in February 2024

Rushmoor Borough Council expects the following measures to be completed over the course of the next reporting year:

 Having completed and passed the State 3 Assessment, the Blackwater Valley Group are developing an Exit Plan that will demonstrate ongoing compliance of the EU Limit value for nitrogen dioxide along the A331. This will provide sufficient evidence to enable the Secretary for State to sign off the Plan, demonstrating the terms of the Ministerial Direction has been met.

Rushmoor Borough Council's priorities for the coming year are:

- Continuing passive monitoring throughout the council and compliance with the air quality objectives
- Implementing the Climate Change Action Plan 2023-2026
- To work with Hampshire County Council and other stakeholders in exploring and accessing available resources to enable the development a local Air Quality Strategy.

Rushmoor Borough Council worked to implement these measures in partnership with the following stakeholders during 2023:

- Hampshire County Council
- The Blackwater Valley Group: Rushmoor Borough Council, Surrey Heath Borough Council, Hampshire County Council and Surrey County Council,

The principal challenges and barriers to implementation that Rushmoor Borough Council anticipates facing are a continued squeeze on local authority finances.

Table 2.1 – Progress on Measures to Improve Air Quality

Measur e No.	Measure Title	Category	Classification	Year Measure Introduce d in AQAP	Estimated / Actual Completio n Date	Organisation s Involved	Funding Source	Defra AQ Grant Fundin g	Funding Status	Estimate d Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Detailed policies included within new Rushmoor Local Plan	Policy Guidance and Developme nt Control	Air Quality Planning and Policy Guidance	Adopted 21 Februar y 2019	2032	RBC	RBC	NO	Not Funde d		Implementatio n	Ongoing improveme nt in NO2 levels measured	-	Adopted 21 February 2019	Local Plan will guide the location, scale and type of future development in Rushmoor up to 2032
2	Local Transport Plan (LTP4)	Policy Guidance and Developme nt Control	Other policy	2023	2040	Hampshire County Council	Local Authority, LTP, Funding: Gov Grant, S106	NO	Partiall y Funde d	> £10 million	Implementatio n	Reduced vehicle emissions	* No of AQMAs in County * Modal split * Public transport use * Decarbonisati on * No of EV charging points	LTP4 published Feburary 2024. www.hants.gov.uk/transport/localtransport plan	The LTP4 sets out short term priorities (to 2025) and medium to long term (beyond 2025) pexpectations to deliver its vision. An Implementatio n Plan will be maintained, that sets out a targeted programme on interventions.
3	Local Air Quality Plan	Policy Guidance and Developme nt Control	Other policy	Final Plan submitte d May 2019	2024	RBC SHBC HCC SCC JAQU	Gov Grant	NO	Funde d	£100k - £500k	Implementatio n	Reduction in NO2	* Reduction in NO2 *Behaviour change - average speed	Full Business Case submitted May 2019. Funding received - RBC for monitoring & Evaluation / HCC for implementation of speed reduction measure along A331	Speed reduction measure to be removed once air quailty improvements achieved and compliance with EU limit

Measur e No.	Measure Title	Category	Classification	Year Measure Introduce d in AQAP	Estimated / Actual Completio n Date	Organisation s Involved	Funding Source	Defra AQ Grant Fundin q	Funding Status	Estimate d Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
4	Installation of Electric Vehicle (EV) charge points across the County	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2015		HCC	Private/grant funding/publi c sector investment	NO	Partiall y Funde d		Planning	Reduced vehicle emissions		EV charging points in 2 RBC car parks: * Queensmead car park - two EV charging bays * Farnborough (main) train station car park - 12 EV charge bays Also, many fuel stations, supermarkets, and other local businesses in borough offer EV charging	value secured. State 3 Assessment confirms ongoing compliance so Exit Plan currently under development. Hampshire County Council has procured an electric vehicle (EV) charging framework and is leading the way in getting more EV charging points installed across Hampshire and the South of England.
5	Cycling Strategy	Promoting Travel Alternatives	Promotion of cycling	2015		нсс	Local Authority, LTP, LEP, Funding: Gov Grant, CIL	NO	Not Funde d		Planning	Reduced vehicle emissions	Participation rates and public satisfaction indices.	Cycling Strategy adopted Sept 2015	Local Cycling and Walking Infrastructure Plan published 2023. Developed by RBC & HCC, its purpose to provide

Measur e No.	Measure Title	Category	Classification	Year Measure Introduce d in AQAP	Estimated / Actual Completio n Date	Organisation s Involved	Funding Source	Defra AQ Grant Fundin q	Funding Status	Estimate d Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
															strategic approach to identifying walking and cycling infrastructure improvements required at a local level.
6	Access Improvemen t	Transport Planning and Infrastructur e	Public transport improvement s- interchanges stations and services	2013	2033	RBC/HCC	Local Authority, LTP, Funding: Gov Grant, S106	NO	Partiall y Funde d		Implementatio n	Reduced vehicle emissions	-	Hampshire County Council has adopted the Farnborough and Aldershot Town Access Plans (TAPs). These identify improvements and other access initiatives	TAP to be reviewed every five years
7	Bradford's Roundabout improvement s	Traffic Manageme nt	Strategic highway improvement s, Re- prioritising road space away from cars, including Access management , Selective vehicle priority, bus priority, high vehicle occupancy lane	2019	2020	нсс	43800	NO	Funde d	£100k - £500k	Completed	Calculated 4.4t of NO _x emissions over 10 years	before and after queue length surveys	Funding secured and detailed design complete	Works complete 2020
8	Speed reduction on A331	Traffic Manageme nt	Reduction of speed limits, 20mph zones	2019	2019	нсс	Gov Grant	NO	Funde d	£100k - £500k	Implementatio n	Reduction in NO2	Reduction in average speed	Funding granted under Implementation Fund and detailed designs complete	On-going

Measur e No.	Measure Title	Category	Classification	Year Measure Introduce d in AQAP	Estimated / Actual Completio n Date	Organisation s Involved	Funding Source	Defra AQ Grant Fundin g	Funding Status	Estimate d Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
9	Climate Change Action Plan	Other	Other	2020	2030	RBC/HCC	Local Authority	NO	Partiall y Funde d	£50k - £100k	Implementatio n	Reduction in CO2, NO2, PM10	Development of Action Plan. Carbon neutral by 2030.	Action Plan approved Nov 2020.	Revised Actrion Plan for 2023-26 presented to Cabinet in July 23, with 12 revised priority actions.
10	"My Journey - Helping Hampshire Getting Around" Travel Awareness Campaign	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2012	2024	нсс	DfT	NO	Funde d		Implementatio n	Reduced vehicle emissions	-	Website: https://myjourneyhampshire.com/	Website includes travel information & advice for Hampshire area, incl information on cycle routes, walking maps and links to public transport
11	Local Cycling and Walking Infrastructur e Plan	Transport Planning and Infrastructur e	Cycle network	2023		нсс	Local Authority, LTP, LEP, Funding: Gov Grant, CIL	NO	Partiall y Funde d		Implementatio n	Reduced vehicle emissions	increase in number of walking and cycling trips	Improvement to Lynchfiord Rd cycle route, improved facilities at Aldershot Railway Sttation planned , and funding secured for pedestrian and cycling facilities in Minley Road area of Farnborough.	LCWIP to be reviewed and updated every four to five years to reflect progress made with implementatio n

2.3 PM_{2.5} – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy⁶, local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter (PM_{2.5})). There is clear evidence that PM_{2.5} (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

The Public Health Outcomes Framework (PHOF) for England recognises the burden of ill health resulting from poor air quality. PHOF Indicator D01 reports that 5.8% of deaths in Hampshire and 6.7% in Rushmoor during 2022 (the year for which the latest data is available) were attributable to fine particulates (PM_{2.5}), the figure for England being 5.8%.

Rushmoor Borough Council do not currently monitor for $PM_{2.5}$ or PM_{10} . In the absence of $PM_{2.5}$ monitoring and where a local authority does not undertake PM_{10} monitoring, the current Defra background mapping resource should be used to provide maximum background annual mean $PM_{2.5}$ concentrations within the Local Authority. This resource is available through <u>https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018</u> The 2023 Defra background maps for Rushmoor Borough Council (2018 reference year) show that all background concentrations of $PM_{2.5}$ are below the annual mean Environmental Improvement Plan 2023 interim target for $PM_{2.5}$ ($12\mu g/m^3$ by 2028), with the highest concentration predicted to be $11.2\mu g/m^3$.

Rushmoor Borough Council is taking the following measures to address PM_{2.5}:

- All significant developments are now required to produce Construction Method Statements prior to demolition or construction works commencing, that detail the measures to be employed to minimise fugitive dust emissions and minimise the deposition of dust on the public highway.
- The Environmental Control and Pollution Team continue to regulate certain industrial installations under the Environmental Permitting Regulations, including such processes as Concrete Crushers, Roadstone Coating and Concrete Batching processes that all have the potential to emit significant levels of particulates into the

⁶ Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

air. The Environmental Control and Pollution Team will continue to work with operators to ensure that measures are in place to reduce fugitive dust from these industrial sites.

- The Environmental Control and Pollution Team routinely receive complaints made in relation to domestic solid fuel burning, or other smoke related nuisance, Such complaints are investigated and where necessary information and guidance is provided to those involved, with the potential for further action where required.
- Policy IN2 of the Rushmoor Local Plan requires development to minimise the need for travel, promote opportunities for sustainable transport, and improved accessibility for pedestrian and cycle networks.
- Policy DE10 of the Rushmoor Local Plan deals specifically with Pollution. Proposals for development that risks non-compliance of EU Limit Values or National Air Quality Objectives will be refused.
- Rushmoor Borough Council approved its Climate Change Strategy and complementary Action Plan in 2020. This includes measures to improve air quality and reduce pollution in the borough and will consider the synergies between carbon emission reduction measures and improving local air quality to identify priority areas for maximum benefit. The updated Climate Change Action Plan 2023-2026 contains 12 priority actions that have the potential to reduce the Council's carbon emissions by over 40% by 2030. Whilst this revised Action Plan is predominantly focused on reducing the Council's own carbon footprint, it also includes actions which support the objective of achieving a greener and more sustainable Rushmoor:
 - To switch the Council's car fleet to electric alternatives and investigate options for other Council vehicles
 - To achieve a 5% annual reduction in overall travel from employee-owned vehicles for business purposes and refresh the Council's Workplace Travel Plan.
 - To work further with Hampshire County Council to improve access to EV charging facilities across Rushmoor.

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance

This section sets out the monitoring undertaken within 2023 by Rushmoor Borough Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2019 and 2023 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Rushmoor Borough Council does not currently operate any automatic monitoring sites. An automatic monitoring station was located in Medway Drive, Farnborough, next to the M3 motorway, up until April 2011. The measurements from this site are presented in previous reports.

National monitoring results are available at https://uk-air.defra.gov.uk/

3.1.2 Non-Automatic Monitoring Sites

Rushmoor Borough Council undertook non- automatic (i.e. passive) monitoring of NO₂ at 27 sites during 2023. Table A.1 in Appendix A presents the details of the non-automatic sites.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. annualisation and/or distance correction), are included in Appendix C.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater than 25%), and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO₂)

Error! Reference source not found. in Appendix A compare the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40µg/m³. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2023 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Rushmoor Borough Council has examined the results from monitoring in the borough and can confirm that there were no exceedances of the NO2 annual mean objective. All air quality objectives are being achieved.

All annual mean results were less than 60µg/m³, indicating that an exceedance of the 1-hour mean objective is unlikely at all locations.

Figure A.1 displays the trend in the annual mean NO2 concentrations for the five-year period between 2019 and 2023. Over this time, there has been an overall improvement in NO₂ concentrations at sites across the borough, with NO₂ concentrations in 2023 being significantly down on levels monitored pre-Covid-19.

The Blackwater Valley Group, consisting of Rushmoor Borough Council, Surrey Heath Borough Council, Surrey County Council and Hampshire County Council, have produced a Local Plan to reduce concentrations of NO₂ along the A331, Blackwater Valley Relief Road. A speed restriction measure was implemented along a 1.8 km section in 2019, and monitoring of this is ongoing to evaluate its effectiveness in achieving compliance of the EU Limit value in the shortest possible time.

6 NO₂ diffusion tube triplicate sites (RBC1 – SH6) were established during 2019 along the A331 and Blackwater Valley path. These monitoring sites are not representative of public exposure, as defined under the LAQM regime, and no results are above $40\mu g/m^3$. There were no exceedances of the NO₂ annual mean objective, and all results are included in this report. One of these sites (SH6) was discontinued in Aug 2023 due to access restrictions. A replacement site was installed (BVR6) in a suitable location along the Blackwater valley footpath, 8m away from the A331.

This ongoing NO₂ monitoring is supplemented by annual ANPR and average speed traffic surveys carried out each Summer. The Blackwater Valley Group routinely submit quarterly monitoring reports to the Government's Joint Air Quality Unit (JAQU) to update them on progress. In accordance with JAQU's Exiting the NO2 Programme guidance, the Blackwater Valley Group have also completed a State Assessment 3, that demonstrated continuing success in achieving compliance with the EU Limit value. The Group are currently developing an Exit Plan to demonstrate that no matter what occurs with the speed restriction measure (retaining it or decommissioning), there will be no return to a NO₂ exceedance. It is anticipated that sufficient evidence will be provided to enable the Blackwater Valley Group to exit the process by the end of 2024.

Appendix A: Monitoring Results

Table A.1 – Details of Non-Automatic Monitoring Sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co- located with a Continuous Analyser?	Tube Height (m)
C1	Medway Drive - Lamppost 17, opp Tees Close	Roadside	485047	156934	NO2	No	20.0	37.0	No	2.5
J1	2 Tees Close	Roadside	485058	156912	NO2	No	0.0	8.0	No	2.5
K1	201 Ash Road, Aldershot	Roadside	487932	149942	NO2	No	0.0	9.0	No	2.5
L1	Alpine Ski Centre	Urban Background	487380	151558	NO2	No	125.0	300.0	No	2.5
N1	270 Fernhill Road, Farnborough	Urban Background	485444	157373	NO2	No	0.0	26.0	No	2.5
Q1	Prospect Avenue	Roadside	487121	156898	NO2	No	5.0	1.0	No	2.5
R1	86 Rectory Road, Farnborough	Roadside	487844	155922	NO2	No	0.0	4.0	No	2.5
S1	64a Park Road, Farnborough	Roadside	488109	153924	NO2	No	5.0	3.0	No	2.5
Y1	38 Union Street	Roadside	486853	155913	NO2	No	6.0	2.0	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co- located with a Continuous Analyser?	Tube Height (m)
Z1	Queens Avenue, Aopposite churches	Roadside	486588	151976	NO2	No	80.0	13.0	No	2.5
Z2	Badajos Road	Roadside	486112	151152	NO2	No	28.0	10.0	No	2.5
AA	Mayfield Road - Lamppost 7 - Cherrywood Primary School	Roadside	486434	156806	NO2	No	15.0	3.0	No	2.0
BB	Church Lane East - St Michaels Primary School	Roadside	487111	149777	NO2	No	10.0	2.0	No	2.5
GG	Farnborough Road	Roadside	487086	154946	NO2	No	3.0	2.0	No	2.0
FF	97-99 North Lane, Ald	Roadside	487940	150466	NO2	No	6.0	2.0	No	2.0
KK	Frederick Street, Aldershot - Junc Victoria Road	Roadside	486236	150638	NO2	No	-8.0	12.0	No	2.5
LL	Nighting Gale, Farnborough- lamppost no 4	Urban Background	484373	156603	NO2	No	56.0	32.0	No	2.5
MM	Sandy Lane, Farnborough- lamppost no 48	Roadside	484778	156775	NO2	No	50.0	68.0	No	2.5
NN	Salvation Army Hall, North Lane	Roadside	487992	149968	NO2	No	6.5	2.5	No	2.0
00	Vernon's Chemist,` North Lane	Roadside	487981	150030	NO2	No	9.0	3.0	No	2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co- located with a Continuous Analyser?	Tube Height (m)
BVR 1a, BVR 1b, BVR 1c	On Tree at bend north of bridge	Roadside	487963	156329	NO2	No	>200	12.0	No	1.5
BVR 2a, BVR 2b, BVR 2c	North of railway bridge	Roadside	487962	156302	NO2	No	>200	6.5	No	2.0
BVR 3a, BVR3b, BVR3c	Fence post 25m south of footbridge	Roadside	487882	156633	NO2	No	>200	7.5	No	1.1
BVR4a, BVR 4b, BVR 4c	Fence post beside traffic count box	Roadside	487873	156660	NO2	No	>200	8.1	No	1.1
BVR 5a, BVR 5b, BVR 5c	Tree 1m south of traffic count box	Roadside	487874	156656	NO2	No	>200	8.0	No	2.0
SH 6a, SH 6b, SH 6c	Fence - north of railway bridge	Roadside	487952	156395	NO2	No	>200	11.9	No	1.1
BVR 6a	Bare tree 32m south of footbridge	Roadside	487884	156627	NO2	No	>200	8.0	No	2.0
BVR 6b	Bare tree 32m south of footbridge	Roadside	487884	156627	NO2	No	>200	8.0	No	2.0
BVR 6c	Bare tree 32m south of footbridge	Roadside	487884	156627	NO2	No	>200	8.0	No	2.0

Notes:

(1) Om if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable.

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Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
C1	485047	156934	Roadside		55.2	24.3	19.5	20.7	19.8	18.1
J1	485058	156912	Roadside		64.8	21.6	14.8	16.1	15.4	14.3
K1	487932	149942	Roadside		64.8	25.6	21.1	22.2	21.1	20.2
L1	487380	151558	Urban Background		64.8	12.2	8.7	9.0	9.0	8.3
N1	485444	157373	Urban Background		64.8	20.1	15.7	16.0	15.8	13.4
Q1	487121	156898	Roadside		64.8	36.2	30.7	30.6	30.2	28.9
R1	487844	155922	Roadside		64.8	30.0	22.5	23.0	22.9	20.7
S1	488109	153924	Roadside		55.2	23.6	17.1	17.0	18.2	19.4
Y1	486853	155913	Roadside		55.5	22.4	15.8	17.3	17.7	16.4
Z1	486588	151976	Roadside		64.8	18.2	12.5	13.1	14.7	14.4
Z2	486112	151152	Roadside		64.8	16.6	12.6	13.9	14.8	12.2
AA	486434	156806	Roadside		64.8	20.6	14.2	15.3	13.4	13.4
BB	487111	149777	Roadside		64.8	18.0	11.3	13.9	12.6	11.4

Table A.2 – Annual Mean NO₂ Monitoring Results: Non-Automatic Monitoring (µg/m³)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
GG	487086	154946	Roadside		64.8		21.8	23.7	23.3	22.9
FF	487940	150466	Roadside		64.8		19.6	20.1	19.4	18.4
КК	486236	150638	Roadside		64.8			17.8	17.9	16.6
LL	484373	156603	Urban Background		57.4				17.2	15.2
ММ	484778	156775	Roadside		64.8				21.2	18.4
NN	487992	149968	Roadside		64.8					22.0
00	487981	150030	Roadside		55.2					21.6
BVR 1a, BVR 1b, BVR 1c	487963	156329	Roadside		74.5	25.9	19.4	20.4	20.4	18.6
BVR 2a, BVR 2b, BVR 2c	487962	156302	Roadside		74.5	26.4	22.0	21.6	21.2	20.2
BVR 3a, BVR3b, BVR3c	487882	156633	Roadside		82.1	26.3	22.3	23.2	22.4	21.3
BVR4a, BVR 4b, BVR 4c	487873	156660	Roadside		82.1	27.7	25.5	25.2	25.6	24.4
BVR 5a, BVR 5b, BVR 5c	487874	156656	Roadside		74.5	32.5	26.5	28.0	27.2	25.1
SH 6a, SH 6b, SH 6c	487952	156395	Roadside		57.7	22.7	21.9	20.8	19.2	19.3

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
BVR 6a	487884	156627	Roadside		24.5					21.6
BVR 6b	487884	156627	Roadside		24.5					18.4
BVR 6c	487884	156627	Roadside		24.5					22.1

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.

Diffusion tube data has been bias adjusted.

Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance correction.

Notes:

The annual mean concentrations are presented as µg/m³.

Exceedances of the NO₂ annual mean objective of $40\mu g/m^3$ are shown in **bold**.

 NO_2 annual means exceeding $60\mu g/m^3$, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).



Figure A.1 – Trends in Annual Mean NO₂ Concentrations

Appendix B: Full Monthly Diffusion Tube Results for 2023

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
C1	485047	156934	30.4	29.7		21.9			13.1	16.3			27.5	18.1	22.4	18.1	-	
J1	485058	156912	22.8	24.3	20.3	16.3			10.3	13.2			23.1	12.4	17.9	14.3	-	
K1	487932	149942	34.2	32.1	24.1	26.3			16.9	20.5			28.1	19.9	25.3	20.2	-	
L1	487380	151558	16.0	13.8	10.5	8.4			5.8	6.7			14.2	7.9	10.4	8.3	-	
N1	485444	157373	21.9	21.5	17.8	17.0			9.9	12.7			20.3	12.6	16.7	13.4	-	
Q1	487121	156898	41.9	45.5	37.3	38.1			28.8	29.6			36.5	30.4	36.0	28.9	-	
R1	487844	155922	31.8	31.0	26.0	28.9			19.1	21.4			26.9	21.2	25.8	20.7	-	
S1	488109	153924	32.9	31.4		20.7			17.4	17.6			27.9	20.1	24.0	19.4	-	
Y1	486853	155913	28.9	25.3	19.1	19.0			13.8				25.7	15.4	21.0	16.4	-	
Z1	486588	151976	20.4	23.1	20.1	15.3			12.6	12.5			23.7	16.2	18.0	14.4	-	
Z2	486112	151152	20.8	20.1	16.1	14.7			8.5	10.6			19.4	11.4	15.2	12.2	-	
AA	486434	156806	24.5	22.4	15.9	15.6			9.6	10.8			21.7	13.3	16.7	13.4	-	
BB	487111	149777	18.8	19.6	13.3	14.7			7.6	9.8			20.3	9.3	14.2	11.4	-	
GG	487086	154946	35.9	33.1	26.5	27.0			23.7	22.8			34.6	24.9	28.6	22.9	-	
FF	487940	150466	29.5	30.2	22.8	23.5			14.6	18.0			27.9	17.2	22.9	18.4	-	
КК	486236	150638	30.4	27.2	18.8	19.3			12.4	16.1			26.7	15.1	20.8	16.6	17.6	
LL	484373	156603	25.0	25.7	19.3	19.8			9.7	13.8			23.5		19.5	15.2	-	
MM	484778	156775	27.5	29.0	24.5	23.4			15.1	19.1			25.8	19.9	23.0	18.4	-	

Table B.1 – NO₂ 2023 Diffusion Tube Results (µg/m³)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Νον	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
NN	487992	149968	33.8	34.2	26.8	29.1			17.9	22.9			34.4	20.3	27.5	22.0	-	
00	487981	150030	36.0	31.7		27.1			18.3	21.8			32.0	20.7	26.8	21.6	-	
																-	-	
BVR 1a	487963	156329	30.6		24.6	22.0	18.2	18.4	20.4	18.5			26.0	23.7	-	-	-	Triplicate Site with BVR 1a, BVR 1b and BVR 1c - Annual data provided for BVR 1c only
BVR 1b	487963	156329	35.2		26.7	22.5	17.8	18.0	20.0	18.8			24.8	25.9	-	-	-	Triplicate Site with BVR 1a, BVR 1b and BVR 1c - Annual data provided for BVR 1c only
BVR 1c	487963	156329	31.5		25.2	21.9	19.4	18.1	20.9	19.7			25.8	24.3	22.9	18.6	-	Triplicate Site with BVR 1a, BVR 1b and BVR 1c - Annual data provided for BVR 1c only
BVR 2a	487962	156302	31.9	28.5	27.3	24.6	23.3	20.6		20.0			28.5	23.3	-	-	-	Triplicate Site with BVR 2a, BVR 2b and BVR 2c - Annual data provided for BVR 2c only
BVR 2b	487962	156302	32.4	28.1	27.9	23.1	23.0	20.5		20.4			28.8	23.2	-	-	-	Triplicate Site with BVR 2a, BVR 2b and BVR 2c - Annual data provided for BVR 2c only
BVR 2c	487962	156302		27.9	20.5	23.6	22.9	21.2					28.3	22.2	25.0	20.2	-	Triplicate Site with BVR 2a, BVR 2b and BVR 2c - Annual data provided for BVR 2c only
BVR 3a	487882	156633	37.6	35.8	30.4	25.2	16.3	16.7	18.4	19.3			33.5	26.2	-	-	-	Triplicate Site with BVR 3a, BVR3b and BVR3c - Annual data provided for BVR3c only
BVR3 b	487882	156633	42.6	36.4	31.0	23.7	19.4	16.9	19.4	19.5			30.3	26.4	-	-	-	Triplicate Site with BVR 3a, BVR3b and BVR3c - Annual data provided for BVR3c only
BVR3 c	487882	156633	41.0	34.7	29.7	24.8	19.6	17.4	18.6	18.9			33.2	26.4	26.3	21.3	-	Triplicate Site with BVR 3a, BVR3b and BVR3c - Annual data provided for BVR3c only
BVR4 a	487873	156660	41.8	39.1	34.4	29.4	23.1	21.5	23.0	23.3			35.6	29.3	-	-	-	Triplicate Site with BVR4a, BVR 4b and BVR 4c - Annual data provided for BVR 4c only
BVR 4b	487873	156660	41.4	39.4	34.7	28.5	25.0	21.3	22.8	22.4			35.2	29.3	-	-	-	Triplicate Site with BVR4a, BVR 4b and BVR 4c - Annual data provided for BVR 4c only
BVR 4c	487873	156660	42.7	40.1	33.4	30.7	24.5	21.2	22.8	22.8			35.3	29.7	30.1	24.4	-	Triplicate Site with BVR4a, BVR 4b and BVR 4c - Annual data provided for BVR 4c only
BVR 5a	487874	156656	44.6		34.0	31.3	26.8	24.3	23.9	26.8			39.2	31.3	-	-	-	Triplicate Site with BVR 5a, BVR 5b and BVR 5c - Annual data provided for BVR 5c only
BVR 5b	487874	156656	41.2		32.3	30.7	26.4	23.7	25.9	26.8			35.6	30.2	-	-	-	Triplicate Site with BVR 5a, BVR 5b and BVR 5c - Annual data provided for BVR 5c only
BVR 5c	487874	156656			34.3	29.9	27.6	24.5	25.5	25.8			38.3	31.3	30.9	25.1	-	Triplicate Site with BVR 5a, BVR 5b and BVR 5c - Annual data provided for BVR 5c only
SH 6a	487952	156395	34.7	31.9	16.2	21.7	22.3	18.1	16.6						-	-	-	Triplicate Site with SH 6a, SH 6b and SH 6c - Annual data provided for SH 6c only

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
SH 6b	487952	156395	34.7	32.7	27.6	22.8	22.2	18.5	16.5						-	-	-	Triplicate Site with SH 6a, SH 6b and SH 6c - Annual data provided for SH 6c only
SH 6c	487952	156395	35.0	31.8	21.2	21.5	20.2	17.0	16.0						23.8	19.3	-	Triplicate Site with SH 6a, SH 6b and SH 6c - Annual data provided for SH 6c only
BVR 6a	487884	156627								18.6			34.7	26.5	26.6	21.6	-	
BVR 6b	487884	156627								17.9			32.9	17.3	22.7	18.4	-	
BVR 6c	487884	156627								19.6			33.7	28.6	27.3	22.1	-	

 \boxtimes All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1.

☑ Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.

□ Local bias adjustment factor used.

☑ National bias adjustment factor used.

Where applicable, data has been distance corrected for relevant exposure in the final column.

Rushmoor Borough Council confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

Notes:

Exceedances of the NO₂ annual mean objective of $40\mu g/m^3$ are shown in **bold**.

 NO_2 annual means exceeding 60μ g/m³, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**. See Appendix C for details on bias adjustment and annualisation.

Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC

New or Changed Sources Identified Within Rushmoor During 2023

Rushmoor Borough Council has not identified any new sources relating to air quality within the reporting year of 2023

Additional Air Quality Works Undertaken by Rushmoor Borough Council During 2023

Rushmoor Borough Council has not completed any additional works within the reporting year of 2023.

QA/QC of Diffusion Tube Monitoring

The diffusion tubes deployed by Rushmoor Borough Council are supplied and analysed by Gradko using a preparation mixture of 20% triethanolamine (TEA) in water. Gradko participate in the AIR Proficiency Testing scheme, 100% of results between January and October 2023 were determined to be satisfactory based upon a z-score of < ± 2. Table 1 from the latest summary of the Laboratory Performance in AIR NO2 Proficiency Testing Scheme (AIR-PT Rounds AR046, 49, 50, 52, 53, 55, 56, 58 and 59 (Sept 2021 – Oct 2023) is reproduced here. The actual reports can be accessed at http://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html

Most monitoring has been completed in adherence with the 2023 Diffusion Tube Monitoring Calendar, apart from a period in October-November due to staff sickness.

Table 1: Laboratory summary performance for AIR NO2 PT rounds AR046, 49, 50, 52, 53, 55, 56, 58 and 59

The following table lists those UK laboratories undertaking LAQM activities that have participated in recent AIR NO₂ PT rounds and the percentage (%) of results submitted which were subsequently determined to be **satisfactory** based upon a z-score of $\leq \pm 2$ as defined above.

AIR PT Round	AIR PT AR046	AIR PT AR049	AIR PT AR050	AIR PT AR052	AIR PT AR053	AIR PT AR055	AIR PT AR056	AIR PT AR058	AIR PT AR059
Round conducted in the period	September – October 2021	January – February 2022	May – June 2022	July – August 2022	September – October 2022	January – February 2023	May – June 2023	July – August 2023	September – October 2023
Aberdeen Scientific Services	100 %	100 %	100 %	100 %	100 %	0 %	100 %	100 %	75 %
Cardiff Scientific Services	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Edinburgh Scientific Services	75 %	NR [2]	50 %	100 %	100 %	100 %	75 %	100 %	50 %
SOCOTEC	100 % [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]
Exova (formerly Clyde Analytical)	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Glasgow Scientific Services	NR [2]	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Gradko International	100 %	100 %	100 % [1]	100 %	100 %	100 %	100 %	100 %	100 %
Kent Scientific Services	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Kirklees MBC	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Lambeth Scientific Services	75 %	50 %	75 %	100 %	50 %	0 %	75 %	50 %	0 %
Milton Keynes Council	100 %	75 %	100 %	100 %	100 %	50 %	75 %	100 %	100 %
Northampton Borough Council	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Somerset Scientific Services	100 %	75 %	100 %	75 %	100 %	100 %	75 %	100 %	100 %
South Yorkshire Air Quality Samplers	100 %	NR [2]	NR [2]	NR [2]	NR [2]	NR [2]	NR [2]	NR [2]	NR [2]
Staffordshire County Council, Scientific Services	100 %	100 %	100 %	0 %	100 %	100 %	100 %	100 %	100 %
Tayside Scientific Services (formerly Dundee CC)	100 %	NR [2]	NR [2]	100 %	100 %	NR [2]	100 %	NR [2]	NR [2]
West Yorkshire Analytical Services	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]

[1] Participant subscribed to two sets of test results (2 x 4 test samples) in each AIR PT round.

[2] NR, No results reported.

[3] Cardiff Scientific Services, Exova (formerly Clyde Analytical), Kent Scientific Services, Kirklees MBC, Northampton Borough Council and West Yorkshire Analytical Services; no longer carry out NO2 diffusion tube monitoring and therefore did not submit results.

Diffusion Tube Annualisation

Most sites had a valid capture for the full calendar year of less than 75%. It was therefore necessary to annualise the mean using the Diffusion Tube Data Processing Tool. UK-AIR was used to identify the three nearest locally-managed automatic monitoring site, with sufficient annual data capture: Reading Caversham Road, Farnham South Street, Surrey Heath Camberley, Details of the calculation method undertaken is provided in Table C.1.

Table C.1 – Annualisation Summary (concentrations presented in µg/m³)

Site ID	Annualisati on Factor Reading Caversham Road	Annualisati on Factor Godalming Ockford Road 2	Annualisati on Factor Farnham South Street	Annualisati on Factor Surrey Heath Camberley	Average Annualisati on Factor	Raw Data Annual Mean	Annualised Annual Mean
C1	1.0342		0.9634	0.9888	0.9955	22.4	22.3
J1	1.0447		0.9682	0.9547	0.9892	17.9	17.7
K1	1.0447		0.9682	0.9547	0.9892	25.3	25.0
L1	1.0447		0.9682	0.9547	0.9892	10.4	10.3
N1	1.0447		0.9682	0.9547	0.9892	16.7	16.5

Site ID	Annualisati on Factor Reading Caversham Road	Annualisati on Factor Godalming Ockford Road 2	Annualisati on Factor Farnham South Street	Annualisati on Factor Surrey Heath Camberley	Average Annualisati on Factor	Raw Data Annual Mean	Annualised Annual Mean
Q1	1.0447		0.9682	0.9547	0.9892	36.0	35.6
R1	1.0447		0.9682	0.9547	0.9892	25.8	25.5
S1	1.0342		0.9634	0.9888	0.9955	24.0	23.9
Y1	1.0467		0.9299	0.9129	0.9632	21.0	20.3
Z1	1.0447		0.9682	0.9547	0.9892	18.0	17.8
Z2	1.0447		0.9682	0.9547	0.9892	15.2	15.0
AA	1.0447		0.9682	0.9547	0.9892	16.7	16.5
BB	1.0447		0.9682	0.9547	0.9892	14.2	14.0
GG	1.0447		0.9682	0.9547	0.9892	28.6	28.3
FF	1.0447		0.9682	0.9547	0.9892	22.9	22.7
КК	1.0447		0.9682	0.9547	0.9892	20.8	20.5
LL	1.0095		0.9460	0.9318	0.9624	19.5	18.8
MM	1.0447		0.9682	0.9547	0.9892	23.0	22.8
NN	1.0447		0.9682	0.9547	0.9892	27.5	27.2
00	1.0342		0.9634	0.9888	0.9955	26.8	26.7
BVR 1a	1.0585		1.0529	1.0328	1.0481	-	-
BVR 1b	1.0585		1.0529	1.0328	1.0481	-	-
BVR 1c	1.0585		1.0529	1.0328	1.0481	22.9	-
BVR 2a	1.0053		0.9848	0.9716	0.9872	-	-
BVR 2b	1.0053		0.9848	0.9716	0.9872	-	-
BVR 2c	1.0053		0.9848	0.9716	0.9872	25.0	-
BVR 5a	1.0585		1.0529	1.0328	1.0481	-	-
BVR 5b	1.0585		1.0529	1.0328	1.0481	-	-
BVR 5c	1.0585		1.0529	1.0328	1.0481	30.9	-
SH 6a	1.0435		1.0143	0.9520	1.0033	-	-

Site ID	Annualisati on Factor Reading Caversham Road	Annualisati on Factor Godalming Ockford Road 2	Annualisati on Factor Farnham South Street	Annualisati on Factor Surrey Heath Camberley	Average Annualisati on Factor	Raw Data Annual Mean	Annualised Annual Mean
SH 6b	1.0435		1.0143	0.9520	1.0033	-	-
SH 6c	1.0435		1.0143	0.9520	1.0033	23.8	23.8

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2024 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO₂ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Rushmoor Borough Council have applied a national bias adjustment factor of 0.81 to the 2023 monitoring data. A summary of bias adjustment factors used by Rushmoor over the past five years is presented in Table C.2.

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	National	03/24	0.81
2022	National	03/23	0.83
2021	National	03/22	0.84
2020	National	08/21	0.81
2019	National	09/20	0.91

Table C.2 – Bias Adjustment Factor

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1.

No diffusion tube NO₂ monitoring locations within Rushmoor required distance correction during 2023.

Appendix D: Map(s) of Monitoring Locations

Figure D.1 – Map showing location of non-automatic monitoring sites LL, MM, C1, J1, N1 and JJ



Figure D. 2 – Map showing location of non-automatic monitoring sites AA, Q1, R1 and Y1





Figure D. 3 – Map showing location of non-automatic monitoring sites S1 and GG

Figure D.4 – Map showing location of non-automatic monitoring sites L1, Z1, Z2, KK and HH



Figure D.5 – Map showing location of non-automatic monitoring sites K1, BB, HH and FF



Figure D.6 – Map showing location of non-automatic monitoring sites along the A331



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England⁷

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO2)	200µg/m ³ not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO2)	40µg/m³	Annual mean
Particulate Matter (PM ₁₀)	50µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM ₁₀)	40µg/m³	Annual mean
Sulphur Dioxide (SO ₂)	350µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO2)	125µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO ₂)	266µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean

 $^{^7}$ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Glossary of Terms

Abbreviation	Description	
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'	
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives	
ASR	Annual Status Report	
Defra	Department for Environment, Food and Rural Affairs	
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways	
EU	European Union	
FDMS	Filter Dynamics Measurement System	
LAQM	Local Air Quality Management	
NO ₂	Nitrogen Dioxide	
NOx	Nitrogen Oxides	
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of $10\mu m$ or less	
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less	
QA/QC	Quality Assurance and Quality Control	
SO ₂	Sulphur Dioxide	

References

- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022.
 Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG22. August 2022.
 Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Chemical hazards and poisons report: Issue 28. June 2022. Published by UK Health Security Agency
- Air Quality Strategy Framework for Local Authority Delivery. August 2023. Published by Defra.