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 Rugby Borough Council

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 year[1].

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 pollution[2].

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.

Table ES 1 - Description of Key Pollutants

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.

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[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

The main pollutants of concern in Rugby, as in most areas of the UK, are associated with road traffic, in particular nitrogen dioxide (NO_2) and particulate matter (PM) at locations close to busy, congested roads where people may live, work or shop. Previous Review and Assessment reports and local knowledge have identified areas where UK Air Quality Strategy (AQS) objectives may be exceeded. Rugby Borough Council (RBC) declared an Air Quality Management Area (AQMA) in 2004 for exceedances of the annual mean NO_2 AQS objective. This area covers the whole urban area of Rugby bounded by the southern boundary with Daventry District Council, the A5, the M6, minor roads west of Long Lawford, the A45 and M45 (https://uk-air.defra.gov.uk/aqma/details?aqma_ref=267#109).

Monitoring data for 2023 showed a decrease in annual mean NO_2 concentrations across the majority of monitoring sites. Concentrations in 2023 decreased at 46 monitoring locations compared to 2022. There were no exceedances of the annual mean NO_2 AQS objective in 2023, the highest annual mean concentration recorded was 34.2 µg/m^3 which was at a roadside site outside of the AQMA.

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 Plan[3] 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 Quality Strategy[4] provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

The Road to Zero[5] 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

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[3] Defra. Environmental Improvement Plan 2023, January 2023

[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

personal travel, and the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Key actions to target sources of pollution within the area over the past reporting year include the expansion of Rugby's Electric Vehicle (EV) Charging point network and increased connectivity to green spaces to promote sustainable forms of transport. Safe and Active travel schemes are also currently in pilot for schools and workplaces with the aim of encourage active travel and reduce congestion around such infrastructure.

In addition, RBC has continued its work alongside Coventry and Warwickshire Air Quality Alliance, a partnership comprising Environmental Health, Public Health, Planning and Transport officers from the Coventry and Warwickshire local authorities to implement the air quality aims of the Health Protection Strategy 2017-2021.

Conclusions and Priorities

During 2023, there were no exceedances of the annual mean NO_2 AQS objective. The highest recorded annual mean NO_2 concentration was 34.2 µg/m^3 at S2, which is located on the B4065, a B road outside the AQMA. The highest measured annual mean NO_2 concentration inside the Rugby AQMA was 29.1 µg/m^3 at S54. It is expected that after one more year of continued compliance, the AQMA will be revoked in accordance with LAQM.TG22. If the AQMA is revoked, a new local Air Quality Strategy will be developed, as required under the Environment Act 2021, which will use the current Air Quality Action Plan (AQAP) as a basis.

RBC's main priorities for the coming year are:

1. Warwickshire County Council (WCC) has recently secured capital funding to expand its traffic monitoring and surveying capabilities and support evidence-based decision making in the County's approach to tackling climate impacts and air quality management. This will allow WCC to monitor the effectiveness of schemes and initiatives in tackling air quality issues and identify the impact of development proposals on air quality.
2. WCC will deliver improvements to the A426 Avon Mill roundabout and the junction of Hunter's Lane with Newbold Road. This will reduce congestion on the currently very congested A426 corridor and will provide additional crossing facilities for pedestrians and cyclists, which will improve access to Rugby Town Centre via sustainable modes.

3. RBC is currently drafting a new and updated AQAP which is expected to be released later in 2024 following consultation with partners and DEFRA.

Local Engagement and How to get Involved

The general public can take simple measures to help improve air quality, the main ones being, where possible, making short trips and journeys on foot or by bike instead of by car, or using public transport. Car sharing with colleagues, or with other parents on the school run, are some other examples of ways to reduce traffic congestion. Other measures are listed below:

- Purchasing low-emission electric and/or hybrid vehicles, with government funding and grants available;

- Upgrading boilers to newest and most efficient gas condensing boilers with lowest nitrogen oxides (NO_x) (and carbon) emissions;

- Renewable energy generation via solar photovoltaics or wind turbine installation (although the individual effect on air quality is minor and non-local);

- Reducing the use of open fires and wood-burning stoves;

- Ensuring only permitted appliances and fuels are burnt in the 'Smoke Free Zone' across the urban area; and

- Following sustainable practices.

Further information can be found on the Council's website[6], and Defra's Local Air Quality Management (LAQM) website[7].

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Health Department of Rugby Borough Council with the support and agreement of the following officers and departments:

Planning and Development

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[6] Rugby Borough Council Air Pollution website: https://www.rugby.gov.uk/info/20021/pollution/217/air_pollution

[7] Defra LAQM website: http://laqm.defra.gov.uk/

This ASR has been approved by:

David Burrows Chief Officer for Regulation and Safety

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

If you have any comments on this ASR please send them to Henry Biddington at:

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1 Local Air Quality Management

This report provides an overview of air quality in Rugby Borough Council (RBC) 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 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 Rugby 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 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.

A summary of AQMAs declared by RBC can be found in Table 2-1. The table presents a description of the AQMA that is currently designated within RBC. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of the AQMA and also the air quality monitoring locations in relation to the AQMA. The air quality objectives pertinent to the current AQMA designation are as follows:

- NO_2 annual mean

The NO_2 concentrations within the AQMA have been compliant for four consecutive years as such the council are considering revocation of the Rugby AQMA and following an additional year of continued compliance, RBC propose to revoke this AQMA in 2025 in accordance with LAQM.TG22. Upon revocation of this AQMA a local Air Quality Strategy will be developed based on the current AQAP at the time.

The current AQAP runs from 2006-2011 and is due to be replaced by a new AQAP which will cover the period from 2024-2028. The new AQAP has been drafted and is currently awaiting Defra approval before it is adopted in full. The new AQAP builds upon the current AQAP, introducing new measures in line with LAQM.TG22 such that air quality levels within the borough remain good and that the AQMA can be revoked in 2025.

Table 2-1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
Rugby AQMA (NO_2)	16/12/2004	NO_2 Annual Mean	The area covers the whole urban area of Rugby bounded by the southern boundary with Daventry District Council, A5, M6, minor roads to the west of Long Lawford, A45 and M45.	YES	59.3 µg/m^3	29.1 µg/m^3	4 years	Rugby Borough Council AQAP, 2010 Draft AQAP (2024-2028) to be adopted in 2024	https://uk-air.defra.gov.uk/aqma/details?aqma_ref=267

☒ **RBC confirm the information on UK-Air regarding their AQMA(s) is up to date.**

☒ **RBC confirm that all current AQAPs have been submitted to Defra.**

2.2 Progress and Impact of Measures to address Air Quality in Rugby Borough Council

Defra's appraisal of last year's ASR concluded the report was well structured, detailed, and provided the information specified in the Guidance. The following comments were provided which have been addressed in this year's report:

1. Trends of annual mean NO_2 concentrations are clearly presented in detail and discussed and a robust comparison with air quality objectives is provided.

2. Maps of the diffusion tube network are clear and comprehensive, showing the AQMA boundaries and monitoring undertaken in this area.

3. Adoption of a revised AQAP is expected by the end of 2023, as stated within the 2023 ASR. This is encouraged as the 2010 Action Plan is out of date. The council should make this a priority, and this should be evident in the 2024 ASR. ***Updates on the new AQAP have been provided in this ASR.***

4. The Council has triplicate diffusion tubes co-located with one automatic monitor, they have compared the calculated local bias adjustment factor and national factor, and justified the factor used. This is welcomed.

5. An additional appendix noting the planning applications that have been submitted and approved within Rugby Borough Council is provided. This is welcomed and considered an example of Good Practice.

6. Measures to address $PM_{2.5}$ are detailed within the ASR. Only measures for the management of wood burning and bonfires are presented. Section 2.3 of the ASR should ideally include specific measures to address $PM_{2.5}$, and not rely on the information presented in Table 2.2. Additionally, as there is no $PM_{2.5}$ monitoring undertaken, a review of $PM_{2.5}$ background concentrations from Defra Background Maps would be welcomed, as highlighted in the 2022 Appraisal Letter. ***A review of the background maps was included under the individual pollutants $PM_{2.5}$ section, this has been amended in this ASR to include it under $PM_{2.5}$ approach to reducing emissions section. Additional detail has also been included regarding measures specific to $PM_{2.5}$ in this section.***

7. The ASR uploaded to the LAQM Portal contained comments that had not been removed, prior to upload. The ASR should be thoroughly reviewed before final documents are uploaded onto the Portal. ***Report has been checked before final submission.***

RBC 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 2-2. Table 2-2 has been updated to reflect measures within the draft 2024-2028 AQAP to be adopted in 2024. 16 measures are included within Table 2-2, with the type of measure and the progress RBC 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 2-2.

More detail on these measures can be found in the Action Plan for Rugby Borough Council[8], Health Protection Strategy 2017-2021[9], RBC's Local Plan 2011 – 2031[10] and Air Quality and Planning Supplementary Planning Document[11]. Key progress made in 2023 includes:

- On 6th November Rugby's first School Street pilot was launched around Eastlands primary school to stop school traffic from entering streets next to the school and providing park and walk facilities, encouraging active travel and reducing air quality.

RBC's priorities for the coming year are:

- Maintain compliance with the AQS objectives to ensure revocation of the AQMA in 2025.
- WCC has recently secured capital funding to expand its traffic monitoring and surveying capabilities and support evidence-based decision making in the County's approach to tackling climate impacts and air quality management. This will allow WCC to monitor the effectiveness of schemes and initiatives in tackling air quality issues and identify the impact of development proposals on air quality.
- WCC will deliver improvements to the A426 Avon Mill roundabout and the junction of Hunter's Lane with Newbold Road. This will reduce congestion on the currently very congested A426 corridor and will provide additional crossing facilities for

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[8] RBC. 2010 Air Quality Progress Report and Action Plan Progress Report for Rugby Borough Council, May 2010.

[9] Coventry and Warwickshire. Coventry and Warwickshire Health Protection Strategy 2017-2021, July 2017.

[10] RBC. Local Plan 2011 – 2031, June 2019

[11] RBC (2021) Air Quality SPD, available at: https://www.rugby.gov.uk/w/air-quality-supplementary-planning-document-spd-

pedestrians and cyclists, which will improve access to Rugby Town Centre via sustainable modes.

- RBC is currently drafting a new and updated AQAP which is expected to be released later in 2024, following consultation with partners and DEFRA.
- If and when the AQMA is revoked, put in place a robust Air Quality Strategy.

RBC anticipates that the measures stated above and in Table 2-2 will be sufficient to keep the Rugby AQMA compliant with the AQS objectives.

Table 2-2 – Progress on Measures to Improve Air Quality

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Warwickshire County Council (WCC) to expand its traffic monitoring and surveying capabilities and support evidence-based decision making in the County's approach to tackling climate impacts and air quality management.	Traffic Management	Other	2023	2024	WCC	County	NO	Funded	£10k - 50k	Planning	Not quantifiable	Traffic Counts undertaken annually. CBA = 2	N/a	During 2023 WCC intended to bring a new rapid roadside screening tool for air quality modelling in house, which can help to screen the impact of measures. ANPR data also to be available for more detailed modelling should this be required.
2	Improvements to the A426 Avon Mill roundabout and the junction of Hunter's Lane with Newbold Road	Transport Planning and Infrastructure	Other	2023	2026	WCC	County	NO	Funded	£1 million - £10 million	Planning	Reduced emissions of NO_2 from traffic.	Queue lengths and junction waiting times. CBA = 3	Cabinet gave approval for officers to produce an OBC in 2023. No air quality specific assessment of scheme yet, appointment pending. March 2025 construction has to start, 2026-2027 to open.	Traffic modelling shows substantial queue reductions on gyratory which is expected to improve local air quality. New pedestrian and cycle path with bridge on North (east)side of roads and junctions, to be linked to existing routes. Should target LGV emissions from source apportionment, as scrap businesses in Avon Mill.
3	Proposed Rugby Parkway station at Houlton, close to M1 J18	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	2023	2030	WCC, DFT, Network Rail,	County, National Govt.	NO	Not Funded	> £10 million	Planning	-0.5 µg/m³ at two locations where traffic is reduced. <0.1 µg/m³ adverse impacts elsewhere	Passenger usage (expected ~2,000 passengers a day) CBA = 6	Plans introduced in Jan 2023, application submitted later in 2023 (RBC/23CC003). Air Quality assessment carried out indicated with development some small decreases in concentrations are estimated.	New strategic park and ride for Houlton. Should ease congestion on the road network around Rugby Town Station by providing a second access to the local and national rail network for residents and businesses in Rugby. Construction of the station is anticipated to begin in 2025 subject to funding and necessary consents being secured.
4	Safe and Active Schools (road safety education and active travel).	Promoting Travel Alternatives	School Travel Plans	2022	2028	WCC	County	NO	Funded	£10k - 50k	Implementation	Not quantifiable	Schools' Plan Uptake Rates	N/a	Also a pilot project plan to close a street leading to school in Rugby to encourage

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
	The Safe and Active Schools programme												CBA = 2		active travel and reduce congestion around school, which will include monitoring
5	The Safe and Active Workplace	Promoting Travel Alternatives	Workplace Travel Planning	2022	2028	WCC	County	NO	Funded	£10k - 50k	Implementation	Not quantifiable	Workplaces' Plan Uptake Rates CBA = 2	N/a	N/a
6	Homestead Link	Transport Planning and Infrastructure	Other	2023	2026	WCC	S106	NO	Not Funded	£1 million - £10 million	Planning	Modelling indicated a reduction in NO_2 between -0.6 µg/m³ and -1.8 µg/m³. Negligible, slight beneficial and Moderate beneficial impacts.	Traffic volumes, Queue lengths and junction waiting times. CBA = 6	Consultation in 2021. Still at planning stage, live at present (2023).	Intended to take traffic away from areas of elevated pollution within the AQMA. Due to connect onto the A426 (Rugby Road) with a new roundabout, before heading west to connect with Alwyn Road and Cawston Lane. It will then turn south, crossing over the Northampton Lane byway, to join the B4429 (Coventry Road) to the west of Dunchurch. Initial modelling results show 30-35% reduction in peak traffic so could have significant benefits.
7	Potsford Dam Link	Transport Planning and Infrastructure	Other	2023	2028	WCC	S106	NO	Not Funded	£1 million - £10 million	Planning	Reduced emissions of NO_2 from traffic.	Traffic volumes, Queue lengths and junction waiting times CBA = 6	N/a	Reconfiguration of Coventry Road onto the new Potsford Dam link, alignment altered to tie directly into existing Potsford Dam roundabout on the Rugby link road. Intended to take traffic away from areas of elevated pollution within the AQMA. Compulsory land purchases likely to delay scheme.
8	Installation of EV Charging points in RBC Carpark	Promoting Low Emission Transport	Other	2023	2028	RBC	Local	NO	Funded	£50k - £100k	Planning	1-4% Road NOx emissions reductions.	Number of active charging points CBA = 4	14 on street charging in 3 locations in Town Centre. 85 overall across the borough currently.	WCC have received LEVI funding to install a significant number of Charging points across Rugby. RBC planning to install EV charging in a Town Centre

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
															carpark. 100 additonal chargers have been assumed, overall.
9	Licensing Policy Taxi replaced to low emission vehicles	Promoting Low Emission Transport	Taxi Licensing conditions	2020	2028	RBC	Local	NO	Funded	< £10k	Implementation	Reduced emissions of NO$_2$ from traffic.	Number of taxis meeting licensing conditions (key metrics newer fleet vehicles) CBA = 3	N/a	From 1 January 2022 all new and existing private hire vehicles with Euro 4 petrol or Euro 6 diesel engines. These vehicles are capable of being licensed for 10 years, however once the vehicle is over six years old, the licence must be renewed every six months. From 1 March 2024, all existing or replacement saloon hackney carriage vehicles must be new, white in colour, and must be new ultra-low emission or zero emission capable.
10	Air Quality Supplementary Planning Document	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2021	2028	RBC	Local	NO	Funded	< £10k	Implementation	Not quantifiable	Number of applications in which it is applied CBA = 3	Guidance adopted July 2021	The overall aim is to improve the quality of new development and facilitate a consistent and transparent approach to decision making. This guidance has been developed in co-operation between Coventry City Council, Coventry & Warwickshire Public Health, Nuneaton and Bedworth Borough Council, Rugby, Stratford District Council and Warwick District Council.
11	Increased connectivity to green spaces	Other	Other	2023	2023	RBC / WCC	UKSPF	NO	Funded	£10k - 50k	Implementation	Not quantifiable	Parking / traffic numbers in town centre CBA = 2	RBC involved with input from WCC Highways	Creation of new entrance to Caldecott Park to increase non-vehicle traffic in town centre, discouraging vehicular journeys
12	Warwickshire Local Cycling and Walking	Transport Planning and Infrastructure	Cycle network	2022	2024	WCC	County	NO	Funded	£100k - £500k	Planning	Not quantifiable	Bike journeys undertaken CBA = 1	Between 17 June and 14 August 2022, WCC asked local people for	Periodic events to promote adoption, such as Warwickshire Cycle Buddies, Cycle

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
	Infrastructure Plan (LCWIP)													their thoughts on the draft Plan. This included drop-in sessions, an online webinar and online survey, which was completed by over 1,000 people. All comments and suggestions are now being reviewed and are being used in an updated version of the LCWIP.	September, and planned walks
13	Neighbourhood Car Share Scheme	Promoting Travel Alternatives	Personalised Travel Planning	2021	2028	RBC/WCC	RBC/WCC	NO	Funded	£10k - 50k	Implementation	Not quantifiable	Reduction in the number of car-based journeys being made within the borough CBA = 2	There is car share scheme operating across Coventry and Warwickshire.	RBC looking at options for staff to join the scheme as an organisation with internal promotion though emails and updates. Promotion of the scheme externally via the website and Social Media platforms.
14	Control Of Industrial Emissions	Environmental Permits	Measures to reduce pollution through IPPC Permits going beyond BAT	2023	2028	RBC	Local	NO	Funded	£10k - 50k	Implementation	Not quantifiable	100% compliance with permits allocated CBA = 2	42 Permitted Industrial Pollution Process (100% inspections completed) achieved 100% compliance improvements.	Ongoing implementation of Council's permitting requirements
15	Control Of Domestic Combustion	Policy Guidance and Development Control	Other policy	2023	2028	RBC	Local	NO	Funded	£10k - 50k	Implementation	Not quantifiable	Reduction in complaints CBA = 2	Designated smoke Control Area (chimneys) and section 79 of the EPA 1990 actively implemented where problems are identified. Section 79 of the EPA 1990 actively implemented where problems are identified.	Relatively low priority. Low number of complaints.
16	Air Quality Monitoring	Public Information	Other	2023	2028	RBC	Local	NO	Funded	£10k - 50k	Implementation	Not quantifiable	Trends in pollutants and number of monitoring sites	In addition to Council's core LAQM monitoring regime, applied for Defra funding for	Used to track compliance and impacts of measures.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
													CBA = 2	particulate monitoring, but rejected. Also looking to set up 5 schools in Rugby to have internal and external monitoring, to include NOx and PM. This will help identify if PM is an issue that needs further work.	

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 Strategy[12], 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.

To put the local concentrations of PM$_{2.5}$ in context within the borough, RBC makes use of Defra background mapping and modelling. The background annual average PM$_{2.5}$ concentrations in Rugby for 2022 ranged from 7.7 µg/m^3 to 10.2 µg/m^3; these are estimated to have decreased slightly to between 8.6 µg/m^3 to 10.1 µg/m^3 in 2023. These concentrations are well below the limit of 20 µg/m^3 and are on track to meet the 2040 target of 10 µg/m^3.

In addition to the measures presented in Table 2-2, RBC also introduced PM monitoring at 7 Airly low-cost sensor monitoring sites across Rugby in 2023, so that the extent of PM$_{10}$ and PM$_{2.5}$ pollution can be better identified and appropriate measures implemented as required. Data became available from the sensors in September 2023, so may be included in an appendix in next year's ASR. Details of the monitoring sites are outlined in Table 2-3, along with the Daily Air Quality Index (DAQI)[13] recorded at each site. The DAQI provides an indicator as to the levels of air pollution in the area and recommends actions to take and health advice accordingly, further details regarding this can be found here: https://uk-air.defra.gov.uk/air-pollution/daqi. Further information will be provided in the 2025 ASR when a full year of data is available.

Table 2-3 – Airly Particulate Matter Sensor Information for 2023.

Sensor ID	Sensor Name	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	DAQI
115588	Ashlawn school	452399	273512	1
115343	Henry Hinde Junior School	447938	274680	2
115392	Houlton school	455309	274634	1

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[12] Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

[13] Defra. Daily Air Quality Index, Available at: https://uk-air.defra.gov.uk/air-pollution/daqi

Sensor ID	Sensor Name	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	DAQI
115580	Rugby free primary school	452088	278470	2
115419	Rugby Town Hall	450194	275490	1
115294	St Andrews Benn - front entrance	451532	275704	1
115301	St Andrews Benn - rear entrance	451506	275647	1

The Public Health Outcomes Framework (see https://fingertips.phe.org.uk/profile/public-health-outcomes-framework) includes an indicator relating to the impact of particulate pollution on human health. Indicator D01 – Fraction of mortality attributable to particulate air pollution provides an estimation of the mortality burden associated with long-term exposure to $PM_{2.5}$ as a percentage of the annual deaths from all causes in those aged 30+. The D01 indicator value for Rugby is 5.6% in 2022 (the latest available year), which is slightly lower than the regional average for the West Midlands of 5.7% and the national English average of 5.8%.

The estimated fraction of mortality attributable to particulate ($PM_{2.5}$) air pollution between 2018 and 2022 is shown in Figure 2.1 for Rugby and across England. The $PM_{2.5}$ fractions for Rugby exhibited a slight increase between 2021 and 2022.

Figure 2-1: Public Health Outcomes Framework, Fine Particulate Matter (PM$_{2.5}$)
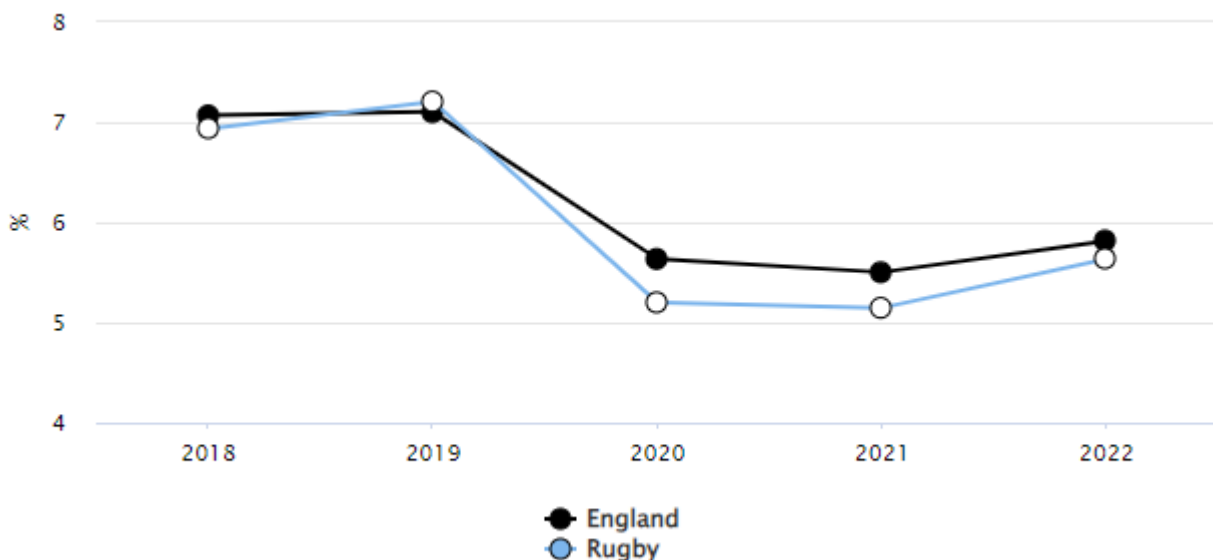
3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance

This section sets out the monitoring undertaken within 2023 by RBC 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

RBC does not undertake automatic (continuous) monitoring. The Council previously had a continuous particulate monitor at Parkfield Road. This was decommissioned in December 2017 due to consecutive years of low pollutant concentrations.

RBC now undertake air quality monitoring via seven low-cost sensors (Airly), which were installed in 2023 with data available from September, which is discussed in Chapter 2.3. However, as these are not reference-grade monitors, the data cannot be used for compliance monitoring with RBC, and thus the data has not been presented within this Chapter of the ASR. These sensors are designed to provide indicative monitoring only.

Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem.

3.1.2 Non-Automatic Monitoring Sites

RBC undertook non- automatic (i.e. passive) monitoring of NO_2 at 53 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 (NO$_2$)

Table A.2 in Appendix A compares the ratified and adjusted monitored NO$_2$ annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the 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.

Overall, between 2022 and 2023 there has been a decrease in annual mean NO$_2$ concentrations across RBC. 46 of the 53 monitoring locations across RBC showed a decrease in annual mean NO$_2$ concentrations compared to 2022. This highlights how the air quality measures implemented by RBC have likely contributed to improved air quality.

During 2023, there were no exceedances of the annual mean NO$_2$ AQS objective. The lowest recorded annual mean NO$_2$ concentration was 7.6 µg/m^3 at S4 (Wolston). This is a slight decrease from 2021 (8.1 µg/m^3). The highest recorded annual mean NO$_2$ concentration was 34.2 µg/m^3 at S2 (3 Church St Shilton). This is a slight increase from the 2022 concentration recorded at S2 of 31.4 µg/m^3, it is also higher than the maximum concentration recorded in 2022 of 32.4 µg/m^3 which was at S54. S2 exceeded the annual mean NO$_2$ AQS objective most recently in 2019. S2 is located outside the AQMA in Shilton at a junction in the village centre. The highest concentration of 2023 within the AQMA was 29.1 µg/m^3 recorded at S54 (Rugby School). S54 is located at the roadside of Warwick Street gyratory system near the town centre and is within the existing AQMA. Despite the increase in concentration, S2 and S54 are still significantly below previously recorded values pre-COVID in 2019 and more than 10% below the AQS annual mean objective.

In general, the NO$_2$ concentrations within the borough have steadily been decreasing in recent monitoring years, there was a slight increase between 2020 and 2021 which was

likely due to the increases in traffic flow following the COVID-19 pandemic. Concentrations have decreased between 2021 and 2023 down to levels observed during the pandemic.

As three years of consecutive compliance have passed revocation of the AQMA has been considered and if the NO_2 concentrations continue to remain compliant for an additional year RBC will take measures to revoke the AQMA. If and when the AQMA is revoked, the current AQAP will form the basis of a new local Air Quality Strategy, as required under the Environment Act 2021.

There were no monitoring locations which saw an annual mean greater than 60 µg/m³. This indicates it is unlikely that the 1-hour mean AQS objective for NO_2 was exceeded at any monitoring sites.

3.2.2 Particulate Matter (PM_{10})

RBC ceased PM_{10} (particulate matter with an aerodynamic diameter of 10µm or less) monitoring in December 2017. Monitoring at the Parkfield Road location was originally commenced to investigate particulate matter concentrations at sensitive receptors near to the Cemex Climafuel facility, but there were no monitored exceedances of the PM_{10} annual mean or short-term mean AQS objectives after several years of monitoring.

3.2.3 Particulate Matter ($PM_{2.5}$)

RBC ceased $PM_{2.5}$ monitoring at the Parkfield Road location in December 2017, as there were no monitored exceedances of the $PM_{2.5}$ annual mean target value after several years of monitoring.

As no $PM_{2.5}$ monitoring is undertaken, $PM_{2.5}$ background concentrations from Defra Background Maps[14] have been reviewed. In 2023, the highest background $PM_{2.5}$ concentration within the Rugby AQMA was 10.1 µg/m³. Outside the AQMA the highest $PM_{2.5}$ concentration in 2023 was 9.1 µg/m³. Both maximum concentrations are significantly below the AQS objective of 20 µg/m³ and are on track to meet the 2040 target of 10 µg/m³.

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[14] Defra, Background Maps: Background Maps | LAQM (defra.gov.uk)

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)
S1	Newbold Opp Shop Lampost	Kerbside	449000	277178	NO_2	YES - Rugby AQMA	0.0	0.5	No	2.5
S2	3 Church St Shilton	Roadside	440416	284401	NO_2	NO	0.0	1.5	No	2.5
S3	69 School St Lawford	Urban Background	447316	276162	NO_2	YES - Rugby AQMA	0.0	15.0	No	2.5
S4	Wolston School	Urban Background	441131	275648	NO_2	NO	0.0	90.0	No	2.5
S5	High St Ryton A45 by subway	Kerbside	438642	274418	NO_2	NO	25.0	0.5	No	2.5
S6	2 Westfield Rd Drainpipe House	Urban Background	449671	274795	NO_2	YES - Rugby AQMA	0.0	10.0	No	2.5
S7	68 Cymbiline Way House	Urban Background	448863	272786	NO_2	YES - Rugby AQMA	0.0	10.0	No	2.5
S8	Newbold Rd opp Benn Hall	Kerbside	450138	275557	NO_2	YES - Rugby AQMA	10.0	1.0	No	2.5
S9	Argyle St Key Shop	Roadside	451187	275334	NO_2	YES - Rugby AQMA	0.0	5.0	No	2.5
S10	Webb Ellis Pub Corporation St	Roadside	450069	275040	NO_2	YES - Rugby AQMA	0.0	5.0	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)
S11	15 Oliver St drainpipe house	Roadside	449787	275224	NO_2	YES - Rugby AQMA	0.0	5.0	No	2.5
S12	Boughton Leigh School	Urban Background	451445	277245	NO_2	YES - Rugby AQMA	0.0	56.0	No	2.5
S13	Avon Mill Lampost	Roadside	450088	276229	NO_2	YES - Rugby AQMA	15.0	3.0	No	2.5
S14	Binley Woods Village Hall	Urban Background	439450	277523	NO_2	NO	0.0	20.0	No	2.5
S15	Lawford Rd / Jubile St	Kerbside	449168	275411	NO_2	NO	0.0	0.5	No	2.5
S16	A45 Citrus Hotel	Roadside	436867	275275	NO_2	NO	0.0	19.0	No	2.5
S17, S18, S19	Stamford Gardens L/SPA	Roadside	431271	266404	NO_2	NO	N/A	6.0	Yes	2.5
S20	Essex St / Newbold Rd	Roadside	450137	275849	NO_2	YES - Rugby AQMA	25.0	3.0	No	2.5
S21	Perciral Rd / Ashlawn Rd	Roadside	451698	273273	NO_2	YES - Rugby AQMA	15.0	2.0	No	2.5
S22	Fisher Av / Ashlawn Rd	Roadside	452403	273567	NO_2	YES - Rugby AQMA	18.0	5.0	No	2.5
S23	Paddox Pub	Roadside	452672	273633	NO_2	YES - Rugby AQMA	13.0	3.0	No	2.5
S24	Dun Cow Dunchurch	Kerbside	448496	271244	NO_2	YES - Rugby AQMA	0.0	0.5	No	2.5
S25	Crystals Duchurch	Roadside	448414	271175	NO_2	YES - Rugby AQMA	0.0	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)
S26	Lawport Rd Flats	Roadside	448999	275505	NO$_2$	YES - Rugby AQMA	0.0	12.0	No	2.5
S27	Leam Rd Ryton lampost	Roadside	449435	275543	NO$_2$	NO	7.0	2.5	No	2.5
S28	256 Parkfield Rd	Roadside	449011	276329	NO$_2$	YES - Rugby AQMA	0.0	2.0	No	2.5
S29	Avon Valley School	Urban Background	449575	276540	NO$_2$	YES - Rugby AQMA	0.0	35.0	No	2.5
S30	Murray Rd bus stop	Kerbside	451107	275838	NO$_2$	YES - Rugby AQMA	0.0	0.5	No	2.5
S31	Wood Street opp Myson house	Roadside	450848	275849	NO$_2$	YES - Rugby AQMA	0.0	3.0	No	2.5
S32	Station Barr Railway Terr	Roadside	450750	275547	NO$_2$	YES - Rugby AQMA	0.0	3.0	No	2.5
S33	Alma Lodge Albert St	Roadside	450510	275355	NO$_2$	YES - Rugby AQMA	0.0	3.0	No	2.5
S34	Oxfam Regent St	Roadside	450405	275329	NO$_2$	YES - Rugby AQMA	0.0	3.0	No	2.5
S35	Papa Johns Church St	Roadside	450444	275236	NO$_2$	YES - Rugby AQMA	0.0	3.0	No	2.5
S36	Whitehall Rd Daisyleins	Roadside	450870	275043	NO$_2$	YES - Rugby AQMA	12.0	3.0	No	2.5
S37	Lower Hillmorton RTMP (DOCS)	Roadside	450897	275059	NO$_2$	YES - Rugby AQMA	5.0	2.0	No	2.5
S38	Clifton Rd	Kerbside	451868	275501	NO$_2$	YES - Rugby AQMA	9.0	0.5	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)
S39	Clifton Rd Murry Rd	Roadside	450852	275116	NO$_2$	YES - Rugby AQMA	0.0	5.0	No	2.5
S40	Drury Lan Bugby Tap	Roadside	450181	275029	NO$_2$	YES - Rugby AQMA	0.0	5.0	No	2.5
S41	Bilton Rd Yellow House	Roadside	450010	274998	NO$_2$	YES - Rugby AQMA	0.0	15.0	No	2.5
S42	Bilton Rd Crow Pie	Roadside	448855	274352	NO$_2$	YES - Rugby AQMA	10.0	5.0	No	2.5
S43	Dunchurch Gyratory	Roadside	450162	274898	NO$_2$	YES - Rugby AQMA	4.0	3.0	No	2.5
S44	Ashlawn Rd Barby Lane	Roadside	453394	273633	NO$_2$	YES - Rugby AQMA	15.0	2.0	No	2.5
S45	Bretford 3 Avon Cottages	Roadside	442963	277071	NO$_2$	YES - Rugby AQMA	11.0	3.0	No	2.5
S46	Oxford Rd Belvedere	Kerbside	437555	274561	NO$_2$	NO	30.0	1.0	No	2.5
S47	Regent Place Quakers	Kerbside	450445	275495	NO$_2$	YES - Rugby AQMA	5.0	0.5	No	2.5
S48	North St Natwest	Roadside	450304	275314	NO$_2$	YES - Rugby AQMA	0.0	2.0	No	2.5
S49	Lesley Souter Whitehall Rd	Roadside	450864	274896	NO$_2$	YES - Rugby AQMA	13.0	3.0	No	2.5
S50	Tesco Express Bilton	Roadside	448169	273625	NO$_2$	YES - Rugby AQMA	18.0	3.0	No	2.5
S51	Brays Clos	Roadside	443433	279208	NO$_2$	NO	6.0	3.0	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)
S52	Green Man Dunchurch	Roadside	448537	271195	NO_2	YES - Rugby AQMA	1.0	3.0	No	2.5
S53	Coventry Rd Dunchurch	Roadside	448361	271334	NO_2	YES - Rugby AQMA	0.0	1.5	No	2.5
S54	Rugby School Lampost No 6	Roadside	450269	274998	NO_2	YES - Rugby AQMA	0.0	1.5	No	2.5
S55	Main St Stretton	Roadside	445004	281330	NO_2	NO	5.0	2.0	No	2.5

Notes:

(1) 0m 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.

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
S1	449000	277178	Kerbside	75.4	75.4	16.2	13.5	15.6	15.3	13.4
S2	440416	284401	Roadside	100	100.0	**45.5**	33.5	33.7	31.4	34.2
S3	447316	276162	Urban Background	100	100.0	13.1	9.5	9.3	9.5	8.9
S4	441131	275648	Urban Background	90.4	90.4	10.4	8.2	8.9	8.3	7.6
S5	438642	274418	Kerbside	100	100.0	23.5	16.4	17.7	17.6	16.9
S6	449671	274795	Urban Background	100	100.0	13.6	10.4	11.5	10.7	9.8
S7	448863	272786	Urban Background	100	100.0	11.7	8.6	9.0	8.1	7.8
S8	450138	275557	Kerbside	100	100.0	28.0	26.9	24.3	25.9	24.1
S9	451187	275334	Roadside	92.6	92.6	16.3	11.8	12.3	12.0	11.1
S10	450069	275040	Roadside	100	100.0	35.7	25.7	26.4	26.1	27.2
S11	449787	275224	Roadside	100	100.0	22.6	16.2	17.4	16.3	16.9
S12	451445	277245	Urban Background	82.8	82.8	20.9	14.3	13.3	13.4	13.0
S13	450088	276229	Roadside	48.4	48.4	33.5	26.7	26.5	26.6	27.2

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
S14	439450	277523	Urban Background	100	100.0	16.8	10.9	10.7	11.1	9.5
S15	449168	275411	Kerbside	90.4	90.4	25.1	22.1	20.7	26.7	24.9
S16	436867	275275	Roadside	100	100.0	18.8	13.5	14.6	14.1	13.3
S17, S18, S19	431271	266404	Roadside	100	100.0	17.4	12.7	13.2	12.6	12.2
S20	450137	275849	Roadside	92.3	92.3	26.0	19.5	20.2	17.6	18.0
S21	451698	273273	Roadside	100	100.0	22.2	15.5	15.8	17.2	16.1
S22	452403	273567	Roadside	80.9	80.9	20.7	15.1	16.1	15.7	14.5
S23	452672	273633	Roadside	100	100.0	21.8	14.4	17.1	16.8	16.1
S24	448496	271244	Kerbside	92.6	92.6	38.5	27.3	28.3	27.0	28.2
S25	448414	271175	Roadside	100	100.0	25.4	19.0	20.7	18.8	17.8
S26	448999	275505	Roadside	100	100.0	18.7	14.5	14.9	14.6	13.1
S27	449435	275543	Roadside	82.8	82.8	21.2	14.4	14.9	13.3	13.1
S28	449011	276329	Roadside	100	100.0	16.7	11.7	11.1	11.6	10.6
S29	449575	276540	Urban Background	92.3	92.3	21.0	16.3	18.4	15.7	13.9

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
S30	451107	275838	Kerbside	90.4	90.4	33.0	20.8	25.9	28.6	26.8
S31	450848	275849	Roadside	100	100.0	24.7	21.3	20.8	21.1	16.3
S32	450750	275547	Roadside	100	100.0	27.4	21.1	21.2	20.9	20.4
S33	450510	275355	Roadside	90.4	90.4	22.2	15.7	16.6	16.4	14.3
S34	450405	275329	Roadside	100	100.0	23.1	15.2	17.1	17.1	16.5
S35	450444	275236	Roadside	92.3	92.3	31.0	19.9	22.0	23.7	23.4
S36	450870	275043	Roadside	100	100.0	29.8	24.2	26.8	23.8	23.0
S37	450897	275059	Roadside	100	100.0	25.2	20.7	22.7	21.5	19.7
S38	451868	275501	Kerbside	100	100.0	25.1	17.1	19.5	18.9	16.5
S39	450852	275116	Roadside	100	100.0	26.2	19.6	21.0	20.8	20.6
S40	450181	275029	Roadside	100	100.0	28.3	22.1	23.9	23.6	21.5
S41	450010	274998	Roadside	100	100.0	24.8	17.8	20.4	20.2	17.2
S42	448855	274352	Roadside	100	100.0	21.2	15.5	17.6	16.9	15.2
S43	450162	274898	Roadside	100	100.0	26.3	19.1	20.0	21.7	18.8

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
S44	453394	273633	Roadside	100	100.0	23.6	17.5	19.8	20.4	19.7
S45	442963	277071	Roadside	100	100.0	23.8	16.3	13.5	17.2	15.1
S46	437555	274561	Kerbside	100	100.0	35.3	26.3	29.9	27.0	25.4
S47	450445	275495	Kerbside	100	100.0	29.5	20.2	22.6	23.0	21.2
S48	450304	275314	Roadside	90.4	90.4	34.1	23.1	22.3	24.5	23.2
S49	450864	274896	Roadside	100	100.0	30.0	20.6	23.2	24.7	21.5
S50	448169	273625	Roadside	82.8	82.8	21.3	16.8	18.6	18.1	14.9
S51	443433	279208	Roadside	100	100.0	28.1	19.0	20.6	19.8	21.1
S52	448537	271195	Roadside	92.3	92.3	20.9	14.1	15.6	14.9	12.7
S53	448361	271334	Roadside	100	100.0	21.8	13.7	15.0	15.2	15.0
S54	450269	274998	Roadside	100	100.0	**41.6**	28.5	31.8	32.4	29.1
S55	445004	281330	Roadside	100	100.0	21.4	13.5	14.4	15.6	12.0

☒ **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/m^3.

Exceedances of the NO$_2$ annual mean objective of 40µg/m^3 are shown in **bold**.

NO$_2$ annual means exceeding 60µg/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 Urban Background Annual Mean NO₂ Concentrations
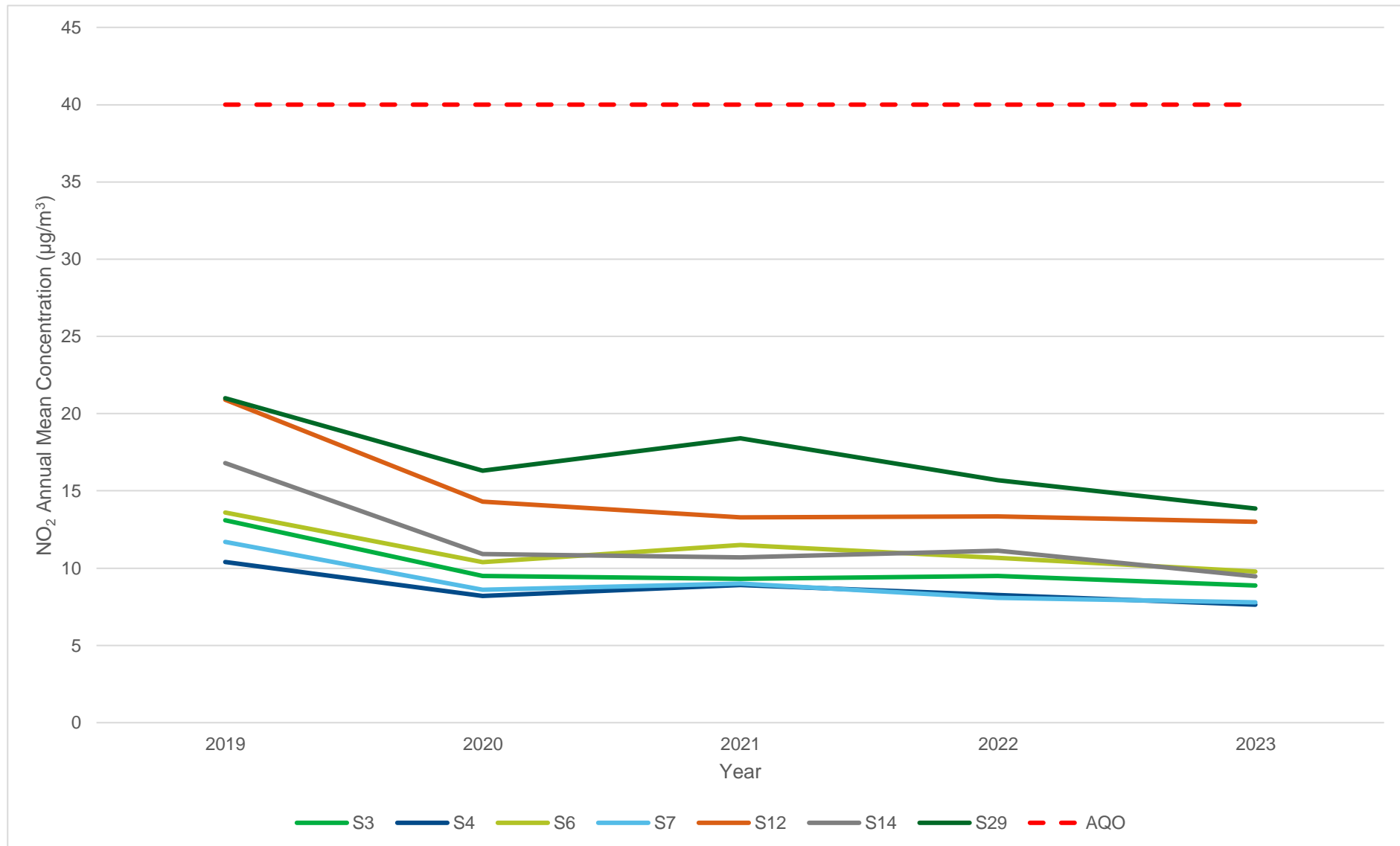
Figure A.2 – Trends in Kerbside Annual Mean NO$_2$ Concentrations

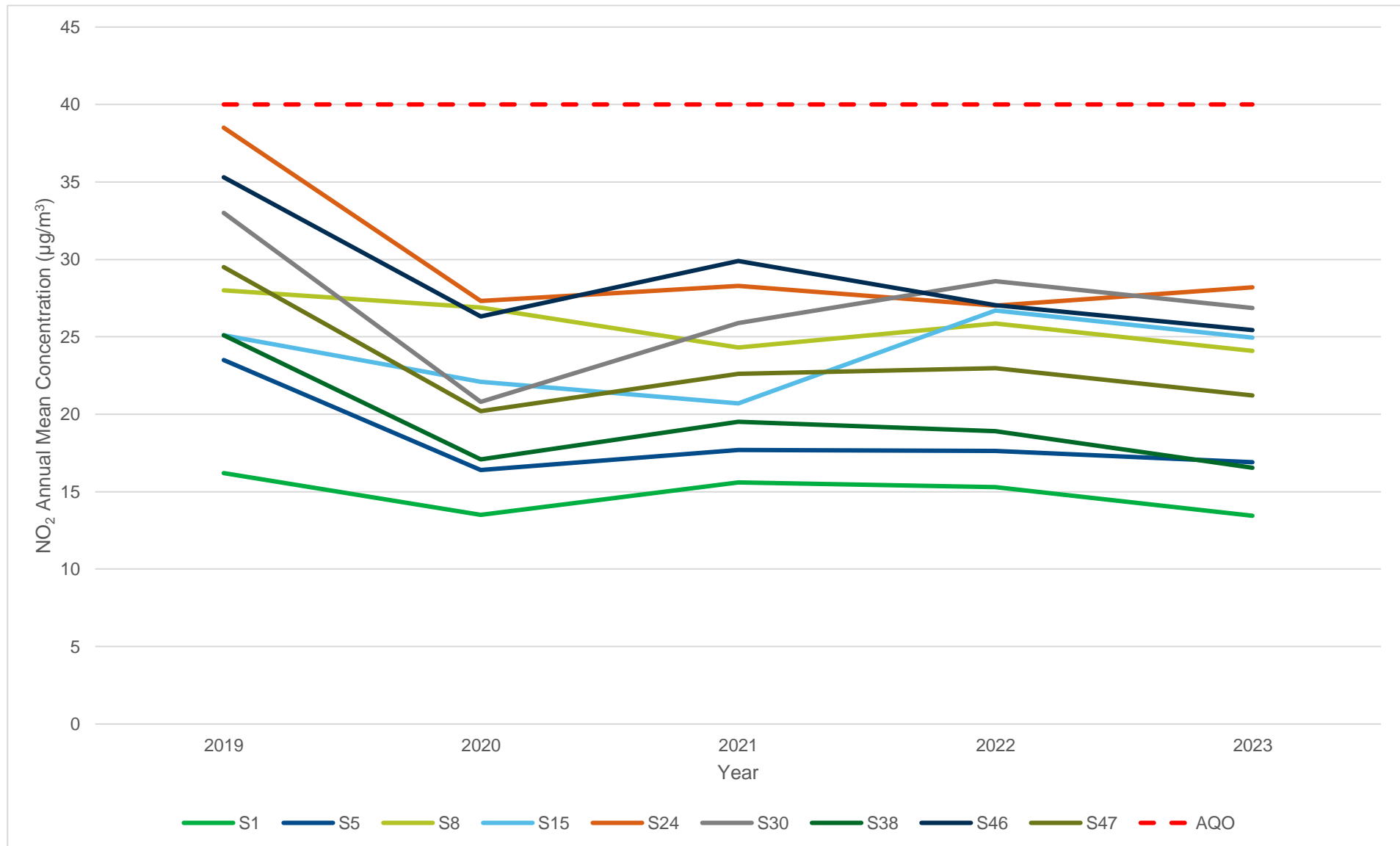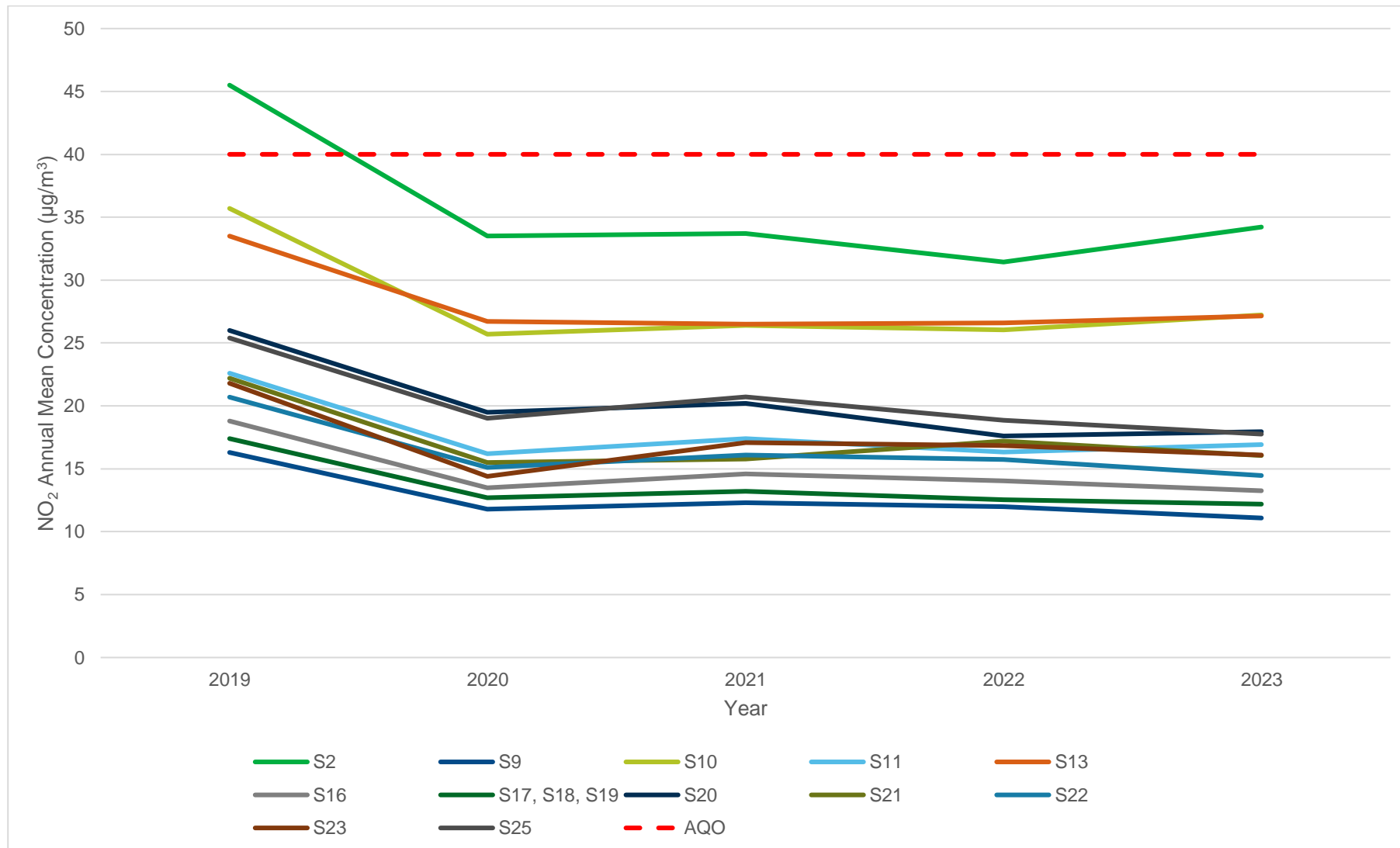**Figure A.3 – Trends in Roadside Annual Mean NO$_2$ Concentrations (a)**

Figure A.4 – Trends in Roadside Annual Mean NO$_2$ Concentrations (b)
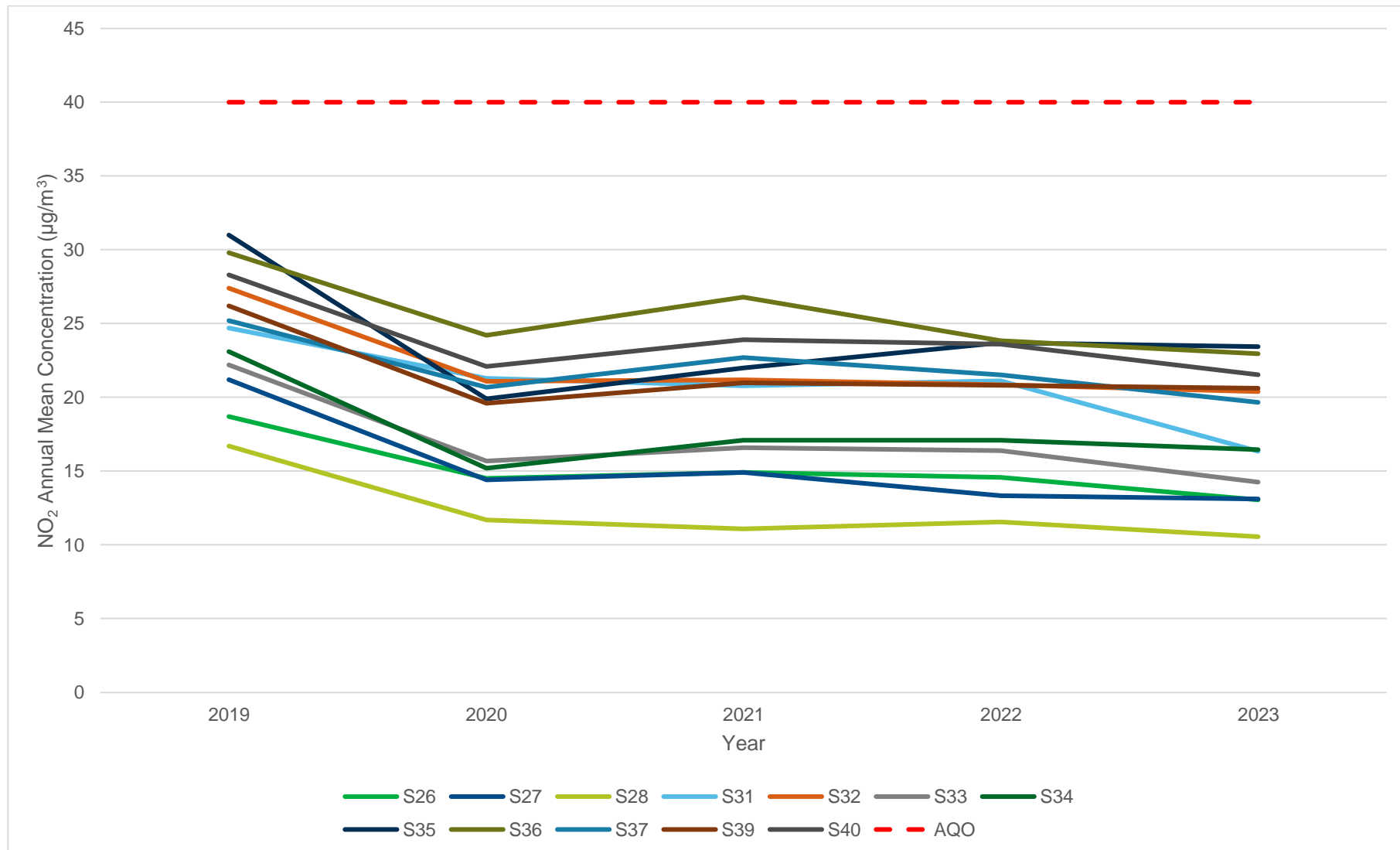
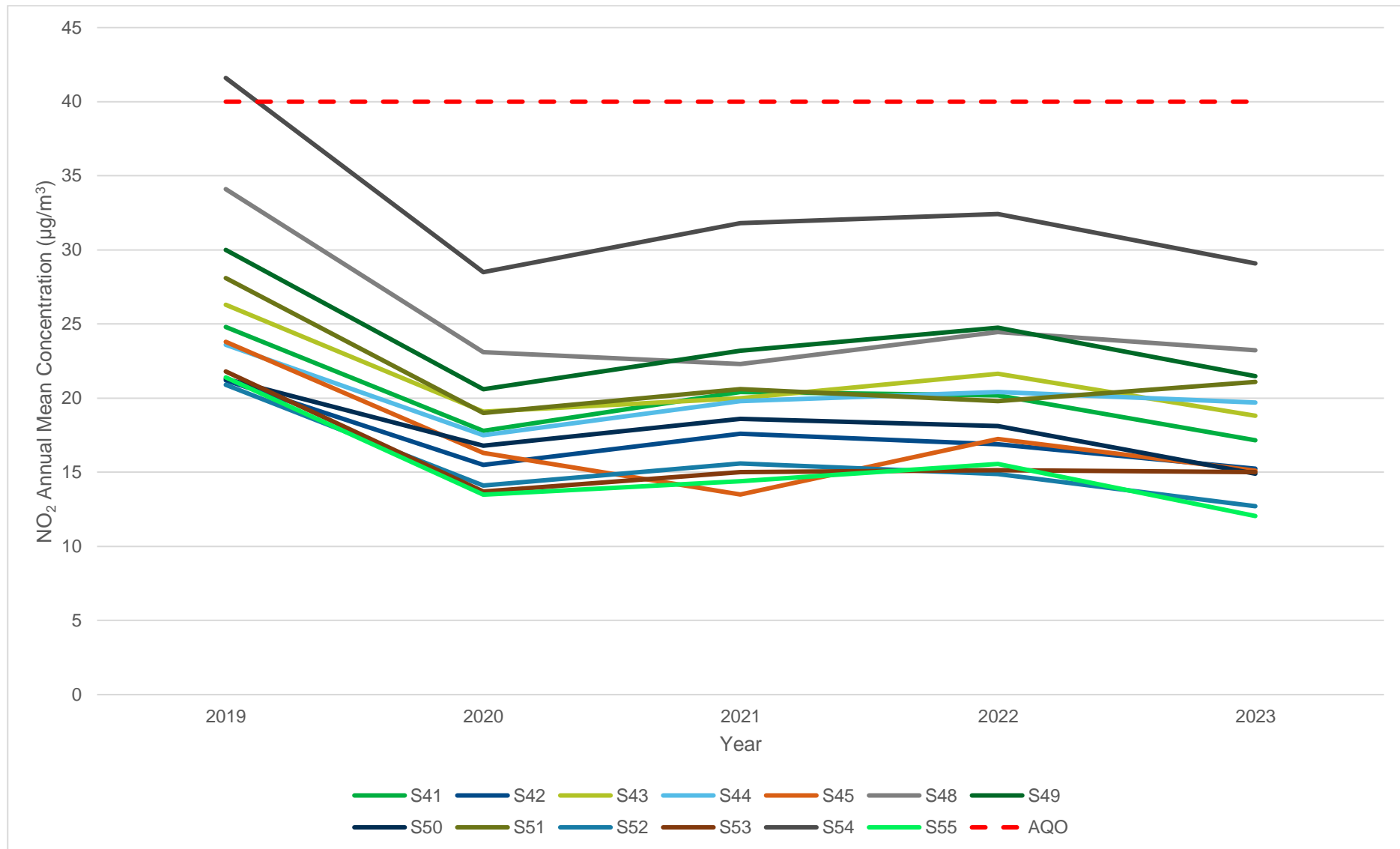**Figure A.5 – Trends in Roadside Annual Mean NO$_2$ Concentrations (c)**

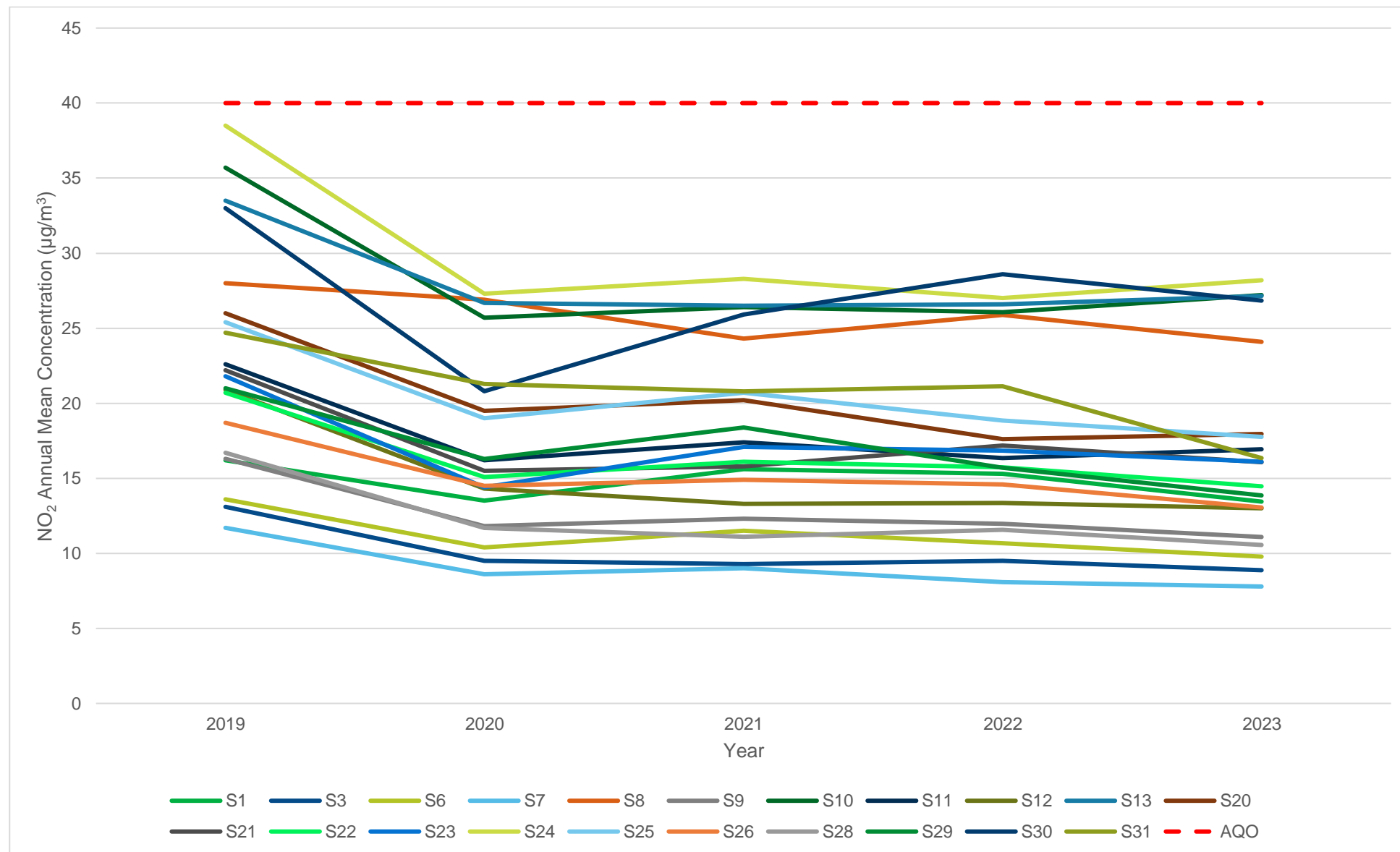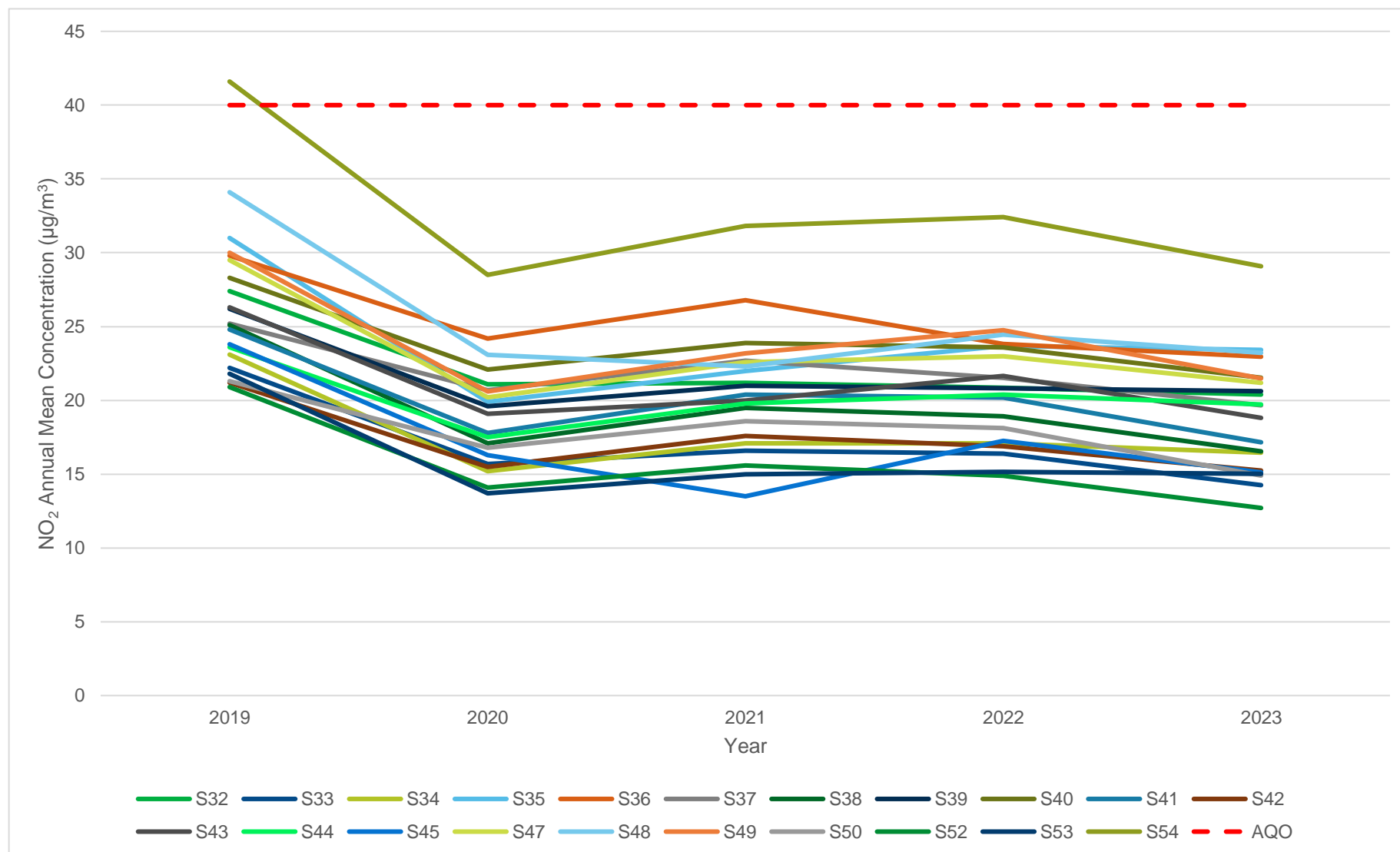**Figure A.6 – Trends in AQMA monitoring sites Annual Mean NO₂ Concentrations (a)**

Figure A.7 – Trends in AQMA monitoring sites Annual Mean NO₂ Concentrations (b)

Appendix B: Full Monthly Diffusion Tube Results for 2023

Table B.1 – NO$_2$ 2023 Diffusion Tube Results (µg/m^3)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.81)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
S1	449000	277178	23.3			16.0	16.2	14.9	9.5	14.1	17.6		23.0	14.8	16.6	13.4	-	
S2	440416	284401	45.2	54.9	41.8	43.5	39.1	40.3	28.9	36.3	47.9	45.5	47.7	36.0	42.3	34.2	-	
S3	447316	276162	14.9	14.7	10.4	10.7	8.7	7.1	5.1	8.9	10.3	14.5	14.7	11.5	11.0	8.9	-	
S4	441131	275648	13.8	12.8	8.0	9.7	8.1	6.3	9.9	7.1	8.4	10.7		8.9	9.4	7.6	-	
S5	438642	274418	29.0	29.6	20.6	22.0	20.7	18.3	6.2	18.2	19.9	23.1	26.7	16.1	20.9	16.9	-	
S6	449671	274795	15.1	18.6	11.0	11.5	11.1	8.7	6.0	9.8	11.1	14.5	16.6	10.9	12.1	9.8	-	
S7	448863	272786	14.2	12.4	10.5	13.5	7.8	5.7	3.4	7.0	7.5	11.2	13.3	8.9	9.6	7.8	-	
S8	450138	275557	41.7	27.5	34.5	31.8	26.4	26.8	22.3	22.7	32.7	29.8	31.6	29.1	29.7	24.1	-	
S9	451187	275334	22.3	10.0	14.7	13.5	10.9	9.1	8.4	10.9	13.8		22.2	14.8	13.7	11.1	-	
S10	450069	275040	40.0	38.6	35.0	35.4	33.3	27.6	22.1	28.3	38.1	39.5	39.0	26.3	33.6	27.2	-	
S11	449787	275224	25.4	27.2	21.0	19.4	17.7	15.4	13.0	16.4	20.6	24.0	28.0	22.9	20.9	16.9	-	
S12	451445	277245	26.0	21.3	13.9	12.2	8.8			10.2	14.7	14.1	23.6	15.7	16.1	13.0	-	
S13	450088	276229	45.9			29.5	21.3	22.3	30.6					24.1	29.0	27.2	-	
S14	439450	277523	19.0	13.8	11.9	10.8	11.0	9.0	6.5	9.3	10.9	14.2	18.2	5.7	11.7	9.5	-	
S15	449168	275411	44.4	46.3	40.8	29.7	24.3		23.0	21.7	27.5	27.7	31.1	22.3	30.8	24.9	-	
S16	436867	275275	24.5	20.1	15.4	19.8	18.3	14.5	8.5	16.4	14.6	16.2	19.6	8.5	16.4	13.3	-	
S17	431271	266404	23.8	22.8	14.6	14.5	12.7	11.9	7.2	11.9	14.3	17.8		13.7	-	-	-	Triplicate Site with S17, S18 and S19 - Annual data provided for S19 only
S18	431271	266404	22.9		15.7	12.7	12.6	11.9	8.0	11.6	12.5	17.2	15.3	12.9	-	-	-	Triplicate Site with S17, S18 and S19 - Annual data provided for S19 only

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.81)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
S19	431271	266404	21.1	19.8	14.5	15.2	12.2	11.2	8.0	12.0	14.5	17.0	22.3	15.5	15.1	12.2	-	Triplicate Site with S17, S18 and S19 - Annual data provided for S19 only
S20	450137	275849	24.1	23.4	27.1	24.1	17.2	16.2		17.6	23.5	23.9	26.6	20.2	22.2	18.0	-	
S21	451698	273273	21.5	19.4	24.7	17.1	14.2	20.0	12.4	19.0	24.6	17.6	27.1	20.5	19.8	16.1	-	
S22	452403	273567	25.4	11.8	18.2	19.8	17.2	17.8	10.2		20.8	20.6		16.8	17.9	14.5	-	
S23	452672	273633	26.8	21.2	20.4	22.5	15.9	17.8	9.9	17.3	20.7	23.8	27.7	14.4	19.9	16.1	-	
S24	448496	271244	48.5	29.5	33.7	33.3	36.0	32.6	25.6	29.6	37.0		45.1	31.9	34.8	28.2	-	
S25	448414	271175	30.4	28.8	17.0	19.1	22.7	18.3	15.5	19.2	22.7	22.9	30.4	16.1	21.9	17.8	-	
S26	448999	275505	24.3	18.7	16.9	16.6	13.7	11.2	9.8	13.3	16.9	19.4	19.9	12.7	16.1	13.1	-	
S27	449435	275543	22.6	21.6	15.8	12.5			9.9	13.8	14.7	19.3	20.6	11.1	16.2	13.1	-	
S28	449011	276329	18.6	17.7	14.8	13.7	10.1	9.5	6.8	11.1	13.6	16.7	13.6	10.2	13.0	10.6	-	
S29	449575	276540	23.4		19.6	18.3	13.8	12.3	10.6	14.3	20.3	23.3	21.5	10.8	17.1	13.9	-	
S30	451107	275838	40.2	31.6	35.3	36.8	37.6	31.4	21.5	34.5	41.7	31.2		22.8	33.1	26.8	-	
S31	450848	275849	12.3	15.8	24.9	23.3	23.4	21.2	12.4	21.8	22.4	27.8	27.1	9.8	20.2	16.3	-	
S32	450750	275547	33.9	25.1	27.6	28.6	22.9	21.8	17.6	20.6	28.7	27.8	24.8	22.7	25.2	20.4	-	
S33	450510	275355	28.3	23.6	20.5	17.5	14.7	13.2	11.1	16.6	17.9	16.6		13.6	17.6	14.3	-	
S34	450405	275329	28.7	26.7	20.2	18.2	15.6	14.7	17.2	18.8	21.8	23.4	22.4	16.3	20.3	16.5	-	
S35	450444	275236	34.5		30.1	25.8	23.7	24.7	23.4	29.3	35.4	31.4	33.2	26.7	28.9	23.4	-	
S36	450870	275043	36.1	23.4	31.0	32.6	25.6	25.7	20.1	26.5	30.3	31.5	33.9	23.4	28.3	23.0	-	
S37	450897	275059	31.9	18.9	28.7	28.1	24.5	18.7	17.8	21.9	24.1	26.1	33.3	17.3	24.3	19.7	-	
S38	451868	275501	23.9	24.0	20.7	20.3	20.3	21.9	15.4	21.9	24.7	20.1	16.4	15.5	20.4	16.5	-	
S39	450852	275116	32.7	30.4	25.8	24.3	19.9	21.6	18.7	19.6	27.8	28.9	34.5	21.3	25.5	20.6	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.81)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
S40	450181	275029	33.6	31.0	27.3	16.6	28.3	22.7	18.0	24.2	29.6	32.8	32.5	22.4	26.6	21.5	-	
S41	450010	274998	26.9	21.3	24.5	17.3	22.1	19.6	13.3	19.0	25.1	24.2	23.6	17.3	21.2	17.2	-	
S42	448855	274352	20.8	16.3	19.9	18.1	18.9	18.9	12.1	17.4	20.7	21.6	23.7	17.4	18.8	15.2	-	
S43	450162	274898	28.4	30.8	24.5	19.4	23.4	22.7	15.2	21.5	28.0	25.6	27.6	11.6	23.2	18.8	-	
S44	453394	273633	25.5	30.3	24.1	25.2	27.2	23.1	16.0	21.8	23.0	25.6	32.2	18.0	24.3	19.7	-	
S45	442963	277071	21.1	24.2	19.4	14.5	13.9	13.5	13.3	16.1	21.3	22.1	26.5	18.1	18.7	15.1	-	
S46	437555	274561	40.6	31.0	34.6	29.2	39.5	30.0	19.6	28.6	29.7	37.3	33.5	23.2	31.4	25.4	-	
S47	450445	275495	33.5	28.3	27.2	10.3	28.5	29.3	20.7	27.1	30.5	31.3	26.4	21.0	26.2	21.2	-	
S48	450304	275314	37.2	33.8	32.0	16.5	20.8	23.7	26.2	29.8	39.9	34.9		20.6	28.7	23.2	-	
S49	450864	274896	30.7	23.6	31.1	15.7	26.3	24.9	20.7	22.3	29.4	31.1	37.0	25.4	26.5	21.5	-	
S50	448169	273625	28.2			6.2	18.5	16.5	12.1	19.9	20.4	22.1	24.3	15.8	18.4	14.9	-	
S51	443433	279208	32.7	31.1	29.3	25.3	22.0	22.8	20.0	23.1	30.3	32.8	29.8	13.5	26.1	21.1	-	
S52	448537	271195	25.7	12.9	16.0	9.6		13.5	10.8	14.8	16.7	21.2	21.3	10.1	15.7	12.7	-	
S53	448361	271334	22.8	21.5	14.2	17.5	18.3	15.5	9.7	14.5	17.3	23.7	32.7	14.7	18.5	15.0	-	
S54	450269	274998	39.6	45.0	35.0	30.2	27.6	29.7	28.8	33.4	45.5	41.2	41.0	34.1	35.9	29.1	-	
S55	445004	281330	17.7	13.8	11.9	15.6	13.3	13.7	10.0	13.7	16.9	20.4	23.2	8.3	14.9	12.0	-	

☒ **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.**

☒ **RBC 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 40µg/m³ are shown in **bold**.

NO$_2$ annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO$_2$ 1-hour mean objective are shown in **<u>bold and underlined</u>**.

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 Rugby Borough Council During 2023

RBC has not identified any new sources relating to air quality within the reporting year of 2023. Through the planning process, RBC have been considering the potential air quality impacts from new developments within RBC. These are detailed in Appendix F.

Additional Air Quality Works Undertaken by Rugby Borough Council During 2023

RBC continued with its development of a new AQAP during 2023, a draft has been issued to Defra for approval.

QA/QC of Diffusion Tube Monitoring

Diffusion tube monitoring has been undertaken in accordance with the Defra Calendar.

RBC's NO_2 diffusion tubes are supplied and analysed by SOCOTEC Didcot using the 50% TEA in Acetone method. This method conforms to the guidelines set out in Defra's 'Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance' document.

SOCOTEC Didcot participates in the AIR NO_2 PT scheme[15]. This scheme forms an integral part of the UK NO_2 Network's QA/QC and is a useful tool in assessing the analytical performance of those laboratories supplying diffusion tubes to Local Authorities for use in the context of LAQM. In AIR NO_2 PT rounds AR046 to AR059 SOCOTEC Didcot achieved 100% satisfactory scores.

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[15] LGC (2023) Summary of Laboratory Performance in AIR NO_2 Proficiency Testing Scheme (September 2021 – October 2023) Available at: https://laqm.defra.gov.uk/wp-content/uploads/2023/11/LAQM-NO2-Performance-data_Up-to-Oct-2023_V1_Final.pdf

Diffusion Tube Annualisation

All diffusion tube monitoring locations within RBC recorded data capture of >75% except for S13 which had a data capture of 48.4% due to personnel not being able to access the monitoring site between August and November. This site has been annualised accordingly. Annualisation requires the use of continuous background monitors with a data capture of 85% or greater. Four continuous monitoring background sites from the DEFRA Automatic Urban and Rural Network (AURN) with sufficient data capture to be used for annualisation have been selected.

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

Diffusion Tube ID	Annualisation Factor Leamington Spa	Annualisation Factor Coventry Allesley	Annualisation Factor Leicester University	Annualisation Factor Northampton Spring Park	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
S13	1.1308	1.1432	1.1715	1.1875	1.1582	29.0	33.5

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2023 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/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

A national bias adjustment factor was obtained from the national Diffusion Tube Bias Adjustment Factors Spreadsheet for March 2024 (03/24). Based on the analytical laboratory (SOCOTEC Didcot) and tube preparation method (50%TEA/Acetone) a national bias adjustment factor of 0.77 was derived for 2023.

A local bias adjustment factor was also calculated from the triplicate co-location of diffusion tubes (S17, S18 and S19) alongside the AURN monitoring station at Leamington Spa Rugby Road. The AURN monitoring station is managed by DEFRA and is outside of the control of Rugby Borough Council. The local bias adjustment factor was calculated as 0.81. The factor was calculated as per LAQM.TG22 guidance, using the Defra Diffusion

Tube Data Processing Tool v4.0. Details of this calculation can be found in Table C.3 to Table C.5.

RBC have applied a local bias adjustment factor of 0.81 to the 2023 monitoring data as this is more representative of the area and provides a more conservative estimate of NO_2 concentrations within the borough. A summary of bias adjustment factors used by RBC over the past five years is presented in Table C.2.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	Local	-	0.81
2022	National	03/23	0.76
2021	National	03/22	0.78
2020	National	03/21	0.77
2019	Local	-	0.81

Table C.3 – Triplicate Diffusion Tube Site Data Quality Check

Period	NO₂ Period Mean (µg/m³)			Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of Mean	Data Quality Check
	Tube 1	Tube 2	Tube 3					
1	23.8	22.9	21.1	22.6	1.4	6%	3.4	**Good**
2	22.8		19.8	21.3	2.1	10%	19.1	**Good**
3	14.6	15.7	14.5	14.9	0.7	4%	1.7	**Good**
4	14.5	12.7	15.2	14.1	1.3	9%	3.2	**Good**
5	12.7	12.6	12.2	12.5	0.3	2%	0.7	**Good**
6	11.9	11.9	11.2	11.7	0.4	3%	1.0	**Good**
7	7.2	8.0	8.0	7.7	0.5	6%	1.1	**Good**
8	11.9	11.6	12.0	11.8	0.2	2%	0.5	**Good**
9	14.3	12.5	14.5	13.8	1.1	8%	2.7	**Good**
10	17.8	17.2	17.0	17.3	0.4	2%	1.0	**Good**
11		15.3	22.3	18.8	4.9	**26%**	44.5	**Poor Precision**
12	13.7	12.9	15.5	14.0	1.3	9%	3.3	**Good**
								Good Overall Precision

Table C.4 – Continuous Monitor Data Quality Check

Period	Period Mean	Data Capture (%)	Data Quality Check
1	19.6	100.0%	Good
2	18.8	100.0%	Good
3	13.3	100.0%	Good
4	12.5	100.0%	Good
5	9.2	100.0%	Good
6	7.9	100.0%	Good
7	6.0	100.0%	Good
8	8.3	100.0%	Good
9	10.7	100.0%	Good
10	14.2	100.0%	Good
11	19.1	100.0%	Good
12	11.2	100.0%	Good
			Good Overall Data Capture

Table C.5 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1
Periods used to calculate bias	11
Bias Factor A	0.81 (0.76 - 0.87)
Bias Factor B	23% (15% - 31%)
Diffusion Tube Mean ($\mu g/m^3$)	14.7
Mean CV (Precision)	5.7%
Automatic Mean ($\mu g/m^3$)	12.0
Data Capture	100%
Adjusted Tube Mean ($\mu g/m^3$)	12 (11 - 13)

Notes:

A single local bias adjustment factor has been used to bias adjust the 2023 diffusion tube results.

NO$_2$ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO$_2$ concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO$_2$ fall-off with distance calculator available on the LAQM Support website.

No diffusion tube NO_2 monitoring locations within RBC required distance correction during 2023 given the low concentrations monitored.

Appendix D: Map(s) of Monitoring Locations and AQMAs

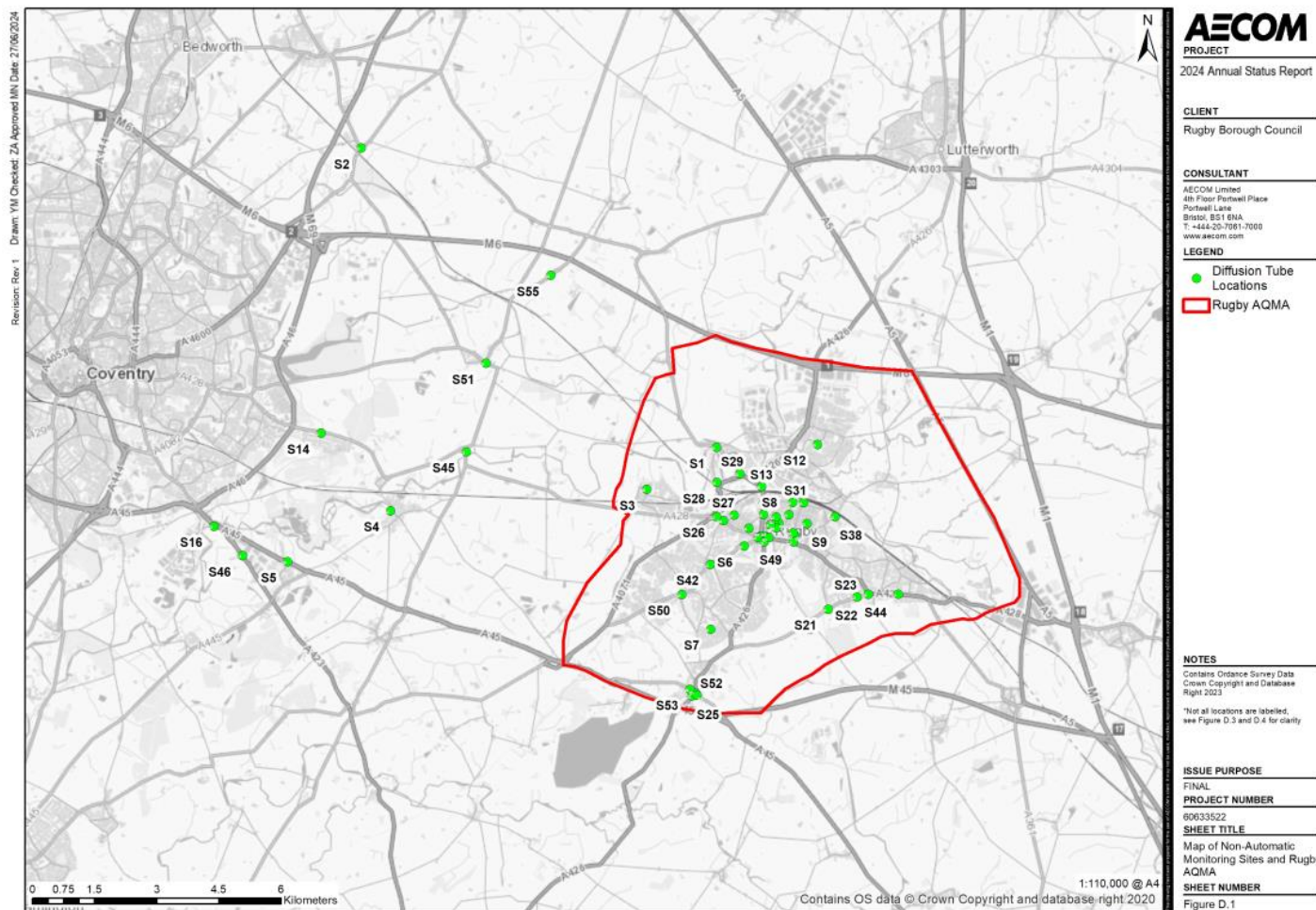**Figure D.1 – Map of All Non-Automatic Monitoring Sites and Rugby AQMA**

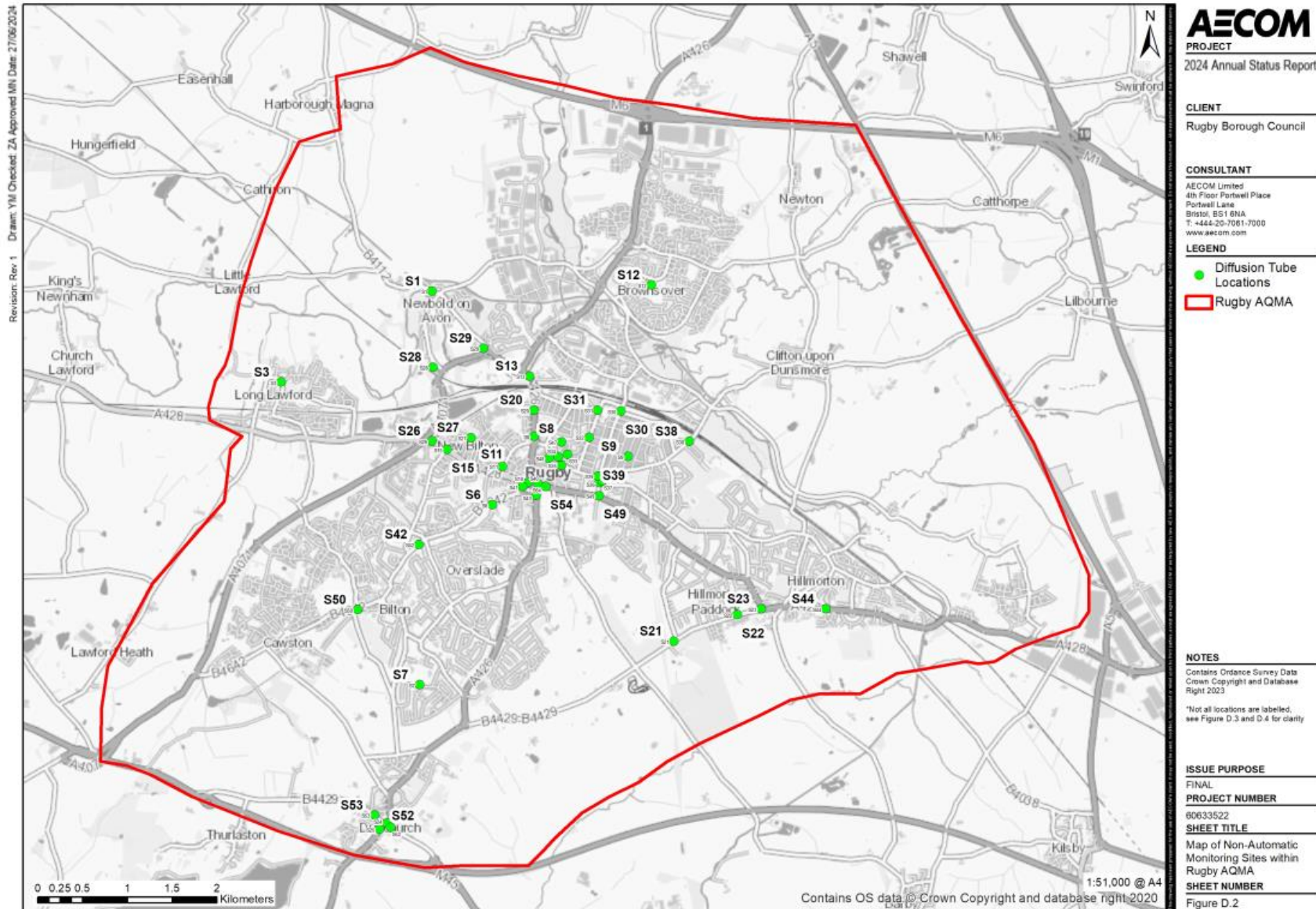**Figure D.2 – Map of Non-Automatic Monitoring Sites within Rugby AQMA**

Figure D.3 – Map of Non-Automatic Monitoring Sites in Central Rugby
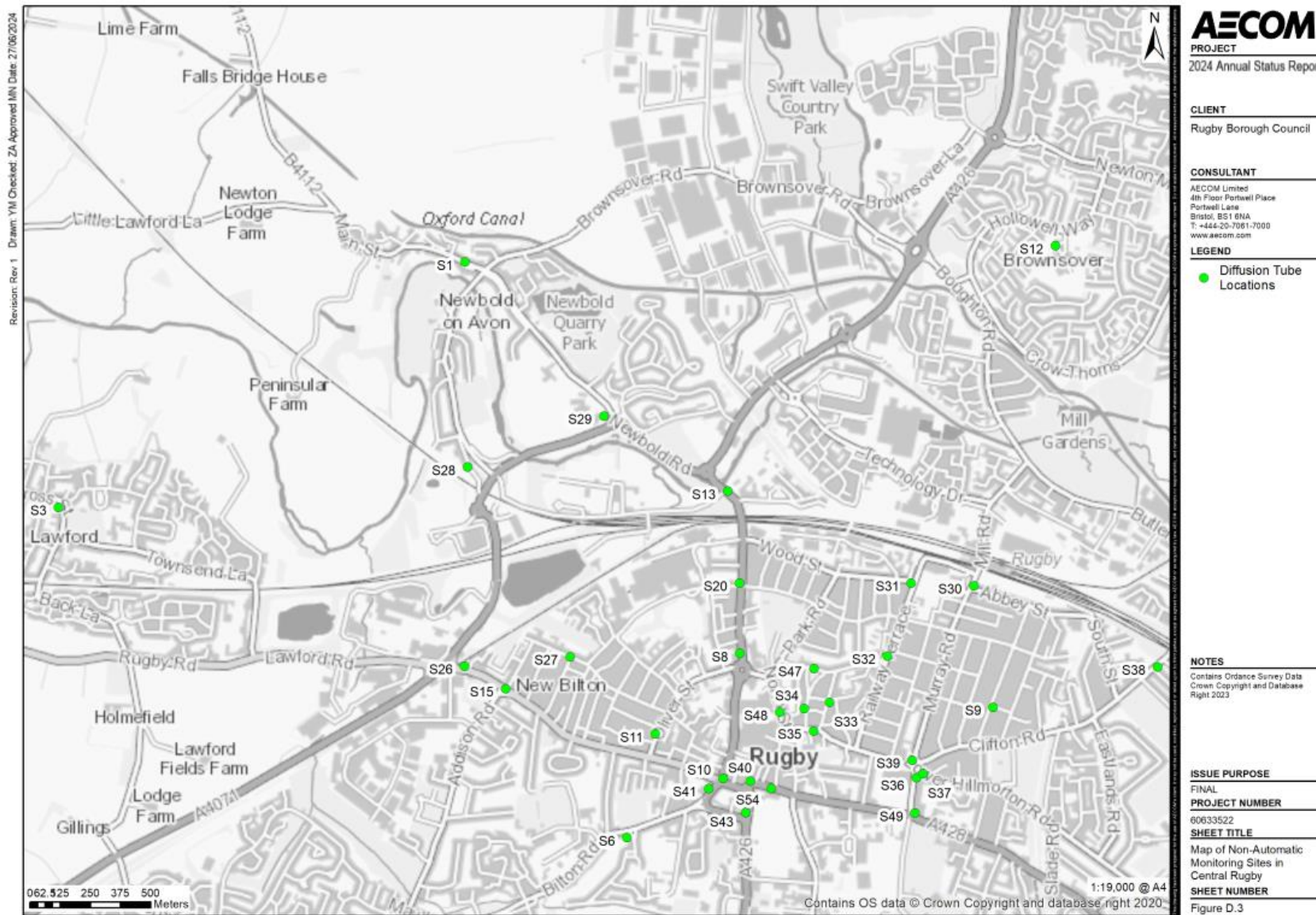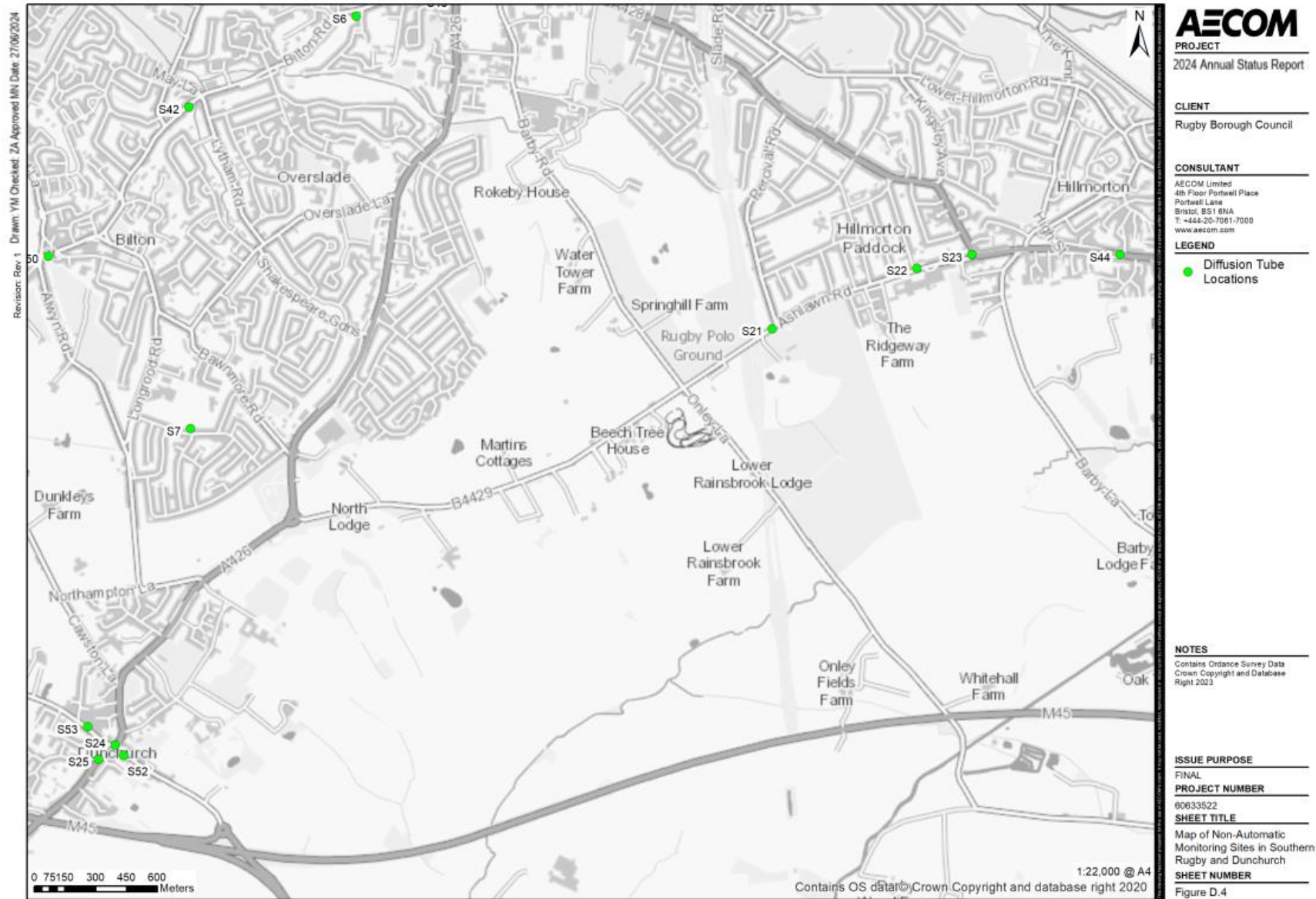
Figure D.4 – Map of Non-Automatic Monitoring Sites in Southern Rugby and Dunchurch

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[16]

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO_2)	200µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO_2)	40µg/m^3	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/m^3	Annual mean
Sulphur Dioxide (SO_2)	350µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO_2)	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

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[16] The units are in microgrammes of pollutant per cubic metre of air (µg/m^3).

Appendix F: Summary of Planning Applications

The most significant planning applications and allocations in the Local Plan are listed below:

1. Coton Park East – An allocation in the Local Plan for around 800 dwellings and 7.5 ha of employment land. Both housing and employment applications approved or resolved to approve on parts of the site.

2. Long Lawford 143 dwellings off the Coventry Road. Granted on appeal September 2021. Site clearance works recently commenced.

3. Gala & Cemex House, Evreux Way – An Outline application for 6255 square metres of retail and an additional 785 square metres of A1/A2/A3/A4/A5 has been approved but not yet implemented. McDonald's drive thru and restaurant approved, built and now operational on part of the site.

4. R22/0657 Rugby Central, North Street – Additional retail and 210 residential units resolved to grant permission in March 2023.

5. Land to the north of Ashlawn Road – allowed on appeal decision for development of up to 860 dwellings and associated primary school. Planning Appeal Reference: APP/E3715/W/16/3147448. Building works associated with the residential properties commenced across the site in several phases.

6. Urban Expansion South West of Rugby – an allocation in the Local Plan for around 5,000 residential dwellings with associated infrastructure comprising of link road, health/community facility, and employment uses, including a local centre, together with primary and secondary schools. As part of this allocation, Miller Homes, Coventry Road, Cawston c150 dwellings approved and occupied. L&Q, Coventry Road, Cawston 210 dwellings and primary school, approved. First phase of industrial units under construction on the employment element adjacent to M45/A45 junction – allocation will provide up to 35 hectares of employment land. This Rugby South West site also covers the development proposal for Ashlawn Road.

The following developments are either under construction or were completed / occupied during 2023:

7. Rugby Radio Station (SUE) – Urban extension to Rugby providing up to 6,200 dwellings, up to 130,000 m^2 of space for various land uses, including mixed use district centre, construction works are underway on all 3 Phases. The Secondary School opened in September 2021. David Lloyd Fitness Centre, inc courts and swimming

pools, approved 01/09/2020. Application for 7810 sqm of employment approved in March 2023

8. Rugby Gateway (Eden Park) – Outline application for up to 1,300 residential units and employment zone. Phases 1, 2 & 4 and the employment zone has been completed and occupied. Phase 3 for 146 dwellings and the primary school have received planning permission and work has commenced. Application for remaining residential phases, 555 dwellings currently pending.

9. Leicester Road/Technology Drive – permission granted for 620 dwellings. All phases have now been completed.

10. Cawston Extension – Outline planning permission granted for up to 600 homes under reference R11/0114. However, the site has been divided into four sections with four different developers. Each of the four sections have been substantially completed and occupied. The northern most section has been constructed by William Davis for 184 dwellings under reference R16/1721. The southern site has been constructed by Linden Homes for a total of 246 dwellings (from combined planning permissions of R16/1780 and R17/1885). To the east of these two sites, Redrow Homes constructed 113 dwellings (from planning permission R15/0540), whilst the furthest site to the east has been constructed by Triosquare and comprises 10 dwellings granted under combined references of R12/1947 and R16/2295 (it should be noted that these last two permissions were not part of the original outline under R11/0114). In total, these four sections comprise 553 dwellings, substantially completed, and mainly occupied.

Glossary of Terms

Abbreviation	Description
ANPR	Automatic Number Plate Recognition
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
AQS	Air Quality Strategy
ASR	Annual Status Report
AURN	Automatic Urban and Rural Network
BAT	Best available techniques
CBA	Cost benefit analysis
CV	Coefficient of variation
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EPA	Environment Protection Act
EU	European Union
EV	Electric Vehicle
FDMS	Filter Dynamics Measurement System
IPPC	Integrated Pollution Prevention and Control
LAQM	Local Air Quality Management
LGV	Light Goods Vehicle
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
OBC	Outline Business Case
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less

Abbreviation	Description
QA/QC	Quality Assurance and Quality Control
RBC	Rugby Borough Council
SO_2	Sulphur Dioxide
UKSPF	UK Shared Prosperity Fund
WCC	Warwickshire County Council

Wider 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.