



# 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 Derby

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<sup>1</sup>, however as this estimate was produced from data up to 2018, the numbers are likely to be lower currently as a result of air pollution levels now decreasing annually. 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<sup>2</sup>.

Nonetheless, nitrogen dioxide concentrations in particular, are now shown to be decreasing year-on-year in the UK, largely due to improvements in vehicle technology and the move from petrol and diesel fuels to hybrid and 'zero emission' electric vehicles. It is estimated that there are now 1.1m fully electric cars driving on UK roads and a further 655,000 plug-in hybrids (as of April 2024 - data from *zapmap*<sup>3</sup>). The total market share for new cars registered with a plug, was 23.9% in 2023.

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.

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<sup>1</sup> UK Health Security Agency. Chemical Hazards and Poisons Report, Issue 28, 2022.

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

<sup>3</sup> <https://www.zap-map.com/ev-stats/ev-market#:~:text=At%20the%20end%20of%202016,a%20plug%20in%202023%2023.9%25>.

**Table ES 1 - Description of Key Pollutants**

Pollutant	Description
Nitrogen Dioxide (NO <sub>2</sub> )	Nitrogen dioxide is a gas which is generally emitted from high-temperature combustion processes such as road transport or energy generation.
Sulphur Dioxide (SO <sub>2</sub> )	Sulphur dioxide (SO <sub>2</sub> ) is a corrosive gas which is predominantly produced from the combustion of coal or crude oil.
Particulate Matter (PM <sub>10</sub> and PM <sub>2.5</sub> )	<p>Particulate matter is everything in the air that is not a gas.</p> <p>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.</p> <p>PM<sub>10</sub> refers to particles under 10 micrometres. Fine particulate matter or PM<sub>2.5</sub> are particles under 2.5 micrometres.</p>

## Actions to Improve Air Quality

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

The Environmental Improvement Plan<sup>3</sup> sets out actions that will drive continued improvements in air quality and to meet the new national interim and long-term targets for fine particulate matter (PM<sub>2.5</sub>), the pollutant of most harm to human health. The Air Quality Strategy<sup>4</sup> 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<sup>5</sup> 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.

## Conclusions and Priorities

There were no exceedances of the NO<sub>2</sub> annual mean objective limit recorded in Derby during 2023. Unlike previous years, NR2 no longer exceeds the annual mean NO<sub>2</sub> objective limit of 40µg/m<sup>3</sup> with an annual mean NO<sub>2</sub> concentration of 35.7µg/m<sup>3</sup>, a 5.4µg/m<sup>3</sup> decrease from 2022.

As stated in previous reports, the boundary of the inner/outer ring road AQMA is out of date and work is being undertaken to re-design the boundaries of this AQMA. The new boundaries are due to be formally amended, subject to local consultation and approval.

There are several major upcoming developments that may influence local air quality including:

- Work is continuing on the former Celanese SmartParc development site. Over the coming years, this will create a large-scale food manufacturing and R&D hub which

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<sup>3</sup> Defra. Environmental Improvement Plan 2023, January 2023

<sup>4</sup> Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

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

could generate a number of new vehicle trips; however, the impact is considered insignificant when considered against the former use of this site.

- The Derby Triangle commercial site (now called St Modwen Park) within the Wyvern area of the city is now reaching an advanced stage of development. This site has potential to create new HGV trips, primarily impacting the A52, Nottingham Road and the Wyvern area.
- There continues to be significant development within Infinity Park Derby and the surrounding Infinity Garden Village growth zone in the south of the city. This is being serviced by a new junction off the A50 and could therefore significantly affect traffic flows into and out of the city. Early AQ modelling suggests that the new junction will provide net air quality improvements, however.

Steps to revoke the No.2 A52 AQMA in Spondon have now begun, as there has not been a recorded exceedance of the annual mean NO<sub>2</sub> objective limit in this AQMA since 2010. A public consultation on the proposed revocation went live in early June 2024 with a consultation period of 8 weeks. Formal revocation of this AQMA is therefore due to take place in August 2024.

## Local Engagement and How to get Involved

The Council remain actively involved in the Derby and Derbyshire Air Quality Working Group, the East Midlands Air Quality Network and the local Active Travel and Green Forums.

The Derby City Council website includes further details of how to get involved in Air Quality here: <https://www.derby.gov.uk/transport-and-streets/air-quality-in-derby/>

Active public consultations can be found here: <https://www.derby.gov.uk/council-and-democracy/consultations/your-city-your-say-latest-consultations/>.

Derby City Council again promoted awareness of air quality issues on National Clean Air Day on 20th June 2024. We encourage people to visit <https://www.cleanairday.org.uk/> for useful resources and information on how to get involved.

## Local Responsibilities and Commitment

This ASR was prepared by the Environmental Protection Team of Derby City Council with the support and agreement of the following officers and departments:

- Traffic and Transport
- Public Health
- Climate Change Team

This ASR has been approved by:

Charles Edwards, Director of Communities, Derby City Council

Cllr Shiraz Khan, Cabinet Member for Housing, Property, and Regulatory Services, Derby City Council

Robyn Dewis, Director of Public Health, Derby City Council

If you have any comments on this ASR, please send them to Karl Suschitzky at:

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# 1 Local Air Quality Management

This report provides an overview of air quality in Derby 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 Derby City 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.

A summary of AQMAs declared by Derby City Council can be found in Table 2.1. The table presents a description of the two AQMAs that are currently designated within Derby City Council. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMAs and the air quality monitoring locations in relation to the AQMAs. The air quality objectives pertinent to the current AQMA designations relate to annual mean exceedances of NO<sub>2</sub>.

Due to continued compliance with the Air Quality Objectives within and surrounding the AQMA in Spondon (*Derby NO<sub>2</sub> AQMA No.2 A52*) it is currently proposed to revoke this AQMA. A public consultation on the proposed revocation of the Spondon AQMA went live on 4<sup>th</sup> June 2024 and will run for 8 weeks. A detailed review of NO<sub>2</sub> around the Spondon AQMA has also been produced as evidence and this has been appended to this ASR.

Derby City Council are also in the process of developing new boundaries for our other designated AQMA (*Derby NO<sub>2</sub> AQMA No.1 Ring Roads*).

**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
No.1 Ring Roads	Declared 01/08/2001, Amended 01/09/2002 and 23/10/2006	NO2 Annual Mean	An AQMA encompassing the Inner and Outer Ring-Roads in the city, as well as some sections radial roads and the entire length of Osmaston Road.	NO	63.6µg/m3	None (Maximum Concentration 38.2µg/m <sup>3</sup> - London Road)	1	Derby City Council Air Quality Action Plan 2020	The AQAP is available <a href="#">here</a> .
No.2 A52	Declared 01/08/2001, Amended 01/09/2002 and 23/10/2006	NO2 Annual Mean	Sections of the A52, Derby Road and Nottingham Road in Spondon.	YES	40.6µg/m3	None (maximum Concentration 31.0µg/m <sup>3</sup> - Nottingham Road)	13	Derby City Council Air Quality Action Plan 2020	The AQAP is available <a href="#">here</a> .

Derby City Council confirm the information on UK-Air regarding their AQMA(s) is up to date.

Derby City Council confirm that all current AQAPs have been submitted to Defra.

## 2.2 Progress and Impact of Measures to address Air Quality in Derby City Council

Defra's appraisal of last year's ASR concluded:

- *“Names should be included for the annualisation reference monitors used in table C.1 to allow for verification of the monitors and check their suitability.”* – This has been included in this year's ASR.
- *“Appendix D refers to 2020 monitoring data and the monitoring data for 2022 has yet to be uploaded to the mapping website.”* – 2022 monitoring data is now available on the mapping websites and 2023 data will also shortly be available.
- *“The council have stated their intention to amend AQMA 1 which is a testament to their continued reviewal of the AQMAs and local air quality within the district. The council have also proposed to revoke AQMA 2, Defra agrees with this proposal and plans to revoke the AQMA should begin immediately as the AQMA has been compliant with the relevant AQO for 9 years to date. AQMAs should be revoked after 5 consecutive years of compliance as Keeping AQMAs in place longer than required risks diluting their meaning and impacting public trust in LAQM. This reviewal of AQMAs is commended and should be continued in next year's ASR.”* – AQMA No.2 is currently in a public consultation period for revocation. There are still plans to amend AQMA No.1 to reflect local air quality.

Derby City 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 2.2. 34 measures are included within Table 2.2, with the type of measure and the progress Derby City Council 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 Derby City Council's updated Air Quality Action Plan (2020). Key completed measures are:

- Capability Programme
- Area and Regional Coordination of AQ Measures through AQWG and EMAQN
- Updated Air Quality Action Plan (AQAP)

- Local Cycling and Walking Infrastructure Plan (LCWIP)
- Derby Roadside NO2 Local Air Quality Plan - Traffic Management Scheme
- Air Quality Awareness Raising
- Local Growth Fund (LGF)
- Derby bus station vehicular entrance/exit upgrades
- City Centre to Derby Rail Station Access Improvement Scheme
- Pentagon Island - Spondon (Nottingham Rd) cycleway
- Traffic light priority at Key Junctions

Derby City Council expects the following measures to be completed over the course of the next reporting year:

- Future Transport Zones (FTZ) Programme
- Moving Derby Forward Programme - Active Travel Fund
- e-Scooter Hire Trial
- Community Hub
- EV Charging Infrastructure

Derby City Council worked to implement these measures in partnership with the following stakeholders during 2023:

- Nottingham City Council;
- South Derbyshire District Council;
- Amber Valley Council;
- Erewash Borough Council;
- National Highways;
- Derbyshire County Council.

The principal challenges and barriers to implementation that Derby City Council anticipates facing are trying to balance the delivery of the various programmes in Table 2.2 with other priorities.

Derby City Council anticipates that the measures stated above and in Table 2.2 will achieve compliance in AQMA No.2 A52.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, Derby City Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of AQMA No.1 Ring Roads.

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	Updated Council Staff and Fleet Travel Plans and updated Cleaner Fleet Policy	Promoting Travel Alternatives	Workplace Travel Planning	2019	2023	DCiC	LA - existing budget	NO	Funded	< £10k	Planning	Reduced vehicle emissions	# of low emission vehicles in Council grey fleet and # business mode shift journeys	Development Phase initiated in June 2019 and Cleaner Fleet Strategy now approved by Cabinet	Plans have stalled due to Covid priorities. Needs to be re-focused.
2	Cleaner Taxis Project	Promoting Low Emission Transport	Taxi Licensing conditions	2018	2020	DCiC, Derby Taxi Trade and Unions	Clean Air Fund bid unsuccessful. Possible use of Transforming Cities Fund and/or Future Transport Zones funding to progress.	NO	Partially Funded		Planning	Reduced vehicle emissions	# of taxis meeting minimum NOx emissions standards	Taxi Licensing Strategy approved, but with later implementation date. Taxi fleet emission study complete.	Progress currently on hold due to partial funding and other priorities. Some aspects being delivered through TCF.
3	Capability Programme	Promoting Travel Alternatives	Workplace Travel Planning	2021	2022	DCiC	LA and Partners through Access Fund, Local Growth Fund and Capability Fund.	NO	Funded		Completed	Reduced vehicle emissions	Capability Fund analysis	Project complete and M&E completed	Complete
4	EV Charging Infrastructure	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2020	2024	DCiC, NCC, OLEV, EV Charging Providers	Various schemes under TCF	NO	Funded		Planning	Reduced vehicle emissions	# New EV Charge Points	Ongoing installation of EV points under framework with BP Pulse.	Needs to be Supported by EV Charging Planning Policy (local and government) and an EV Strategy. Concerns over future costs of maintaining publicly owned EV infrastructure, especially in light of Covid-19 financial recovery.
5	Anti-idling Enforcement	Traffic Management	Anti-idling enforcement	2020	2023	DCiC, schools	LA Enforcement. Use of DEFRA funding for comms campaign?	NO	Partially Funded		Planning	Reduced vehicle emissions	New expanded PPO enforcement service operational, then # of Notices Served	Report complete and awaiting Cabinet consideration, but on hold.	Question over whether remit of PPO Service can include anti-idling. Funding and resource not yet allocated for publicity campaign and designation of anti-idling zones.



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
6	Area and Regional Coordination of AQ Measures through AQWG and EMAQN	Other	Other	2016		Derbyshire and other East Midlands Authorities	Using existing DCC funding to work with Derbyshire and other East Midlands Authorities	NO	Funded		Completed	Wide range of measures proposed under Work Plan	AQWG Work Plan Implementation and annual reporting to Health Protection Board and Health and Well-being Boards	Operational since 2016	Slowed down due to Covid-19 priorities. Needs re-energising in 2021.
7	AQ and Planning	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance		2022	DCiC, EMAQN	LA resourced	NO	Funded		Planning	Ensuring AQ is at the heart of planning decisions. To assist EV charging implementation under EV schemes being taken forward under TCF/FTZ.	Completion of Local Plan AQ Policy and subsequently, completion of Supplementary Planning Guidance (or Developer's Guide) on AQ and EV Charging Policy. Also developing specific Planning Guidance on Derby Local Roadside NO2 Plan TMS.	EMAQN template produced for use in DCC Policy.	Policy being taken forward, however currently resource-constrained due to other Local Plan commitments.
8	Derby Roadside NO2 Local Air Quality Plan - Traffic Management Scheme	Traffic Management	UTC, Congestion management, traffic reduction	2020	2022	DCiC and JAQU	Subject to DEFRA Funding	YES	Funded	> £10 million	Implementation	Reduction in annual average NO2 along Stafford Street to below 40µgm3 by 2020 (reduction of 9.4µgm-3 NO2 based on 2020 baseline)	Compliance with EU Limit Values	Infrastructure complete. UTMC system - Ian Butler	Implementation going ahead, subject to ongoing government advice.
9	National Bus Strategy	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	2021	2022	DCiC and Local Bus Service Providers	Requirement on all LAs	NO	Funded	£1 million - £10 million	Planning	To be determined.	Completion of Bus Partnership Scheme	Draft Enhanced Partnership Agreement due with DfT by end of June 2022. Second draft Bus Service Improvement Plan (BSIP) by October 2022.	Indicative funding award of £7.4m

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
11	Air Quality Awareness Raising	Public Information	Via other mechanisms			DCiC Comms	LA Delivery using DEFRA Implementation Funding (£450k)	YES	Funded	£100k - £500k	Implementation	Indirect reductions in pollutant concentrations due to behavioural change resulting from information. Hard to quantify.	# stakeholders actively engaged, assessed via click-through rates and average view length time on social media and web pages and # mailshots/ letters	Taxi engagement workshop and Clean Air Day events complete. Ongoing updating of website and connecting Derby site including useful info and signposting.	Currently insufficient staff to deliver funding. Funding includes revenue, so hoping to appoint new comms/marketing officer/s?
12	Investigate the potential for promoting low emission freight initiatives in Derby	Promoting Low Emission Transport	Other			DCiC, DCC	Derby City Council / Derbyshire County Council	NO	Not Funded		Planning	Unknown	Unknown	Council to consider options for supporting a freight consolidation centre and promoting Eco Stars	Resource constrained. Possibly not deemed a priority. Departmental ownership and resource allocation required.
13	Review Derby Burning of Waste Enforcement Policy	Other	Other	2023	2024	DCiC	Derby City Council	NO	Partially Funded	£10k - 50k	Planning	NO2 and PM2.5 emissions reduction. Hard to quantify.	Completion of Policy.	Political discussion initiated and internal procedure written. Work now begun on drafting a new policy for public engagement.	Some equalities issues to consider and conflicts with Bonfire Night celebrations. Political/public pressure needs to be considered fully. Focus now to be more on trade waste.
14	Transforming Cities Fund (TCF) implementation	Alternatives to private vehicle use	Other	2020	2025	DCiC jointly with NCiC and private partners	Derby CC delivery jointly with Nottingham CC - £161m awarded under TCF.	NO	Funded	> £10 million	Planning	Emission reductions to be modelled for certain projects. Hard to quantify in some cases.	Large variety of measures being delivered under TCF. See further items for individual scheme details.	See extensive work programme	See extensive work programme
15	Future Transport Zones (FTZ) Programme	Transport Planning and Infrastructure	Other	2020	2024	DCiC jointly with NCiC	Derby CC delivery jointly with Nottingham CC - £16.7m awarded under FTZ Fund.	NO	Funded	> £10 million	Planning	Emission reductions to be modelled for certain projects. Hard to quantify in some cases.	E.g. No. of people using data platform, MaaS app and mobility hubs.	See extensive work programme	See extensive work programme

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
16	Moving Derby Forward Programme - Active Travel Fund	Traffic Management	Other	2020	2024	DCiC, DfT	DfT Emergency Active Travel Fund - £238k from tranche 1. More funding being delivered under tranche 2 and 4.	NO	Funded	£100k - £500k	Implementation	Emergency measures, so focus is on implementation rather than theoretical measurement. Long term aims encouraging more active travel and reduced car use.	Completion of programme. No. of people using new cycle lanes and No. of converted trips to cycling/walking from car. Amount of reallocated road space	Measures introduced at 11 schools to encourage Active Travel, with a further 5 schools in the planning stage, along with Behaviour Change work by Cycle Derby. Restrictions on motor vehicles introduced in 10 locations and cycle lanes still in design phase.	
17	e-Scooter Hire Trial	Promoting Low Emission Transport	Other	2021	2024	DCC, Wind Mobility	TCF	NO	Funded		Implementation	Reduced vehicle emissions	No. of users and scooter miles covered.	Firs tranche of scooters now available to key workers	Trial now Extended to May 2024 - Managed by Superpedestrian
18	Community Hub	Promoting Low Emission Transport	Other	2020	2024	DCC and Private Partners	FTZ	NO	Funded	£500k - £1 million	Planning	Reduced vehicle emissions	Completion of hubs	6 Streets Mobility Hub - On-street Charging Infrastructure Pilot and Car Club	
19	Derby Strategic corridors	Transport Planning and Infrastructure	Bus route improvements	2020	2023	DCC, Bus Providers and Private Partners	TCF	NO	Funded	£1 million - £10 million	Planning	Reduced bus emissions	Benefits and Outcomes Measures Report	Draft reports for corridor improvements issued for review. Work has started on mapping and packaging the remaining routes of the network.	
20	Public Realm work within the key areas of the city centre (The Spot and Victoria and Albert Street)	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	2020	2025	DCC and Private Partners	TCF	NO	Funded	£1 million - £10 million	Implementation	Reduced vehicle emissions	Benefits and Outcomes Measures Report	Construction now started	
21	Derby bus station vehicular entrance/exit upgrades	Transport Planning and Infrastructure	Bus route improvements	2020	Complete	DCC	TCF	NO	Funded	£1 million - £10 million	Planning	Reduced bus emissions	Benefits and Outcomes Measures Report	Complete	

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22	City Centre to Derby Rail Station Access Improvement Scheme	Transport Planning and Infrastructure	Cycle network	2020	Complete	DCC	TCF	NO	Funded	£1 million - £10 million	Planning	Reduced vehicle emissions by encouraging walking and cycling	Benefits and Outcomes Measures Report	Complete	
23	DRT - Demand Responsive Bus Service linking Infinity Park with Key Employment Sites	Transport Planning and Infrastructure	Bus route improvements	2020	2023	DCC/Private Bus Company	Private Bus Companies with DCC support using TCF Funding	NO	Funded	£1 million - £10 million	Planning	Reduced vehicle emissions	Benefits and Outcomes Measures Report	Under feasibility. No completion date available at this point.	
24	Strategic cycle link (Derby)	Transport Planning and Infrastructure	Cycle network	2020	2024	DCC	TCF	NO	Funded	£1 million - £10 million	Planning	Reduced vehicle emissions by encouraging cycling	Benefits and Outcomes Measures Report	Scheme now progressing on amended programme. Construction commenced in 2023 and due for completion in June 2024. Involving widening and resurfacing of the Riverside Path between Raynesway Industrial Park and the B5010 near Borrowash.	
25	City centre - Mickleover cycle route	Transport Planning and Infrastructure	Cycle network	2020	Complete	DCC with private partners	TCF	NO	Funded	£1 million - £10 million	Implementation	Reduced vehicle emissions by encouraging cycling	Benefits and Outcomes Measures Report	Complete	
26	Pentagon Island - Spondon (Nottm Rd) cycleway	Transport Planning and Infrastructure	Cycle network	2020	2025	DCC	TCF	NO	Funded	£1 million - £10 million	Planning	Reduced vehicle emissions by encouraging cycling	Benefits and Outcomes Measures Report	Construction commenced in January 2024. Completion due in March 2025	
27	City Centre - Raynesway (A52) cycleway	Transport Planning and Infrastructure	Cycle network	2020	Complete	DCC	TCF	NO	Funded	£1 million - £10 million	Implementation	Reduced vehicle emissions by encouraging cycling	Benefits and Outcomes Measures Report	Complete	
28	Traffic light priority at Key Junctions	Transport Planning and Infrastructure	Bus route improvements	2020	2023	DCC/Bus Partners	TCF	NO	Funded	£1 million - £10 million	Planning	Reduced bus emissions	Benefits and Outcomes Measures Report	Pentagon Island Scheme now complete. Work programme being developed to progress bus priority scheme at existing	

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
														signalised junctions through the use of Trapeze system (planning stage).	
29	Smart Ticketing	Transport Planning and Infrastructure	Bus route improvements	2020	2023	DCC with public transport partners	TCF/FTZ	NO	Funded	£100k - £500k	Planning	Improved journey planning and increase in use of sustainable transport modes	Benefits and Outcomes Measures Report	Final report submitted. Exploring software solution.	
30	Zero Emission Bus Regional Areas (ZEBRA)	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2021		DCC	ZEBRA Fund	NO	Not Funded		Aborted	No. of Zero Emission Buses purchased	Successful bid first step	Bid not progressed.	
31	E-Bike Hire Scheme	Promoting Low Emission Transport	Other		2028	DCC with NCC	TCF	NO	Funded	£500k - £1 million	Implementation				
32	Magaloughton Lane Site	Promoting Low Emission Transport	Other	2020	2025	DCC	TCF	NO	Funded	£1 million - £10 million	Planning			Hub no longer being taken forward; however new site concept being worked on	
33	Cycling Strategy	Promoting Low Emission Transport	Cycle network	2024	2025	DCC	H&T Programme	No	Funded	<£100k	Planning	No. mode shifts	Completion of Strategy	Early planning stage	
34	School Safe Havens	Promoting Low Emission Transport	UTC, Congestion management, traffic reduction	2023	Ongoing	DCC/Schools	DfT	No	Funded	£500k - £1 million	Implementation	No. mode shifts	No. of school safe haven TROs	7 School Safe Havens now confirmed with TRO in place. At least 6 more schools proposed. AQ monitoring now taking place outside 13 schools.	Local opposition and creating parking issues on nearby roads are main barriers to implementation

## 2.3 PM<sub>2.5</sub> – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy<sup>6</sup>, local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter (PM<sub>2.5</sub>). There is clear evidence that PM<sub>2.5</sub> (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Derby City Council are taking the following measures to address PM<sub>2.5</sub>:

1. A review of bonfire complaint investigation and enforcement procedures has been undertaken and is currently being formalised. A wider 'burning of waste' policy is due to go out for public consultation during 2024/25.
2. Smoke from chimney enforcement continues, with additional information and campaigns on the effects of smoke from chimneys taking place throughout the year.
3. Consolidation and renewal of the existing smoke control orders for Derby, culminating in the creation of a new single order, is planned for 2024/25.
4. Continued focus on securing planning conditions to require construction dust management plans for the majority of new development and all demolition consents in the City.

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<sup>6</sup> Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

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

This section sets out the monitoring undertaken within 2023 by Derby City 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

Derby City Council undertook automatic (continuous) monitoring at one site during 2023. Automatic (continuous) monitoring is now carried out under the AURN Network (managed by Bureau Veritas on behalf of DEFRA) at the Derby St Alkmund's Way site with data now available. A new PM<sub>10</sub> AURN monitor was also installed at Stockbrook Park in November 2023. Data from this monitor will be presented in the 2025 ASR. Table A.1 in Appendix A shows the details of the automatic monitoring sites. National monitoring results are available at [https://uk-air.defra.gov.uk/networks/site-info?uka\\_id=UKA00630](https://uk-air.defra.gov.uk/networks/site-info?uka_id=UKA00630).

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

#### 3.1.2 Non-Automatic Monitoring Sites

Derby City Council undertook non- automatic (i.e. passive) monitoring of NO<sub>2</sub> at 65 sites during 2023. Table A.2 in Appendix A presents the details of the non-automatic sites.

Unfortunately, a number of sites have had to have been abandoned in 2023 due to systematic tampering. Although attempts were made during 2023 to minimise the risk of tampering at these sites, including moving tubes up higher and attaching 'do not tamper' notices next to them, it appears that a member of the public has taken it upon themselves to persistently remove a total of 4 tubes from a small area close to the junction of Ashbourne Road, Friar Gate, and Uttoxeter Old Road (monitoring locations AR4, FG3,

UOR2, and UOR4). This is now reflected in the data and these monitoring sites have now regrettably been abandoned.

Results for 3 of these sites (AR4, FG3 and UOR4) have been annualised and included for completeness, however caution is advised when interpreting the results due to very low data capture rates. No data is available for site UOR2.

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<sub>2</sub>)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past five years with the air quality objective of 40µg/m<sup>3</sup>. 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.

Table A.5 in Appendix A compares the ratified continuous monitored NO<sub>2</sub> hourly mean concentrations for the past five years with the air quality objective of 200µg/m<sup>3</sup>, not to be exceeded more than 18 times per year.



### **3.2.2 Particulate Matter (PM<sub>10</sub>)**

Derby City Council have not undertaken any PM<sub>10</sub> monitoring since 2013. These data have been presented in previous reports and are not repeated here; measured concentrations were well below the relevant objectives. However, a particulate monitor has now been installed under the AURN network at Stockbrook Park, which started providing data in November 2023.

### **3.2.3 Particulate Matter (PM<sub>2.5</sub>)**

As highlighted above, a new AURN monitor has now been installed at Stockbrook Park which, as of November 2023, will provide continuous data for PM<sub>2.5</sub>. Data will be ready for presentation in the 2025 ASR.

### **3.2.4 Sulphur Dioxide (SO<sub>2</sub>)**

Derby City Council does not currently monitor SO<sub>2</sub> concentrations and currently has no plans to do so in the future.

## Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Inlet Height (m)
UKA00630	St Alkmund's Way AURN	Roadside	435763	336306	NO2	Yes - Derby NO2 AQMA No.1 Rings Roads	Chemiluminescent	N/A	3.7	1.2

**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 – 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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
AB1	201 Abbey Street	Roadside	434846	335657	NO2	Y - No.1 Ring Roads	0.0	2.0	No	1.8
AR1	189/191 Ashbourne Road	Roadside	433633	336850	NO2	N	0.0	4.0	No	1.8
AR2	259 Ashbourne Road	Roadside	433459	336918	NO2	N	N/A	14.5	No	1.8
AR3	148 Ashbourne Road	Roadside	433796	336786	NO2	N	0.0	3.0	No	1.8
AR4	Millgate, Ashbourne Road	Roadside	434307	336565	NO2	Y - No.1 Ring Roads	0.0	4.0	No	1.8
AS1	Kenneth House, Agard Street	Roadside	434545	336570	NO2	Y - No.1 Ring Roads	0.0	2.5	No	1.8
AS2	Centro West, Agard Street	Roadside	434579	336571	NO2	N	0.0	4.2	No	1.8
BR1	Bass Recreation Ground/The Holmes	Urban Background	435764	336306	NO2	N	N/A	4.0	No	1.8
BUR1	220 Burton Road	Roadside	434785	335241	NO2	Y - No.1 Ring Roads	0.0	3.0	No	1.8
BUR2	114a Burton Road	Roadside	435025	335508	NO2	Y - No.1 Ring Roads	0.0	2.0	No	1.8
CAV1	171/182 Cavendish Court	Roadside	434820	336505	NO2	N	0.0	15.0	No	1.8

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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
CC1	Casteward Court, Traffic Street	Kerbside	435725	335802	NO2	Y - No.1 Ring Roads	0.0	35.0	No	1.8
CH1	Council House	Urban Centre	435496	336294	NO2	N	N/A	>50	No	1.8
CM1	Victoria Street/Corn Market	Roadside	435262	336157	NO2	N	N/A	5.0	No	1.8
DER1	198 Derby Road	Roadside	438942	335864	NO2	N	0.0	2.0	No	1.8
DR1	Duffield Road/North Street	Roadside	434814	337041	NO2	Y - No.1 Ring Roads	2.0	4.0	No	1.8
DR2	5 Duffield Road	Roadside	434937	336916	NO2	Y - No.1 Ring Roads	0.0	4.0	No	1.8
EG1	Eastgate (Pentagon)	Roadside	436064	336487	NO2	N	N/A	3.0	No	1.8
FG1	100A Friar Gate	Roadside	434718	336375	NO2	Y - No.1 Ring Roads	0.0	11.5	No	1.8
FG2	63 Friar Gate	Roadside	434450	336523	NO2	Y - No.1 Ring Roads	0.0	4.9	No	1.8
FG3	Friargate / Bridge street corner	Roadside	434497	336510	NO2	Y - No.1 Ring Roads	0.0	7.0	No	1.8
GC1	23 Gilbert Close	Roadside	439776	335696	NO2	Y - No.2 A52	0.0	10.0	No	1.8
HL1	109 Highfield Lane	Roadside	437382	336044	NO2	N	2.0	19.0	No	1.8
HS1	16/18 Harrow Street	Roadside	437196	334410	NO2	Y - No.1 Ring Roads	0.0	8.0	No	1.8

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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
KL1	10 Kirkleys Ave North	Roadside	440206	335650	NO2	Y - No.2 A52	0.0	10.0	No	1.8
KL2	27 Kirkleys Ave South	Roadside	440198	335611	NO2	Y - No.2 A52	0.0	12.0	No	1.8
KR1	8 Kedleston Road (Chiropodist)	Roadside	434775	337086	NO2	N	0.0	8.0	No	1.8
LR1	938 London Road	Roadside	437676	334090	NO2	Y - No.1 Ring Roads	0.0	3.0	No	1.8
LR2	1178 (1170) London Road	Roadside	438162	333654	NO2	Y - No.1 Ring Roads	0.0	5.0	No	1.8
LW1	18 Leeway	Roadside	439647	335575	NO2	Y - No.1 Ring Roads	0.0	9.8	No	1.8
ML1	25 Morledge	Roadside	435477	336176	NO2	Y - No.2 A52	N/A	11.0	No	1.8
MR1	14 Mansfield Road	Roadside	435439	336817	NO2	N	0.0	3.0	No	1.8
NR1	24 Nottingham Road	Roadside	439899	335348	NO2	Y - No.1 Ring Roads	0.0	5.7	No	1.8
NR2	203/201 Nottingham Road	Roadside	436700	336637	NO2	Y - No.1 Ring Roads	0.0	2.0	No	1.8
NR3	123 Nottingham Road	Roadside	435795	336625	NO2	Y - No.1 Ring Roads	0.0	3.0	No	1.8
NR4	63 Nottingham Road	Roadside	435586	336642	NO2	Y - No.1 Ring Roads	0.0	3.0	No	1.8
NS1	32 Newdigate Street	Roadside	435091	333526	NO2	Y - No.1 Ring Roads	0.0	2.0	No	1.8

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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
NS2	80 Newdigate Street	Roadside	435022	333581	NO2	Y - No.1 Ring Roads	0.0	2.0	No	1.8
OPR1	523 Osmaston park Road	Roadside	436809	332826	NO2	Y - No.1 Ring Roads	0.0	3.0	No	1.8
OPR2	104 Osmaston Park Road	Roadside	435716	333327	NO2	Y - No.1 Ring Roads	0.0	4.5	No	1.8
OR1	831 Osmaston Road	Roadside	436992	332713	NO2	Y - No.1 Ring Roads	0.0	10.0	No	1.8
OR2	29 Ivy Square off Osmaston Road	Roadside	436046	334857	NO2	Y - No.1 Ring Roads	0.0	6.0	No	1.8
OR3	114 Osmaston road	Roadside	435534	335467	NO2	Y - No.1 Ring Roads	0.0	2.0	No	1.8
OR4	59 Osmaston Road	Roadside	435440	335717	NO2	Y - No.1 Ring Roads	0.1	2.0	No	1.8
PL1	26 / 24a Penny Long Lane	Urban Background	434364	337881	NO2	Y - No.1 Ring Roads	10.0	N/A	No	1.8
RS1	150 Radbourne Street	Roadside	433118	336650	NO2	N	0.0	5.0	No	1.8
RT1	Royal Telegraph Pub	Roadside	435653	335706	NO2	N	0.0	2.0	No	1.8
RW1	7 Raynesway	Roadside	438535	333508	NO2	Y - No.1 Ring Roads	0.0	8.0	No	1.8
SMC1	St Marys Court 1	Roadside	435203	336779	NO2	Y - No.1 Ring Roads	0.0	3.0	No	1.8
SMC2	St Marys Court 2	Roadside	435249	336785	NO2	Y - No.1 Ring Roads	0.0	12.8	No	1.8

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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
SR1	1 Station Road	Roadside	439789	335412	NO2	N	0.0	8.0	No	1.8
SS1	Stafford Street Burleigh Mews Flats	Roadside	434748	336352	NO2	Y - No.2 A52	0.0	4.0	No	1.8
SS2	Roman House, Stafford Street	Roadside	434766	336329	NO2	Y - No.1 Ring Roads	0.0	7.1	No	1.8
SS3	46 Stafford Street	Roadside	434703	336213	NO2	N	0.0	5.2	No	1.8
SS4	59a Stafford Street	Roadside	434688	336155	NO2	N	0.0	2.0	No	1.8
UNR2	414 Uttoxeter New Road	Roadside	433190	335380	NO2	N	0.0	7.7	No	1.8
UNR3	431 Uttoxeter New Road	Roadside	433186	335327	NO2	Y - No.1 Ring Roads	0.0	9.0	No	1.8
UNR4	266 Uttoxeter New Road	Roadside	433786	335778	NO2	Y - No.1 Ring Roads	0.0	2.0	No	1.8
UNR5	199 Uttoxeter New road	Roadside	433887	335804	NO2	Y - No.1 Ring Roads	0.0	2.0	No	1.8
UNR6	126 Uttoxeter New Road	Roadside	434227	335958	NO2	N	0.0	10.0	No	1.8
UNR7	Rowleys Mill Flats, Uttoxeter New Road	Roadside	434461	336041	NO2	N	0.0	4.9	No	1.8
UOR1	208 Uttoxeter Old Road	Roadside	433877	335850	NO2	N	0.0	4.0	No	1.8

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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
UOR2	Corner of Uttoxeter Old Rd/James Close	Roadside	434182	336329	NO2	N	0.0	4.3	No	1.8
UOR3	122/124 Uttoxeter Old Road	Roadside	434109	336255	NO2	N	0.0	1.8	No	1.8
UOR4	Ashbourne Court, Uttoxeter Old Road	Roadside	434310	336533	NO2	Y - No.1 Ring Roads	0.0	2.5	No	1.8
WH1	115 Windmill Hill Lane	Roadside	433161	336692	NO2	N	0.0	8.2	No	1.8
AKPS1	Akaal Primary School, Grange Avenue, Sunny Hill.	Roadside	434523	333311	NO2	N	N/A	1.9	No	1.8
APS1	Allenton Primary School, Brookhouse Street, Allenton	Roadside	436839	332452	NO2	N	N/A	2.4	No	1.8
AIS1	Alvaston Infant School, Elvaston Lane, Alvaston	Roadside	439020	333134	NO2	N	N/A	1.9	No	1.8
BWP1	Borrow Wood Primary School, Arundel Drive, Spondon	Roadside	440734	336067	NO2	N	N/A	0.9	No	1.8
BLP1	Bishop Lonsdale Primary School, St Albans Road, Warwick Avenue	Roadside	433968	335166	NO2	N	N/A	2.0	No	1.8



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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
CSA1	Castleward Spencer Academy, Canal Street	Roadside	435922	335562	NO2	N	N/A	2.3	No	1.8
CTHP1	Cherry Tree Hill Primary School, Sunny Grove, Chaddesden	Roadside	438508	336350	NO2	N	N/A	0.9	No	1.8
HPA1	Hackwood Primary Academy, Starflower Way, Mickleover	Roadside	430621	336227	NO2	N	N/A	2.0	No	1.8
HPS1	Hardwick Primary School, Dover Street, Normanton	Roadside	435111	334442	NO2	N	N/A	2.4	No	1.8
RJS1	Ravensdale Junior School, Devonshire Drive, Mickelover	Roadside	431245	335379	NO2	N	N/A	2.1	No	1.8
RPP1	Reigate Park Primary School, Reigate Drive, Mackworth	Roadside	431947	337193	NO2	N	N/A	1.9	No	1.8
ARCA1	St Albans RC Academy, Oakleigh Avenue, Chaddesden	Roadside	437775	336773	NO2	N	N/A	2.0	No	1.8
TBS1	The Bemrose School, Rowditch Avenue	Roadside	433734	335694	NO2	Y - No.1 Ring Roads	N/A	2.1	No	1.8

**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.3 – Annual Mean NO<sub>2</sub> Monitoring Results: Automatic Monitoring (µg/m<sup>3</sup>)**

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2023 (%) <sup>(2)</sup>	2019	2020	2021	2022	2023
UKA00630	435763	336306	Roadside	62	62	35	26	26	27	28

- ☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**
- ☒ **Reported concentrations are those at the location of the monitoring site (annualised, as required), i.e. prior to any fall-off with distance correction.**
- ☒ **Where exceedances of the NO<sub>2</sub> annual mean objective occur at locations not representative of relevant exposure, the fall-off with distance concentration has been calculated and reported concentration provided in brackets for 2023.**

**Notes:**

The annual mean concentrations are presented as µg/m<sup>3</sup>.

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

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%).

**Table A.4 – Annual Mean NO<sub>2</sub> Monitoring Results: Non-Automatic Monitoring (µg/m<sup>3</sup>)**

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2023 (%) <sup>(2)</sup>	2019	2020	2021	2022	2023
AB1	434846	335657	Roadside	100	100	29.0	24.0	27.6	24.8	27.3
AR1	433633	336850	Roadside	100	100	38.0	30.8	31.1	33.3	27.5
AR2	433459	336918	Roadside	100	100	29.0	22.2	22.3	21.2	21.2
AR3	433796	336786	Roadside	100	100	27.0	20.5	21.3	21.1	20.3
AR4	434307	336565	Roadside	16.7	17.3	29.0	24.5	24.8	25.8	-
AS1	434545	336570	Roadside	75	75	32.0	25.1	25.5	27.0	25.6
AS2	434579	336571	Roadside	100	100	28.0	23.6	25.6	23.1	21.7
BR1	435764	336306	Urban Background	83.3	82.7	39.0	28.4	31.5	34.0	29.2
BUR1	434785	335241	Roadside	100	10	32.0	25.2	28.1	26.2	26.8
BUR2	435025	335508	Roadside	75	75	30.0	28.8	27.6	27.5	29.3
CAV1	434820	336505	Roadside	100	100	23.0	17.8	18.6	17.5	17.6
CC1	435725	335802	Kerbside	91.7	90.4	28.0	18.8	20.1	19.8	18.9
CH1	435496	336294	Urban Centre	91.7	92.3	25.0	19.9	19.1	20.3	18.3

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2023 (%) <sup>(2)</sup>	2019	2020	2021	2022	2023
CM1	435262	336157	Roadside	58.3	59.6	22.0	16.8	17.4	18.5	14.6
DER1	438942	335864	Roadside	100	100	28.0	24.6	24.9	24.8	23.8
DR1	434814	337041	Roadside	100	100	27.0	19.9	22.0	20.6	20.0
DR2	434937	336916	Roadside	100	100	27.0	21.7	23.8	23.1	21.4
EG1	436064	336487	Roadside	83.3	84.6	<b>40.0</b>	31.1	35.3	32.1	30.1
FG1	434718	336375	Roadside	100	100	28.0	21.5	23.3	23.5	21.5
FG2	434450	336523	Roadside	100	100	31.0	23.3	26.2	26.8	24.9
FG3	434497	336510	Roadside	16.7	17.3	33.0	25.1	27.5	27.1	-
GC1	439776	335696	Roadside	100	100	24.0	18.7	19.8	18.8	18.1
HL1	437382	336044	Roadside	100	100	26.0	21.3	21.3	20.5	23.0
HS1	437196	334410	Roadside	91.7	90.4	29.0	22.8	26.2	25.8	22.9
KL1	440206	335650	Roadside	100	100	24.0	19.4	20.0	19.7	18.7
KL2	440198	335611	Roadside	100	100	21.0	16.7	18.3	17.1	16.5
KR1	434775	337086	Roadside	100	100	27.0	20.9	23.1	23.4	21.4

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2023 (%) <sup>(2)</sup>	2019	2020	2021	2022	2023
LR1	437676	334090	Roadside	100	100	<b>42.0</b>	35.1	38.8	38.7	38.2
LR2	438162	333654	Roadside	100	100	33.0	26.2	28.2	29.2	28.1
LW1	439647	335575	Roadside	100	100	23.0	19.3	20.3	19.3	19.0
ML1	435477	336176	Roadside	91.7	92.3	34.0	25.1	26.0	24.7	23.4
MR1	435439	336817	Roadside	58.3	61.5	28.0	21.5	25.7	26.3	25.2
NR1	439899	335348	Roadside	100	100	37.0	32.2	35.4	31.9	31.0
NR2	436700	336637	Roadside	91.7	92.3	<b>44.0</b>	36.2	<b>42.1</b>	<b>41.1</b>	35.7
NR3	435795	336625	Roadside	100	100	29.0	23.2	23.2	21.9	22.5
NR4	435586	336642	Roadside	75	75	29.0	24.8	25.2	22.4	27.0
NS1	435091	333526	Roadside	100	100	31.0	25.6	34.0	29.4	28.8
NS2	435022	333581	Roadside	83.3	82.7	33.0	29.2	33.6	31.1	30.3
OPR1	436809	332826	Roadside	100	100	27.0	20.6	23.1	21.2	20.3
OPR2	435716	333327	Roadside	100	100	37.0	29.5	33.6	31.4	30.2
OR1	436992	332713	Roadside	100	100	24.0	19.9	22.1	22.0	20.0

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2023 (%) <sup>(2)</sup>	2019	2020	2021	2022	2023
OR2	436046	334857	Roadside	100	100	31.0	26.5	28.0	28.5	28.1
OR3	435534	335467	Roadside	100	100	34.0	29.2	31.7	30.5	29.2
OR4	435440	335717	Roadside	83.3	84.6	29.0	22.4	26.6	25.5	24.9
PL1	434364	337881	Urban Background	100	100	15.0	11.1	11.8	10.3	13.4
RS1	433118	336650	Roadside	100	100	24.0	18.8	19.9	18.7	16.4
RT1	435653	335706	Roadside	66.7	65.4	33.0	24.0	28.9	27.2	27.7
RW1	438535	333508	Roadside	100	100	31.0	25.4	27.3	25.6	23.9
SMC1	435203	336779	Roadside	100	100	37.0	28.5	30.7	30.2	27.3
SMC2	435249	336785	Roadside	91.7	92.3	25.0	19.9	25.8	20.6	19.7
SR1	439789	335412	Roadside	100	100	29.0	21.9	24.8	20.2	19.2
SS1	434748	336352	Roadside	58.3	59.6	<b>45.0</b>	<b>40.1</b>	<b>40.8</b>	37.6	32.8
SS2	434766	336329	Roadside	75	75	28.0	21.9	25.6	24.2	22.1
SS3	434703	336213	Roadside	91.7	90.4	27.0	23.1	26.6	25.5	24.3
SS4	434688	336155	Roadside	91.7	90.4	34.0	28.1	32.1	28.5	28.4

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2023 (%) <sup>(2)</sup>	2019	2020	2021	2022	2023
UNR2	433190	335380	Roadside	100	100	27.0	21.9	22.6	21.9	21.0
UNR3	433186	335327	Roadside	100	100	27.0	21.9	23.2	20.2	21.2
UNR4	433786	335778	Roadside	83.3	84.6	36.0	27.8	31.7	29.3	31.4
UNR5	433887	335804	Roadside	100	100	32.0	27.1	29.7	26.4	27.2
UNR6	434227	335958	Roadside	100	100	26.0	20.8	23.3	22.2	22.1
UNR7	434461	336041	Roadside	100	100	22.0	18.5	21.2	19.7	20.0
UOR1	433877	335850	Roadside	100	100	28.0	23.5	24.0	23.6	22.4
UOR2	434182	336329	Roadside	0	0	23.0	18.6	19.4	17.8	-
UOR3	434109	336255	Roadside	91.7	92.3	28.0	23.9	23.4	24.2	23.1
UOR4	434310	336533	Roadside	8.3	7.7	31.0	25.2	28.0	29.2	-
WH1	433161	336692	Roadside	100	100	26.0	19.9	23.1	20.2	17.4
AKPS1	434523	333311	Roadside	80	34.6	-	-	-	-	15.9
APS1	436839	332452	Roadside	100	42.3	-	-	-	-	12.7
AIS1	439020	333134	Roadside	60	25	-	-	-	-	13.6



Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2023 (%) <sup>(2)</sup>	2019	2020	2021	2022	2023
BWP1	440734	336067	Roadside	80	34.6	-	-	-	-	11.8
BLP1	433968	335166	Roadside	80	34.6	-	-	-	-	11.6
CSA1	435922	335562	Roadside	100	42.3	-	-	-	-	19.6
CTHP1	438508	336350	Roadside	100	42.3	-	-	-	-	13.7
HPA1	430621	336227	Roadside	100	42.3	-	-	-	-	9.7
HPS1	435111	334442	Roadside	100	42.3	-	-	-	-	13.0
RJS1	431245	335379	Roadside	100	42.3	-	-	-	-	10.1
RPP1	431947	337193	Roadside	100	42.3	-	-	-	-	12.2
ARCA1	437775	336773	Roadside	40	17.3	-	-	-	-	-
TBS1	433734	335694	Roadside	80	32.7	-	-	-	-	17.4

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  $\mu\text{g}/\text{m}^3$ .

Exceedances of the NO<sub>2</sub> annual mean objective of  $40\mu\text{g}/\text{m}^3$  are shown in **bold**.

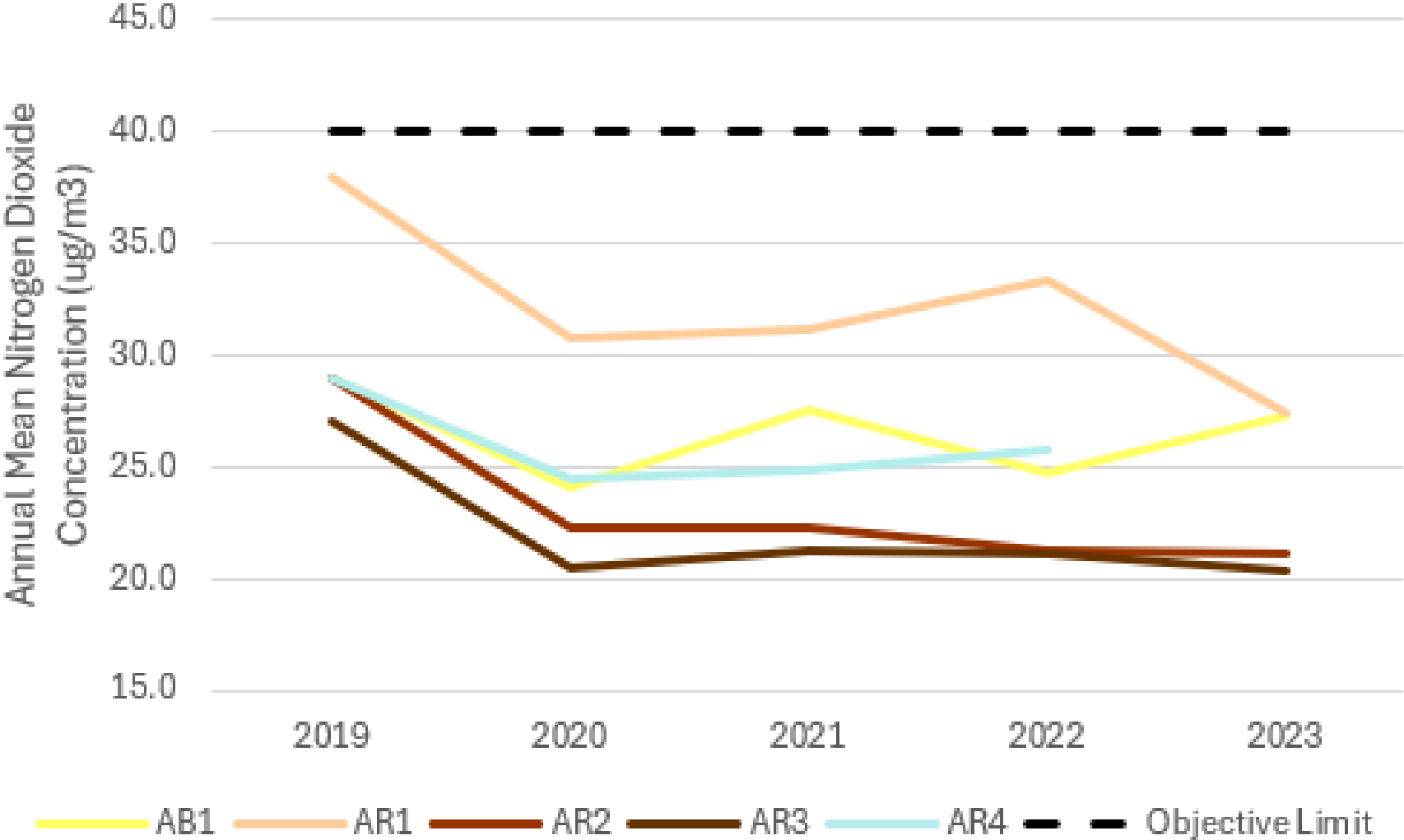
NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

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.

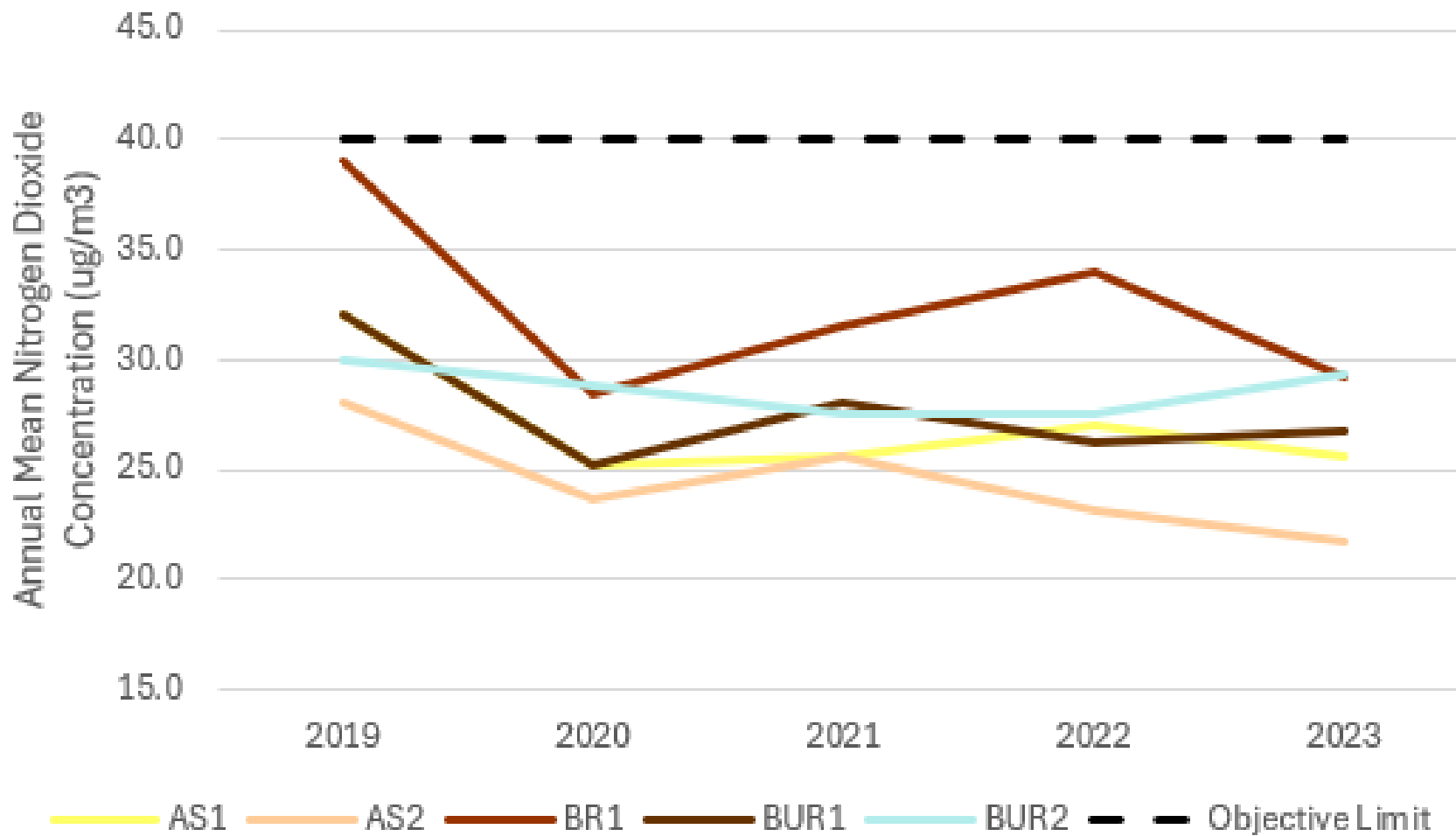
Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

- (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 NO<sub>2</sub> Concentrations



**Figure A.2 – Trends in Annual Mean NO<sub>2</sub> Concentrations**



**Figure A.3 – Trends in Annual Mean NO<sub>2</sub> Concentrations**

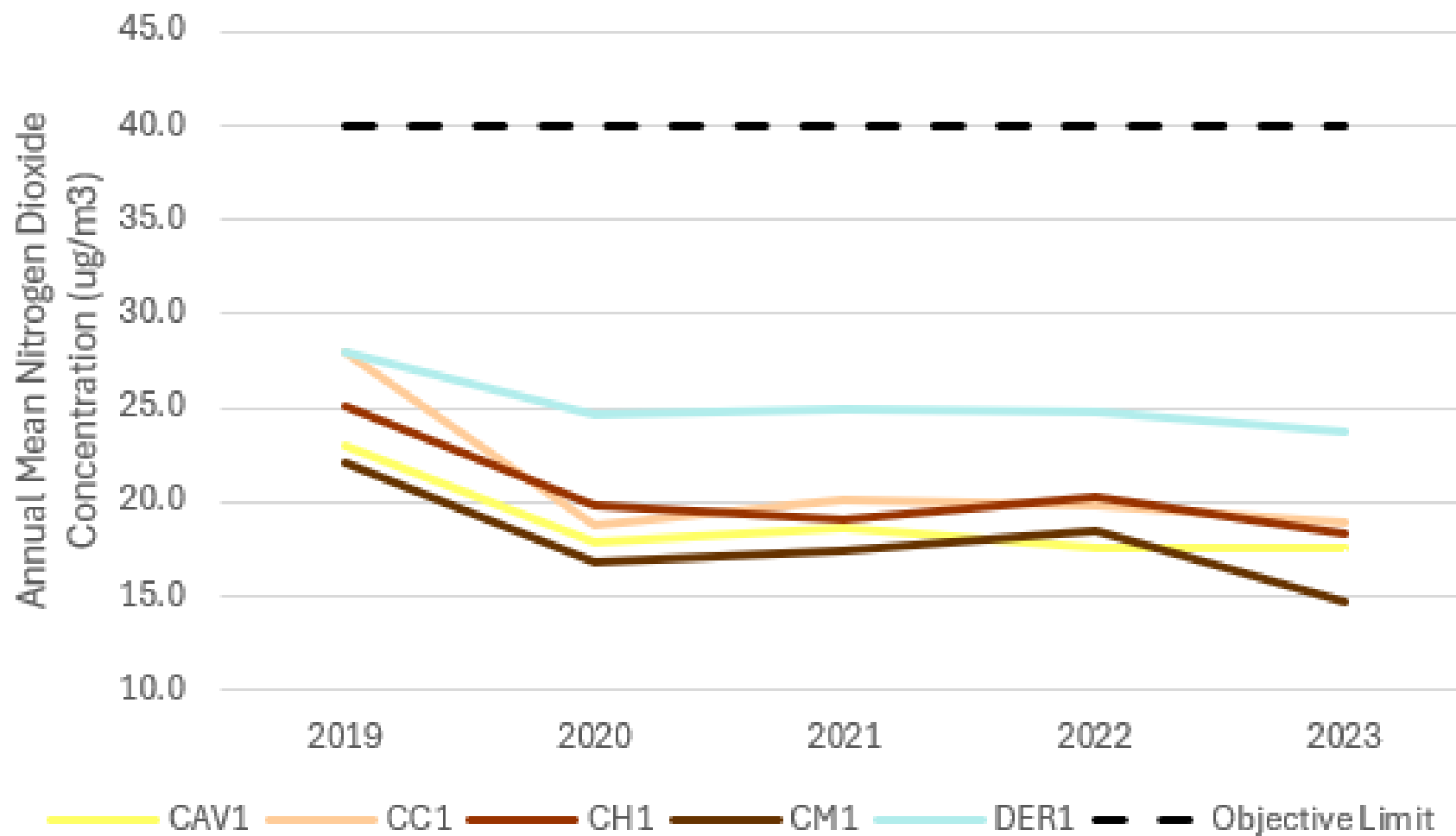
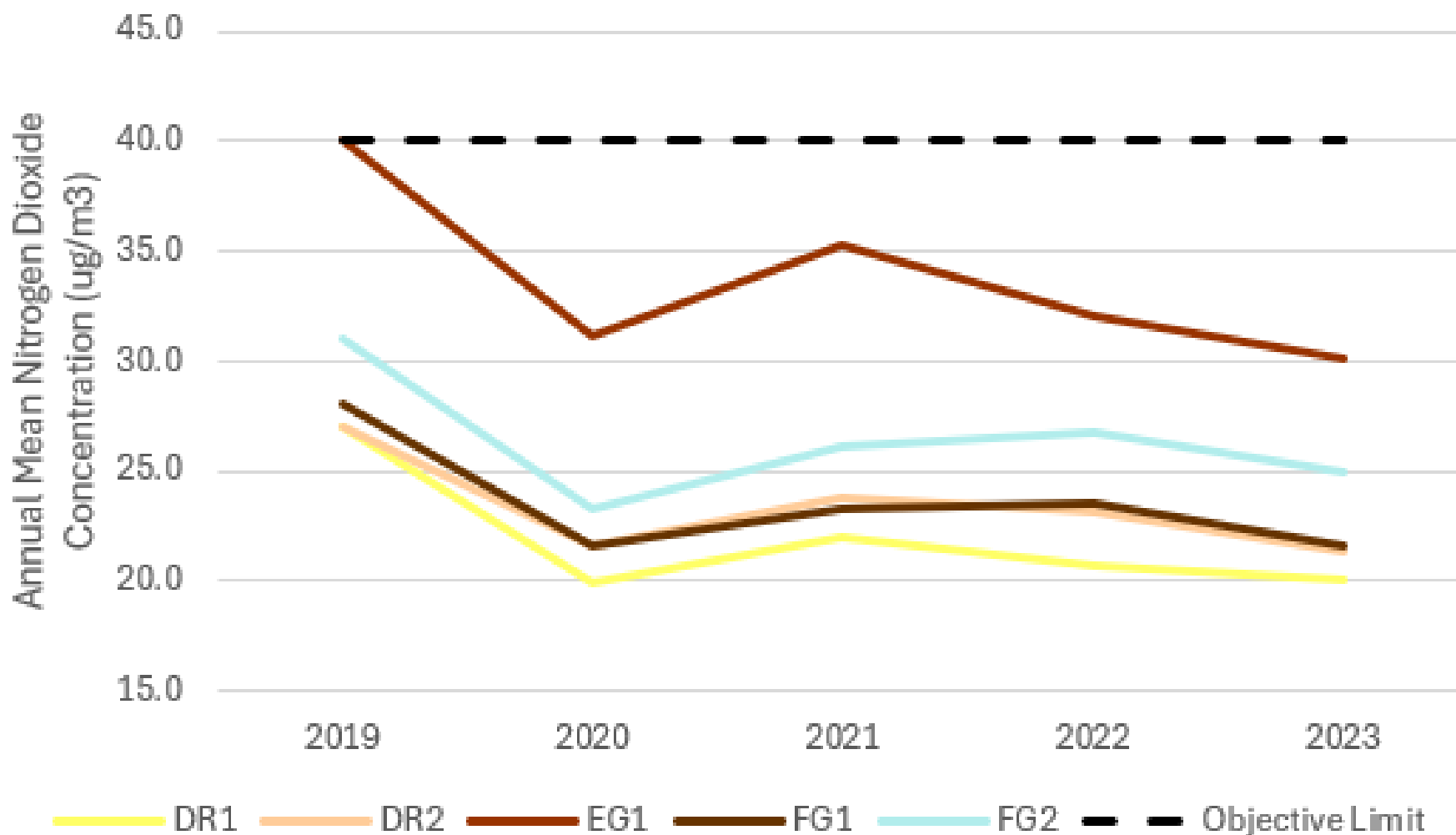
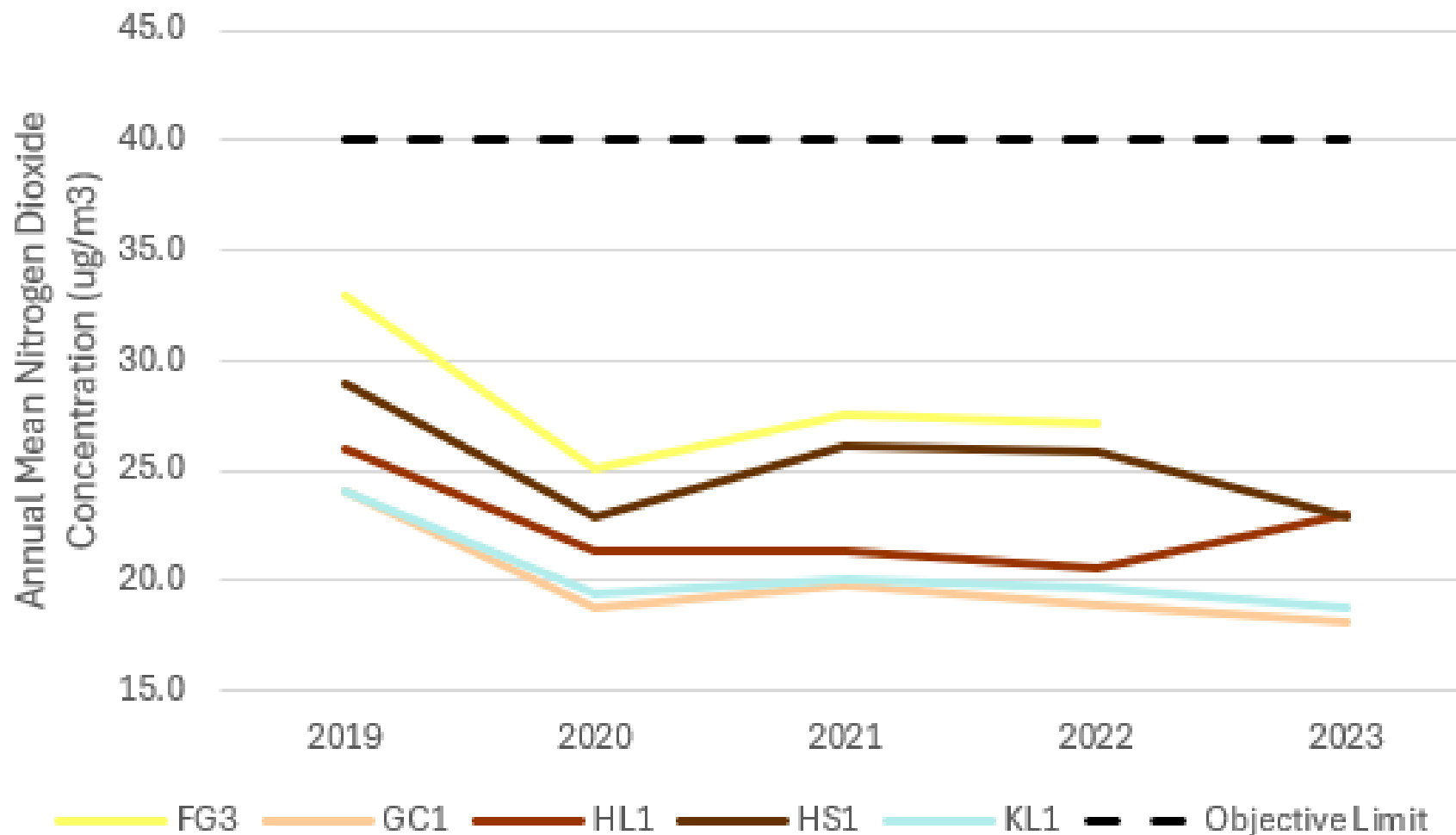


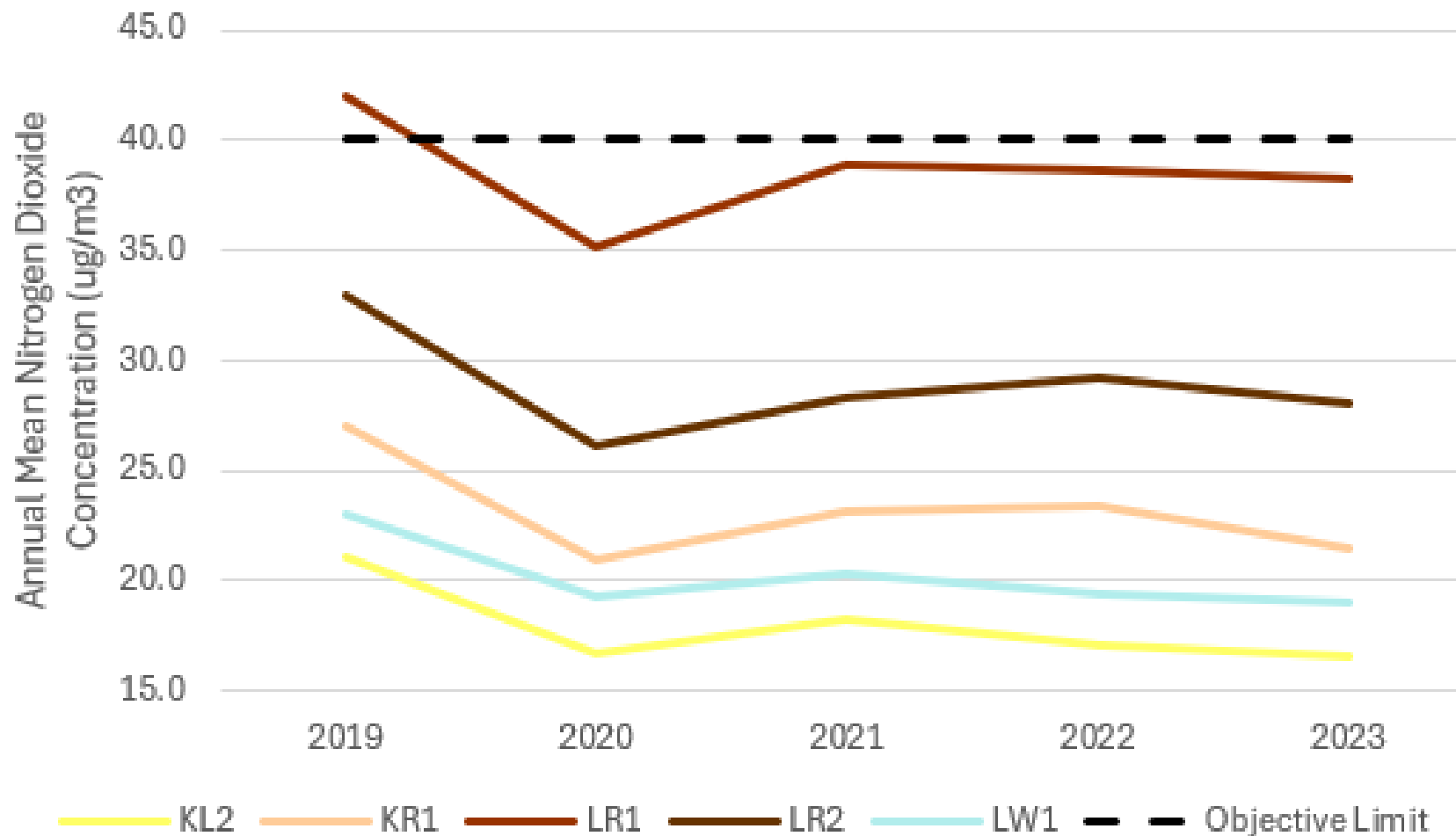
Figure A.4 – Trends in Annual Mean NO<sub>2</sub> Concentrations



**Figure A.5 – Trends in Annual Mean NO<sub>2</sub> Concentrations**

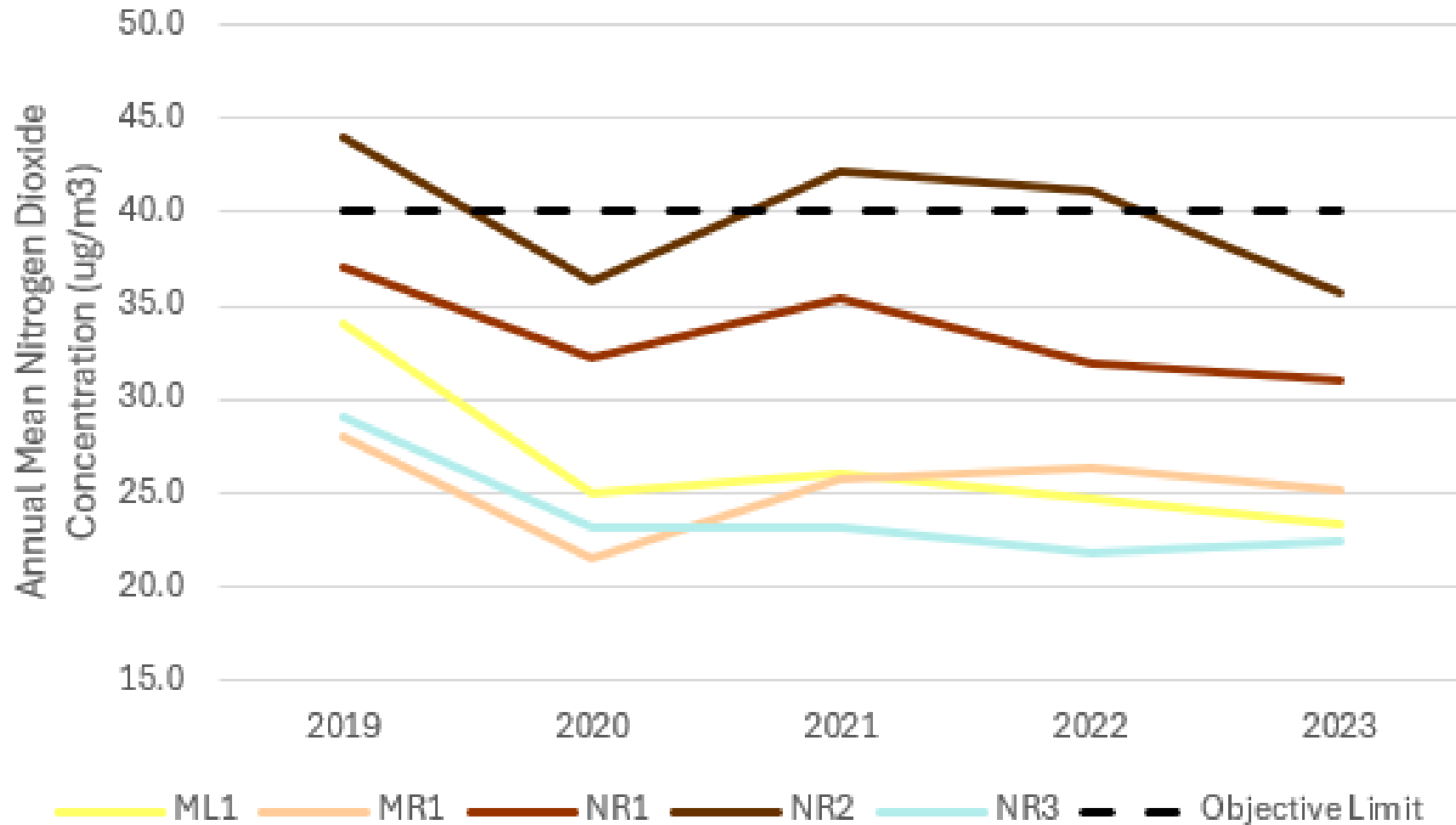


**Figure A.6 – Trends in Annual Mean NO<sub>2</sub> Concentrations**

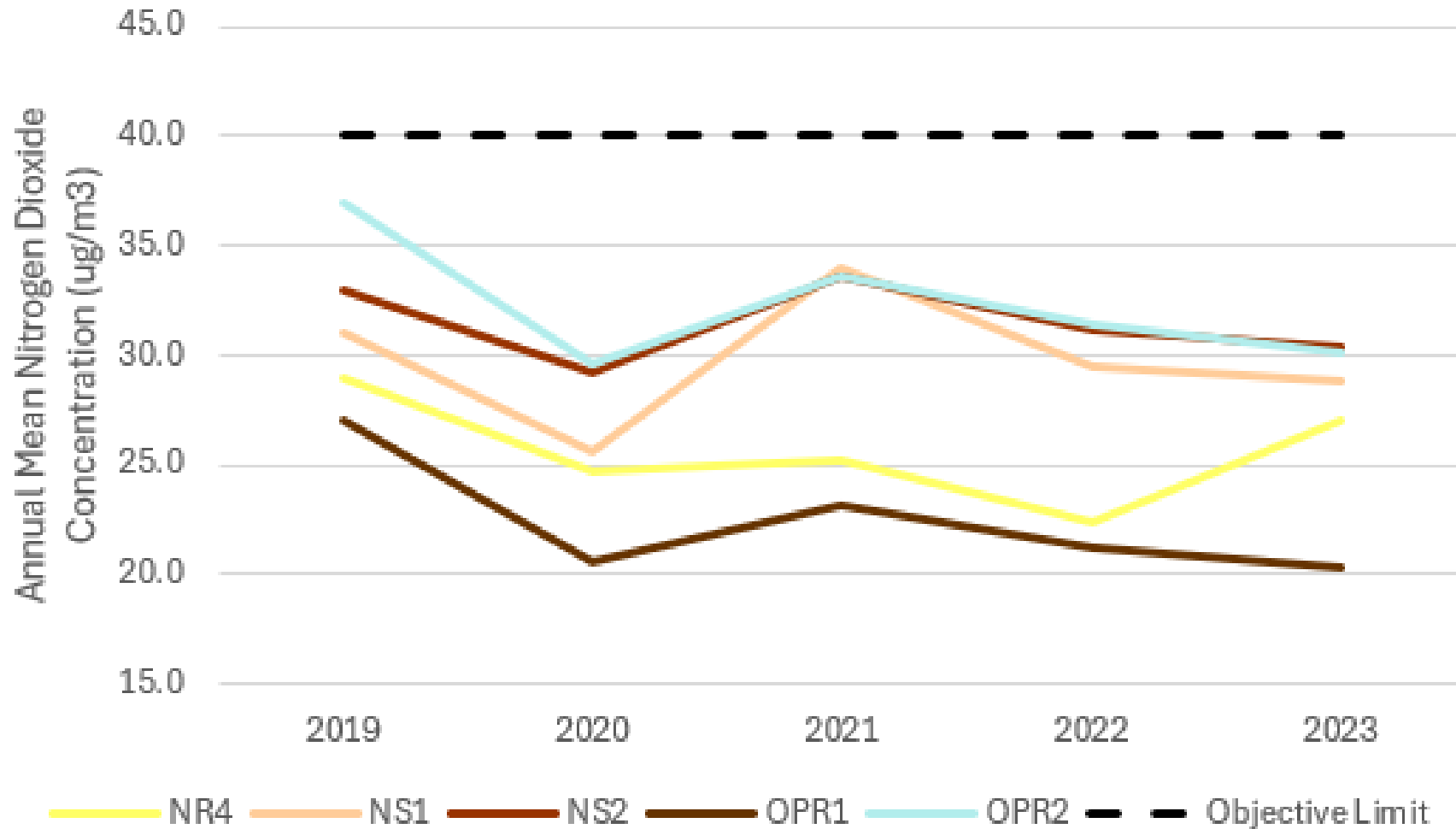




**Figure A.7 – Trends in Annual Mean NO<sub>2</sub> Concentrations**



**Figure A.8 – Trends in Annual Mean NO<sub>2</sub> Concentrations**



**Figure A.9 – Trends in Annual Mean NO<sub>2</sub> Concentrations**

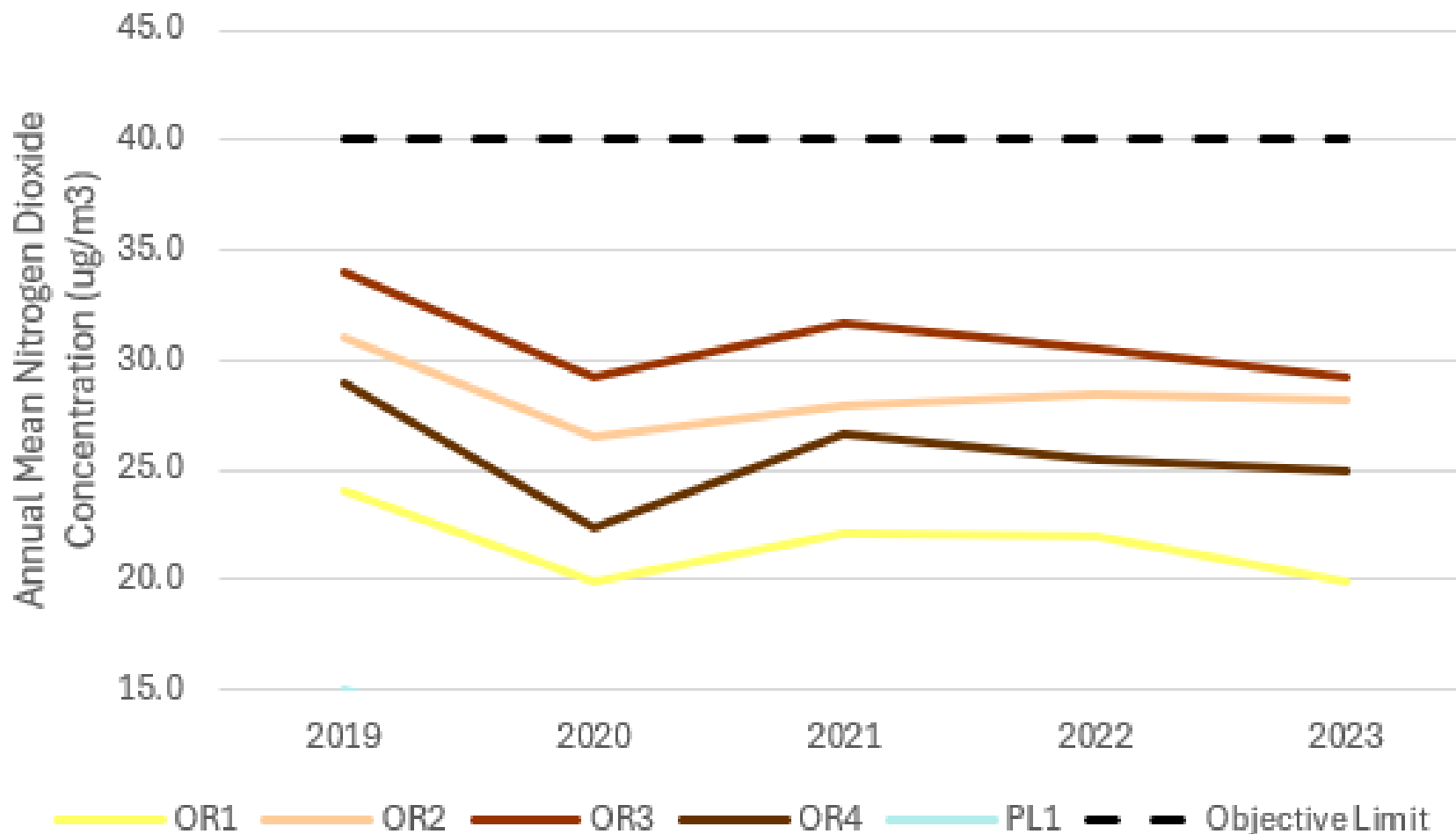
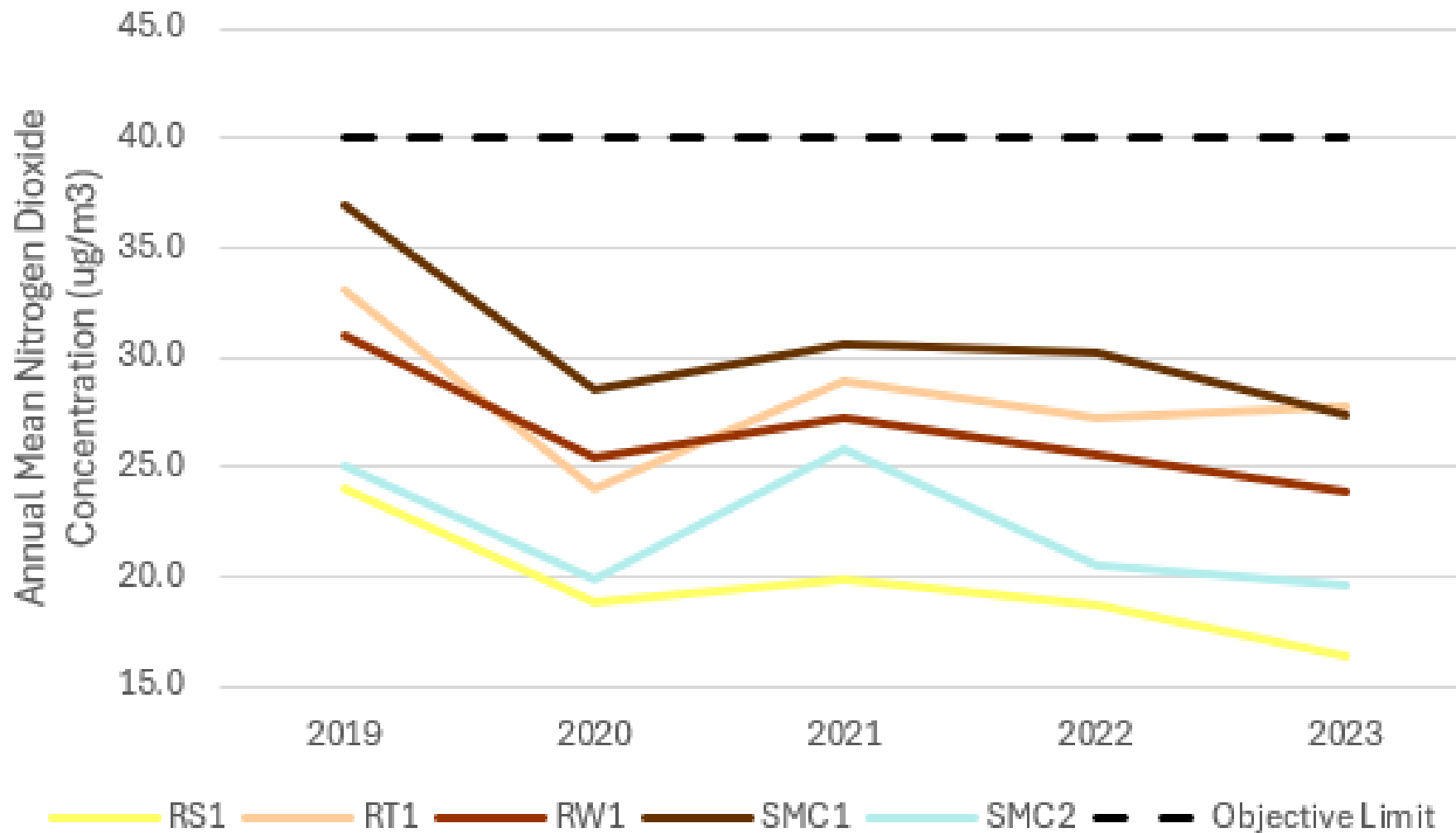
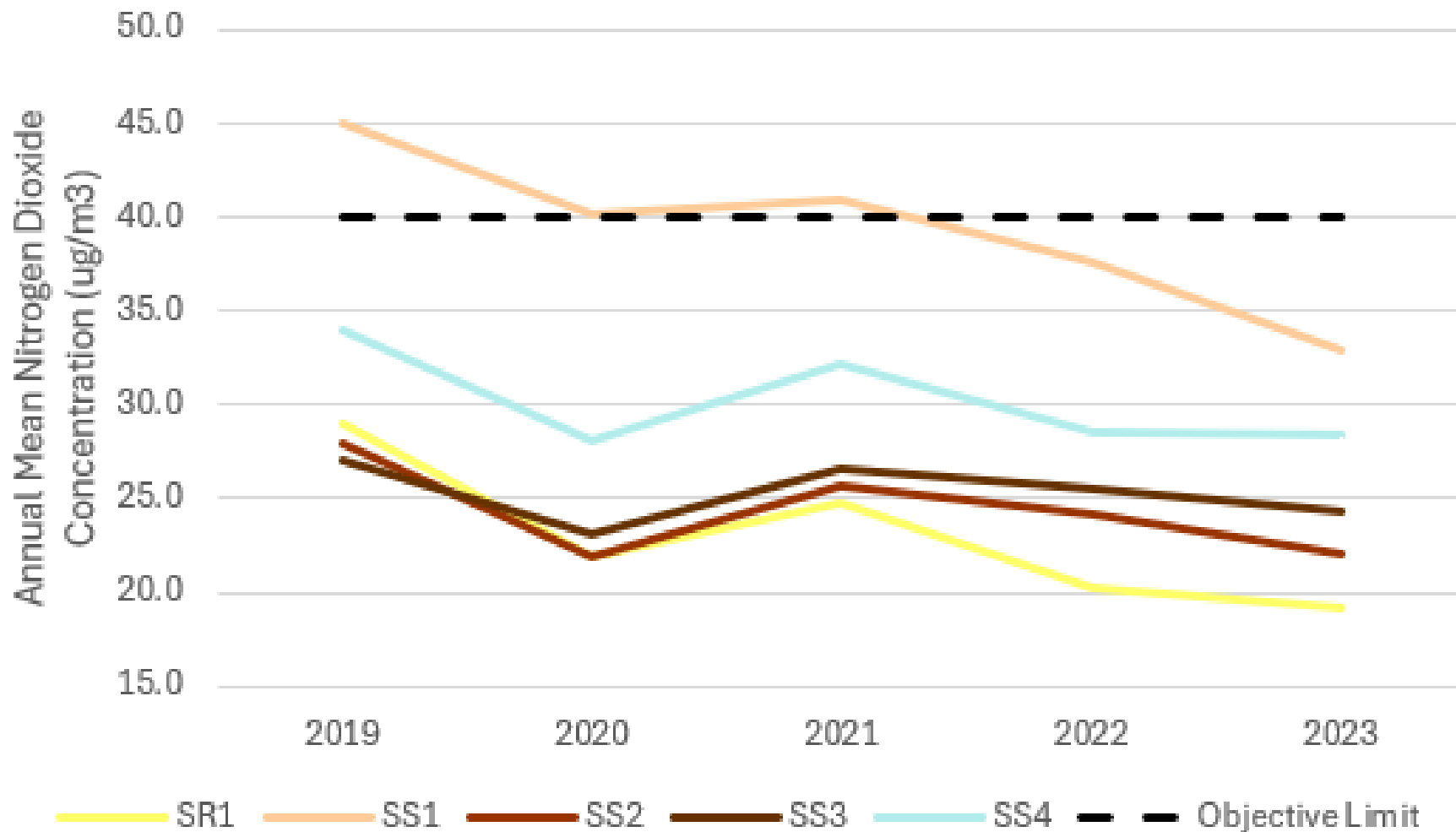


Figure A.10 – Trends in Annual Mean NO<sub>2</sub> Concentrations



**Figure A.11 – Trends in Annual Mean NO<sub>2</sub> Concentrations**



**Figure A.12 – Trends in Annual Mean NO<sub>2</sub> Concentrations**

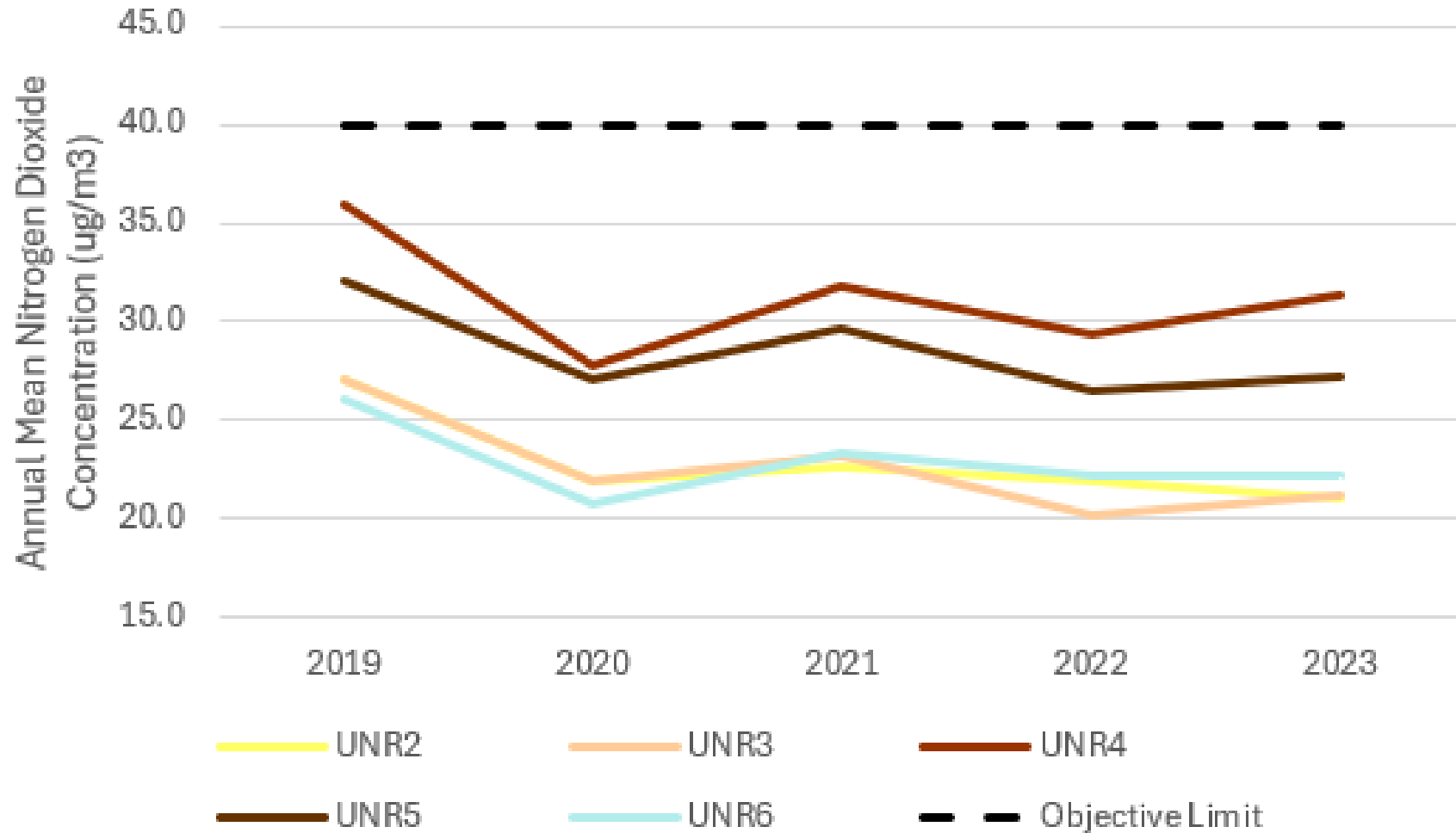
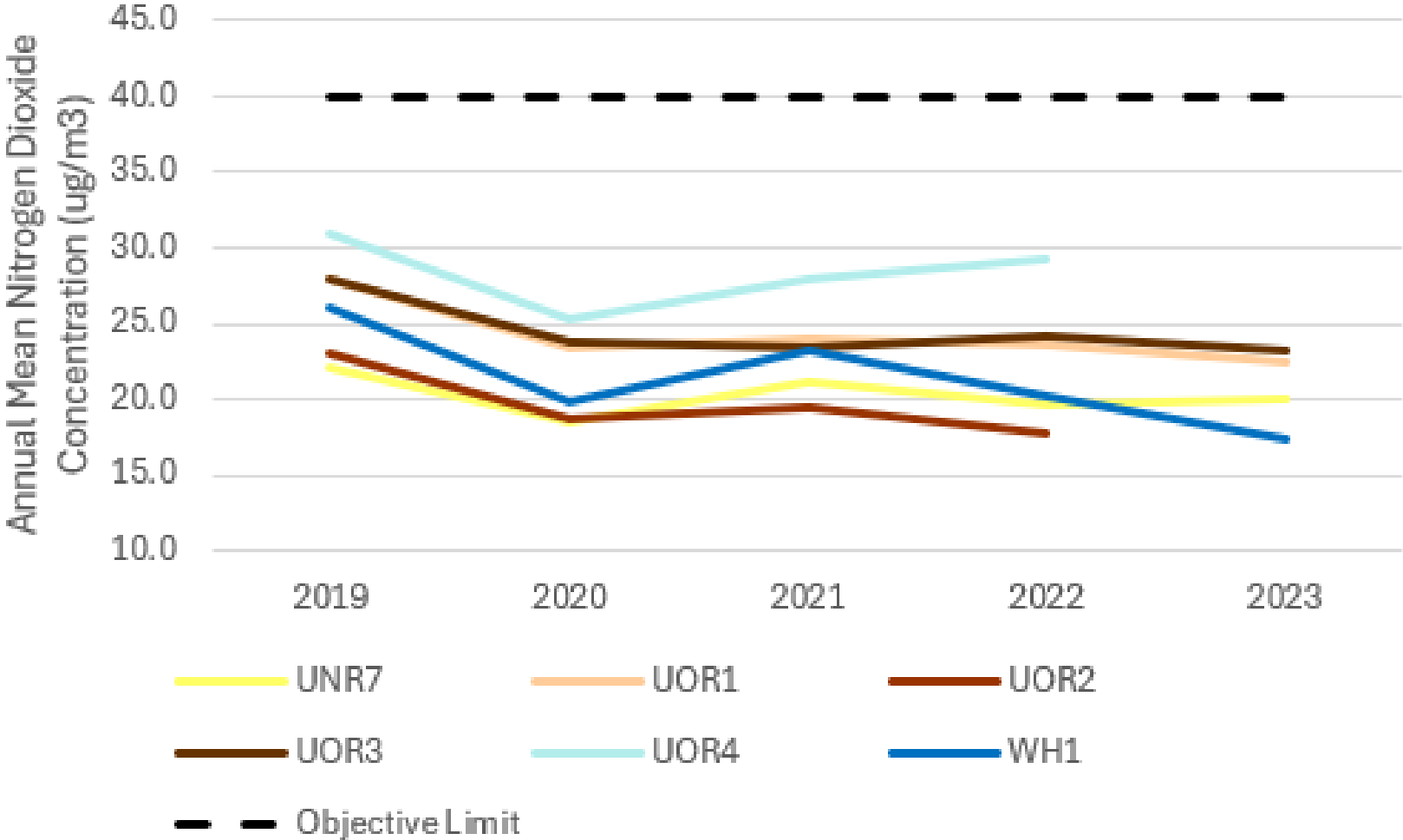


Figure A.13 – Trends in Annual Mean NO<sub>2</sub> Concentrations



**Table A.5 – 1-Hour Mean NO<sub>2</sub> Monitoring Results, Number of 1-Hour Means > 200µg/m<sup>3</sup>**

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2023 (%) <sup>(2)</sup>	2019	2020	2021	2022	2023
UKA00630	435763	336306	Roadside	62	62	0	0	0	0	0

**Notes:**

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m<sup>3</sup> have been recorded.

Exceedances of the NO<sub>2</sub> 1-hour mean objective (200µg/m<sup>3</sup> not to be exceeded more than 18 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

(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%).



## Appendix B: Full Monthly Diffusion Tube Results for 2023

Table B.1 – NO<sub>2</sub> 2023 Diffusion Tube Results (µg/m<sup>3</sup>)

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 (x0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
AB1	434846	335657	37.8	46.9	36.1	38.1	38.9	37.8	20.6	25.0	37.6	38.7	36.2	31.4	35.4	27.3	-	
AR1	433633	336850	41.2	43.5	45.5	10.3	39.1	37.4	33.9	35.8	41.8	23.5	42.3	33.6	35.7	27.5	-	
AR2	433459	336918	30.5	35.9	25.4	27.2	33.9	29.6	21.9	26.8	24.6	26.4	26.2	21.6	27.5	21.2	-	
AR3	433796	336786	29.2	31.3	25.8	26.6	26.2	24.7	14.2	20.5	26.7	37.1	28.8	25.8	26.4	20.3	-	
AR4	434307	336565					27.0	24.8							-	-	-	
AS1	434545	336570	40.7	35.0	30.7				31.2	30.7	36.2	30.4	28.5	36.1	33.3	25.6	-	
AS2	434579	336571	26.6	35.9	30.3	37.4	35.8	32.4	17.1	23.5	33.0	15.8	33.3	16.4	28.1	21.7	-	
BR1	435764	336306	49.6	53.5	38.5	32.2	28.5	12.9			30.0	39.9	49.7	44.2	37.9	29.2	-	
BUR1	434785	335241	42.1	37.1	33.8	36.1	30.3	32.4	26.8	31.3	36.3	37.3	37.7	36.1	34.8	26.8	-	
BUR2	435025	335508	46.2	43.3	37.0	36.3	30.6			28.6		39.6	45.0	36.4	38.1	29.3	-	
CAV1	434820	336505	29.0	28.2	24.0	32.7	15.9	18.4	16.5	18.4	25.0	24.1	16.9	24.8	22.8	17.6	-	
CC1	435725	335802	29.6	31.3	25.7	24.6	16.6	20.6	18.0	19.9	26.4	30.8		27.1	24.6	18.9	-	
CH1	435496	336294		30.9	22.7	24.8	17.9	18.3	17.8	18.1	26.7	29.4	27.2	27.8	23.8	18.3	-	
CM1	435262	336157		27.1	17.8				12.5	17.5	4.0	33.9	28.4		20.2	14.6	-	
DER1	438942	335864	41.9	38.8	33.2	28.2	26.1	26.5	23.4	26.1	32.4	29.4	31.9	32.6	30.9	23.8	-	
DR1	434814	337041	32.1	32.4	27.5	28.5	22.2	23.0	18.1	23.4	31.3	21.6	25.7	26.3	26.0	20.0	-	
DR2	434937	336916	31.5	34.3	28.3	32.8	27.8	28.1	18.5	22.1	32.3	27.0	23.1	27.2	27.8	21.4	-	
EG1	436064	336487			41.2	45.3	49.8	45.1	29.4	39.0	41.7	39.6	31.1	28.3	39.1	30.1	-	

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 (x0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
FG1	434718	336375	35.1	32.8	36.8	37.0	25.0	25.9	11.2	19.2	25.7	41.0	15.5	30.5	28.0	21.5	-	
FG2	434450	336523	36.8	40.5	30.7	23.4	35.2	33.7	25.9	29.4	36.4	37.2	36.0	23.5	32.4	24.9	-	
FG3	434497	336510		46.8	18.3										-	-	-	
GC1	439776	335696	33.7	25.9	24.2	27.4	18.9	24.0	20.0	20.3	27.3	23.5	13.7	23.1	23.5	18.1	-	
HL1	437382	336044	59.3	72.4	26.5	25.5	14.9	17.3	23.4	19.0	16.1	26.0	24.7	33.8	29.9	23.0	-	
HS1	437196	334410	36.6	39.2		32.8	23.6	24.7	23.3	25.6	31.1	33.6	24.8	32.3	29.8	22.9	-	
KL1	440206	335650	30.1	29.9	27.4	21.2	19.6	22.2	18.8	22.5	25.9	25.8	28.9	19.3	24.3	18.7	-	
KL2	440198	335611	30.8	29.0	20.2	20.3	18.8	16.9	13.8	19.7	19.3	24.1	24.5	20.5	21.5	16.5	-	
KR1	434775	337086	30.9	31.1	24.6	27.6	24.0	28.5	26.3	26.4	28.7	29.4	31.6	25.1	27.9	21.4	-	
LR1	437676	334090	56.4	53.5	54.0	44.8	42.0	38.9	42.6	46.4	53.4	60.9	57.2	45.8	49.7	38.2	-	
LR2	438162	333654	49.4	47.0	39.4	34.5	30.4	28.8	28.9	33.8	37.0	43.2	39.6	25.8	36.5	28.1	-	
LW1	439647	335575	35.4	34.5	23.7	21.8	16.8	17.0	21.0	23.2	21.0	25.4	31.5	24.1	24.6	19.0	-	
ML1	435477	336176		47.1	26.5	33.2	27.0	26.4	20.3	26.2	34.0	29.4	30.6	33.0	30.3	23.4	-	
MR1	435439	336817			31.0	32.5		26.4	26.5	27.4		39.3	36.2		31.3	25.2	-	
NR1	439899	335348	51.2	48.9	43.2	37.4	33.8	32.7	34.4	37.2	42.5	37.8	42.1	42.3	40.3	31.0	-	
NR2	436700	336637	39.4	33.9	55.1	50.6	51.3	44.3		42.3	43.6	54.8	54.3	40.5	46.4	35.7	-	
NR3	435795	336625	37.8	37.0	26.8	28.9	20.3	24.6	22.1	22.6	31.1	35.8	32.8	30.2	29.2	22.5	-	
NR4	435586	336642	44.5			31.3		25.4	26.7	30.0	38.3	38.1	37.4	43.6	35.0	27.0	-	
NS1	435091	333526	40.3	44.9	41.3	47.3	45.3	43.1	21.8	29.8	38.7	36.5	27.5	32.5	37.4	28.8	-	
NS2	435022	333581	39.7	46.5	37.3	47.6	44.5	43.4	24.2			45.0	31.7	34.0	39.4	30.3	-	
OPR1	436809	332826	27.0	31.6	23.5	29.9	29.8	28.1	17.3	21.8	31.0	30.9	27.7	18.5	26.4	20.3	-	

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 (x0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
OPR2	435716	333327	45.3	47.3	43.9	45.9	35.5	40.7	31.5	36.1	41.0	38.4	27.6	37.0	39.2	30.2	-	
OR1	436992	332713	30.3	36.6	26.5	26.6	23.9	23.4	13.8	22.0	27.4	27.3	31.6	22.0	26.0	20.0	-	
OR2	436046	334857	38.7	43.7	35.2	38.5	32.7	35.0	26.9	31.5	37.2	45.2	41.0	32.7	36.5	28.1	-	
OR3	435534	335467	45.2	44.9	40.6	20.7	31.2	32.7	37.5	36.9	43.9	36.3	40.4	44.0	37.9	29.2	-	
OR4	435440	335717	37.6	37.2	33.4	32.1		26.0	24.4	28.9	34.9		38.7	30.4	32.4	24.9	-	
PL1	434364	337881	20.8	18.3	13.8	43.1	8.4	8.7	8.9	9.3	13.4	30.7	18.3	15.8	17.5	13.4	-	
RS1	433118	336650	27.8	28.4	21.8	20.6	18.9	16.8	17.2	20.5	20.6	20.8	23.4	19.0	21.3	16.4	-	
RT1	435653	335706	40.8	45.7	38.9		30.0	30.2	34.2		36.1	26.5			35.3	27.7	-	
RW1	438535	333508	36.9	41.0	30.3	35.5	29.6	28.1	21.7	28.7	33.0	32.8	25.8	28.7	31.0	23.9	-	
SMC1	435203	336779	42.7	45.2	37.9	36.9	33.7	32.9	30.0	34.9	34.8	25.4	40.3	31.4	35.5	27.3	-	
SMC2	435249	336785	32.0	31.9	25.9	32.9	16.0	18.1		19.7	24.3	26.9	26.2	27.1	25.5	19.7	-	
SR1	439789	335412	27.9	31.4	24.1	25.5	18.7	18.3	16.8	22.8	24.0	22.8	33.9	33.1	24.9	19.2	-	
SS1	434748	336352	49.9	54.8				29.5	34.5	44.4			49.8	40.5	43.3	32.8	-	
SS2	434766	336329	29.2	34.1	20.0	34.4		28.3		22.9	33.3		30.3	25.6	28.7	22.1	-	
SS3	434703	336213	37.4	38.0	29.6	30.7	26.0	24.7	28.1		28.8	34.5	37.5	32.0	31.6	24.3	-	
SS4	434688	336155	41.5	41.2	35.3	39.9	34.5	35.5	24.0		42.5	39.0	41.9	29.8	36.8	28.4	-	
UNR2	433190	335380	36.6	33.1	31.0	27.2	24.1	22.4	20.9	23.4	27.0	27.7	31.4	22.8	27.3	21.0	-	
UNR3	433186	335327	31.5	37.2	27.4	27.3	23.1	23.1	22.2	25.2	23.8	28.1	33.1	28.7	27.6	21.2	-	
UNR4	433786	335778	44.4	51.1	37.3	44.3	37.7	38.0		33.0	41.4		46.5	34.1	40.8	31.4	-	
UNR5	433887	335804	51.3	40.0	35.2	35.3	23.4	29.7	28.1	32.2	30.1	32.7	37.9	47.7	35.3	27.2	-	
UNR6	434227	335958	34.1	35.7	29.4	30.4	27.2	25.0	21.8	24.4	29.5	27.9	32.9	26.5	28.7	22.1	-	

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 (x0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
UNR7	434461	336041	28.1	31.6	21.9	26.1	23.1	22.0	14.6	17.8	25.1	48.2	30.9	22.7	26.0	20.0	-	
UOR1	433877	335850	37.5	37.6	28.4	27.9	22.5	22.1	23.7	26.2	26.2	30.9	36.5	29.3	29.1	22.4	-	
UOR2	434182	336329													-	-	-	
UOR3	434109	336255		37.5	28.9	31.4	25.6	20.9	20.7	23.0	33.3	40.5	37.3	31.2	30.0	23.1	-	
UOR4	434310	336533		49.2											-	-	-	
WH1	433161	336692	28.8	31.2	24.4	25.0	22.9	20.9	14.4	19.7	22.6	22.6	18.0	21.3	22.7	17.4	-	
AKPS <sub>1</sub>	434523	333311								12.3	20.8		28.7	24.6	21.6	15.9	-	
APS1	436839	332452								12.2	15.7	22.6	20.2	17.1	17.6	12.7	-	
AIS1	439020	333134									18.0		23.1	19.2	20.1	13.6	-	
BWP1	440734	336067								11.9	13.9	17.8	23.8		16.9	11.8	-	
BLP1	433968	335166								12.6	14.1		18.6	17.9	15.8	11.6	-	
CSA1	435922	335562								20.5	26.3	27.1	34.9	26.8	27.1	19.6	-	
CTHP <sub>1</sub>	438508	336350								11.7	16.2	21.0	26.7	19.1	18.9	13.7	-	
HPA1	430621	336227								10.1	11.6	16.3	15.3	13.9	13.4	9.7	-	
HPS1	435111	334442								15.7	15.7	20.6	19.1	18.4	17.9	13.0	-	
RJS1	431245	335379								8.9	12.8	17.9	15.5	14.7	14.0	10.1	-	
RPP1	431947	337193								9.3	23.0	16.9	19.1	16.1	16.9	12.2	-	
ARCA <sub>1</sub>	437775	336773									24.2		22.3		-	-	-	
TBS1	433734	335694									23.1	27.7	28.1	23.5	25.6	17.4	-	

All erroneous data has been removed from the NO<sub>2</sub> 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.**
- ☒ **Derby City Council confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

**Notes:**

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 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 Derby City Council During 2023

As in 2022, Derby City Council has not identified any new sources relating to air quality within the reporting year of 2023, other than the major developments listed in the Executive Summary.

### Additional Air Quality Works Undertaken by Derby City Council During 2023

A new initiative to monitor air quality at schools started at 13 primary schools in August 2023. However, one site, ARCA 1, did not gather enough data in 2023. The monitoring will carry on through 2024 to help us understand NO<sub>2</sub> levels at our primary schools. Trend graphs will be presented in the 2025 ASR once multiple years of data have been collected.

### QA/QC of Diffusion Tube Monitoring

Derby City Council's diffusion tube supplier, SOCOTEC Didcot, have supplied the following information regarding QA/QC:

- The samples have been analysed in accordance with SOCOTEC's standard operating procedure ANU/SOP/1015. This method meets the guidelines set out in DEFRA's 'Diffusion Tubes for Ambient NO<sub>2</sub> Monitoring: Practical Guidance.
- The tubes were prepared by spiking acetone:triethanolamine (50:50) onto the grids prior to the tubes being assembled. The tubes were desorbed with distilled water and the extract analysed using a segmented flow auto analyser with ultraviolet detection.

There were minor deviations from the DEFRA calendar due to resources and practicalities, however all monthly results are time-weighted to account for this.

### Diffusion Tube Annualisation

Missing diffusion tubes meant that 16 monitoring locations did not achieve the minimum data requirements (75%) during 2023. The data for these sites have therefore been

adjusted to an annual mean, based on the ratio of concentrations during the short-term monitoring period to those over the 2023 calendar year. Annualisation has utilised data from the four closest urban background monitoring sites whose data are available from the Automatic Urban and Rural Network (AURN; <https://uk-air.defra.gov.uk>) where there was sufficient annual data capture (>85%); these sites are listed in Table C.1. As previously stated, monitoring locations AR4, FG3, UOR2, and UOR4 have now regrettably been abandoned due to repeated tampering of the diffusion tubes. ARCA1 also had insufficient data capture and could not be annualised.

**Table C.1 – Annualisation Summary (concentrations presented in  $\mu\text{g}/\text{m}^3$ )**

Site ID	Annualisation Factor Chesterfield Loundsley Green	Annualisation Factor Nottingham Centre	Annualisation Factor Leicester University	Annualisation Factor Stoke-on-Trent Centre	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
CM1	0.9666	0.9336	0.9205	0.9462	0.9417	20.2	19.0
MR1	1.0596	1.0162	1.0611	1.0360	1.0432	31.3	32.7
RT1	1.0053	1.0492	1.0017	1.0271	1.0208	35.3	36.0
SS1	0.9820	1.0200	0.9564	0.9785	0.9842	43.3	42.7
AURN	1.1222	1.0291	1.1028	1.0602	1.0786	26.0	28.0
AKPS1	0.9970	0.9254	0.9492	0.9415	0.9533	21.6	20.6
APS1	0.9473	0.9171	0.9577	0.9399	0.9405	17.6	16.5
AIS1	0.8736	0.8514	0.9103	0.8761	0.8779	20.1	17.6
BWP1	0.9253	0.9054	0.9018	0.9026	0.9088	16.9	15.3
BLP1	0.9970	0.9254	0.9492	0.9415	0.9533	15.8	15.1
CSA1	0.9473	0.9171	0.9577	0.9399	0.9405	27.1	25.5
CTHP1	0.9473	0.9171	0.9577	0.9399	0.9405	18.9	17.8
HPA1	0.9473	0.9171	0.9577	0.9399	0.9405	13.4	12.6
HPS1	0.9473	0.9171	0.9577	0.9399	0.9405	17.9	16.8
RJS1	0.9473	0.9171	0.9577	0.9399	0.9405	14.0	13.1
RPP1	0.9473	0.9171	0.9577	0.9399	0.9405	16.9	15.9
TBS1	0.8485	0.8583	0.9286	0.8896	0.8813	25.6	22.6

## Diffusion Tube Bias Adjustment Factors

Figure C.1 – Diffusion Tube Bias Adjustment Factor Calculation

National Diffusion Tube Bias Adjustment Factor Spreadsheet						Spreadsheet Version Number: 03/24					
Follow the steps below <b>in the correct order</b> to show the results of <b>relevant</b> co-location studies Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.											This spreadsheet will be updated at the end of June 2024 <a href="#">LAQM Helpdesk Website</a>
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.						Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.					
Step 1:		Step 2:	Step 3:	Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List		Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor shown in blue at the foot of the final column.							
If a laboratory is not shown, we have no data for this laboratory.		If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data.	If you have your own co-location study then see footnote. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMhelpdesk@bureauveritas.com or 0800 0327953							
Analysed By	Method	Year	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m <sup>3</sup> )	Automatic Monitor Mean Conc. (Cm) (µg/m <sup>3</sup> )	Bias (B)	Tube Precision	Bias Adjustment Factor (A) (Cm/Dm)	
SOCOTEC Dilcot	50% TEA in acetone	2023	UB	City Of York Council	11	15	12	27.9%	G	0.78	
SOCOTEC Dilcot	50% TEA in acetone	2023	R	City Of York Council	11	22	17	26.8%	G	0.79	
SOCOTEC Dilcot	50% TEA in acetone	2023	R	City Of York Council	9	22	17	33.7%	G	0.75	
SOCOTEC Dilcot	50% TEA in acetone	2023	R	City Of York Council	10	31	25	26.1%	G	0.79	
SOCOTEC Dilcot	50% TEA in acetone	2023	UB	Gravesham Borough Council	12	19	15	25.6%	G	0.80	
SOCOTEC Dilcot	50% TEA in acetone	2023	UB	Gravesham Borough Council	12	23	19	18.4%	G	0.84	
SOCOTEC Dilcot	50% TEA in acetone	2023	R	Ipswich Borough Council	9	26	20	33.0%	G	0.75	
SOCOTEC Dilcot	50% TEA in acetone	2023	R	Ipswich Borough Council	12	36	27	34.3%	G	0.74	
SOCOTEC Dilcot	50% TEA in acetone	2023	R	North East Lincolnshire Council	12	43	26	61.9%	G	0.62	
SOCOTEC Dilcot	50% TEA in acetone	2023	UB	North East Lincolnshire Council	10	13	10	29.1%	G	0.77	
SOCOTEC Dilcot	50% TEA in acetone	2023	R	North East Lincolnshire Council	11	24	21	18.0%	G	0.85	
SOCOTEC Dilcot	50% TEA in acetone	2023	R	Cardiff Council / Shared Regulatory Services	11	41	34	22.2%	G	0.82	
SOCOTEC Dilcot	50% TEA in acetone	2023	UB	Torfaen County Borough Council	11	12	9	43.9%	G	0.70	
SOCOTEC Dilcot	50% TEA in Acetone	2023	R	East Suffolk Council	12	29	21	38.9%	G	0.72	
SOCOTEC Dilcot	50% TEA in Acetone	2023	R	Wrexham County Borough Council	11	17	14	25.2%	G	0.80	
SOCOTEC Dilcot	50% TEA in Acetone	2023	R	Horsham District Council	12	21	17	23.5%	G	0.81	
SOCOTEC Dilcot	50% TEA in Acetone	2023	R	Horsham District Council	10	25	17	43.5%	G	0.70	
SOCOTEC Dilcot	50% TEA in Acetone	2023	R	Horsham District Council	10	23	24	-5.4%	G	1.06	
SOCOTEC Dilcot	50% TEA in Acetone	2023	UI	North Lincolnshire Council	10	14	11	26.2%	G	0.79	
SOCOTEC Dilcot	50% TEA in acetone	2023	R	Bridgend Council	11	32	27	20.8%	G	0.83	
SOCOTEC Dilcot	50% TEA in acetone	2023	R	Cambridge City Council	12	22	18	24.8%	G	0.80	
SOCOTEC Dilcot	50% TEA in acetone	2023	R	Leeds City Council	10	39	29	32.3%	G	0.76	
SOCOTEC Dilcot	50% TEA in acetone	2023	KS	Leeds City Council	10	30	20	48.9%	G	0.67	
SOCOTEC Dilcot	50% TEA in acetone	2023	R	Leeds City Council	12	25	19	30.0%	G	0.77	
SOCOTEC Dilcot	50% TEA in acetone	2023	UC	Leeds City Council	11	26	19	40.0%	G	0.71	
SOCOTEC Dilcot	50% TEA in acetone	2023	KS	Marylebone Road Intercomparison	11	53	38	41.4%	G	0.71	
SOCOTEC Dilcot	50% TEA in acetone	2023	R	Waik Of White Horse District Council	10	22	18	21.2%	G	0.83	
SOCOTEC Dilcot	50% TEA in acetone	2023	UB	Wirral Council	11	15	13	16.7%	G	0.86	
Overall Factor* (28 studies)								Blue		0.77	

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<sub>x</sub>/NO<sub>2</sub> continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Derby City Council have applied a national bias adjustment factor of 0.77 to the 2023 monitoring data. A summary of bias adjustment factors used by Derby City Council over the past five years is presented in Table C.2. The national bias adjustment factor of 0.77 is



for the 50% TEA in acetone method at SOCOTEC Didcot; available at <https://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>).

**Table C.2 – Bias Adjustment Factor**

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	National	03/24	0.77
2022	National	03/23	0.76
2021	National	03/22	0.78
2020	National	03/21	0.77
2019	National	03/19	0.75

### NO<sub>2</sub> Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO<sub>2</sub> concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO<sub>2</sub> fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO<sub>2</sub> concentrations corrected for distance are presented in Table B.1.

No diffusion tube NO<sub>2</sub> monitoring locations within Derby City Council required distance correction during 2023.

### QA/QC of Automatic Monitoring

The automatic monitor in Derby City Council's administrative area is managed by Bureau Veritas and run by DEFRA. Derby City Council is not involved with QA/QC of the monitor.

### Automatic Monitoring Annualisation

The automatic NO<sub>2</sub> monitor did not achieve the minimum data requirements (75%) during 2023. The data for this site have therefore been adjusted to an annual mean, based on the ratio of concentrations during the short-term monitoring period to those over the 2023 calendar year. Annualisation has utilised data from the four closest urban background monitoring sites whose data are available from the Automatic Urban and Rural Network (AURN; <https://uk-air.defra.gov.uk>) where there was sufficient annual data capture (>85%); these sites are listed in Table C.1.

### **NO<sub>2</sub> Fall-off with Distance from the Road**

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO<sub>2</sub> concentration at the nearest location relevant for exposure has been estimated using the NO<sub>2</sub> fall-off with distance calculator available on the LAQM Support website. Where appropriate, automatic annual mean NO<sub>2</sub> concentrations corrected for distance are presented in Table A.3.

No automatic NO<sub>2</sub> monitoring locations within Derby City Council required distance correction during 2023.

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

Maps of monitoring locations and AQMAs within the Derby City Council administrative area are available at: <http://maps.derby.gov.uk>.

Please select the menu in the top left-hand corner > Air Quality Management Data > 'Air Quality Management Areas' and 'Air Quality Monitoring Data' to show locations of monitors in relation to AQMAs.

## Appendix E: Summary of Air Quality Objectives in England

**Table E.1 – Air Quality Objectives in England<sup>7</sup>**

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO <sub>2</sub> )	200µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO <sub>2</sub> )	40µg/m <sup>3</sup>	Annual mean
Particulate Matter (PM <sub>10</sub> )	50µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM <sub>10</sub> )	40µg/m <sup>3</sup>	Annual mean
Sulphur Dioxide (SO <sub>2</sub> )	350µg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO <sub>2</sub> )	125µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO <sub>2</sub> )	266µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	15-minute mean

<sup>7</sup> The units are in microgrammes of pollutant per cubic metre of air (µg/m<sup>3</sup>).

## 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 <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
PM <sub>10</sub>	Airborne particulate matter with an aerodynamic diameter of 10µm or less
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO <sub>2</sub>	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.