



2021 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995
Local Air Quality Management

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Executive Summary: Air Quality in Our Area

Air Quality in Derby

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas^{1,2}.

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages³, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017⁴.

Derby City Council have declared two Air Quality Management Areas (AQMAs) as a result of exceedances in the annual mean nitrogen dioxide (NO₂) objective, predominantly due to road traffic emissions. The extent of the AQMAs can be viewed at

<http://derby.maps.gov.uk>. Derby was previously identified as one of several Local Authorities that needed air quality measures to be put in place, due to the outcome of the National air quality model (PCM) which predicted exceedances of the EU Limit Value for NO₂. As acknowledged in previous reports, the boundary of the inner/outer ring road AQMA is out of date and no longer reflective of current circumstances and subsequently, work is being undertaken to re-design the boundaries of this AQMA. The new boundaries are currently being finalised and the AQMA is due to be formally amended, subject to local consultation and approval.

As for previous years, under the Local Air Quality Management (LAQM) regime, the main air pollutants of concern in Derby continue to be nitrogen dioxide (NO₂) and fine particulate matter (PM_{2.5}). The NO₂ monitoring data from 2020 generally show a continued

¹ Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

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

³ Defra. Air quality appraisal: damage cost guidance, July 2020

⁴ Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

decreasing trend in NO₂ concentrations across Derby. There was only one exceedance of the annual mean NO₂ concentration during 2020, which was recorded at SS1 within the No.1 Ring Roads AQMA, compared to five exceedances in 2019. It is noted, however, that air pollutant concentrations were impacted by the national restrictions in place during 2020 as a result of the global Covid-19 pandemic, and this is discussed in more detail in this report.

Derby City Council have recently prepared a new Air Quality Action Plan (AQAP), which was approved by Cabinet in November 2020 and submitted to DEFRA in December 2020.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy⁵ sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero⁶ sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Extensive funding (£161 million) was confirmed in March 2020 jointly with Nottingham under the Transforming Cities Fund designed to improve connections between major employment sites and promote active travel and public transport. This funding is now being delivered under three main themes:

- City centre connectivity;
- Better connecting Derby, Nottingham and East Midlands Airport; and
- Derby growth corridors.

⁵ Defra. Clean Air Strategy, 2019

⁶ DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

Further details can be found here: <https://www.derby.gov.uk/transport-and-streets/transport-policy/transforming-cities-fund/about-the-transforming-cities-fund/>.

As a result of the Transforming Cities Fund and further funding success, it is an incredibly active time in Derby for the progression of sustainable transport schemes which will assist reductions in air pollution. A number of cycling infrastructure improvement schemes are underway with enhanced cycling infrastructure and new dedicated cycle lanes supporting several key routes across the City, designed to improve connectivity between the City Centre and key employment sites. In addition, public transport links are being improved across the city, including new bus lanes (Morledge and Siddals Road), consolidation of cashless payments/seamless ticketing, and the development of three new 'smart' park and ride facilities with improved cycling and public transport links, upgraded RTI, and waiting and electric charging facilities.

Plans are also underway to establish Derby's first dedicated mass transit link across the city by providing a high-quality electric Rapid Transit (eRT) route directly across the city centre. This will be further supplemented by a Demand Responsive Transport (DRT) service which will link the city centre and rail station to key employment sites including Rolls Royce, Bombardier, and Pride Park.

Derby City Council received Covid-19 related funding in 2020 for temporary measures, such as "keeping everyone cycling" and banning cars on Corporation Street between 7am and 7pm. Continuing these measures is aiming to lock in the air quality improvements that have been observed during the Covid-19 lockdown.

Derby City Council are also trialling an e-scooter hire scheme for key workers.

The Local Roadside NO₂ Plan is also progressing well with full scheme completion expected in early summer 2021. The project includes:

- Changes to the junctions at either end of Stafford Street to limit traffic flow
- changes to improve capacity at the Ashbourne Road/Uttoxeter Old Road junction and on Friar Gate to help provide alternative route choices, whilst improving crossing points and widening some footways.

Conclusions and Priorities

One exceedance of the NO₂ annual mean objective limit was recorded in Derby during 2020. With an annual mean NO₂ concentration of 40.1 µg/m³, SS1 narrowly exceeded the annual

mean NO₂ objective limit of 40µg/m³. SS1 is located at traffic lights on Stafford Street within the No.1 Ring Roads AQMA, meaning that it is still exposed to the pollutants from queuing traffic despite the Covid-19 lockdown.

As seen in Figure A1-A9, the majority of the monitors within Derby show a decreasing trend in NO₂ concentrations., with only 1 location showing an exceedance of the annual mean NO₂ objective limit. As stated above, the boundary of the inner/outer ring road AQMA is out of date and no longer reflective of current circumstances and subsequently, work is being undertaken to re-design the boundaries of this AQMA. The new boundaries are currently being finalised and the AQMA is due to be formally amended, subject to local consultation and approval.

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

- Former Celanese site, Spondon: This site will be a food manufacturing hub of approximately 100 hectares, formerly the site of a chemical plant. The development was granted planning consent in April 2021.
- New link road off the A50: This project is for a new arterial road into the south of the Derby, which includes a new A50 junction and new road to support development in the south of the City within the Infinity Park and Infinity Garden Village development areas. This improvement to the road network has been shown through assessment to improve air quality and was given planning consent in 2021.
- A38 Derby junction scheme: This is a major infrastructure scheme to grade separate three junctions and include a flyover. This scheme has been approved by Development Consent Order but is currently the subject of a legal challenge. The project has a four-year construction programme and prior to the legal challenge was due to begin the main works in September 2021.

The A52 congestion scheme has now been completed. The scheme aims to reduce congestion and increase sustainable travel.

Following the Covid-19 lockdown, Derby City Council aims to lock in the improvements to air quality that have been observed during the lockdown by encouraging the increase in working from home, cycling, and walking.

Derby City Council have recently prepared a new Air Quality Action Plan (AQAP), which was approved by Cabinet in November 2020 and submitted to DEFRA in December 2020. The AQAP focusses on three key priority areas:

Priority 1: Tackling Nitrogen Dioxide (NO₂) hotspots

Priority 2: Improving the overall air quality across Derby

Priority 3: Managing airborne fine particulate matter (PM_{2.5}) exposure

A link to the AQAP can be found in Table 2.1.

Local Engagement and How to get Involved

The Air Quality Action Plan went through two consultations; one on the draft and one on the final issue. The draft AQAP was developed through a public stakeholder group in 2019 which included representatives from business, public transport providers, the taxi trade, local politics, fleet management, the NHS, cycling groups and green campaign initiative representatives.

The Council is 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 impact of Covid-19 meant that these groups were not as active as usual in 2020, however the intention in all cases is to increase the activity of these groups again in 2021. Two public consultations have taken place in the last 12 months specifically on air quality improvement projects, both of which were well-represented in terms of consultation responses and it is therefore considered that the public of Derby are actively involved and engaged in air quality matters in the City.

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 will again be promoting awareness of air quality issues on National Clean Air Day on 17th June 2021. We encourage people to visit <https://www.cleanairday.org.uk/> for useful resources and information on how to get involved.

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1 Local Air Quality Management

This report provides an overview of air quality in Derby during 2020. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) 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 pursuit of the objectives. 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 12 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

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 a link to maps of the AQMAs and also 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 NO₂.

Derby City Council are in the process of developing new boundaries for these AQMAs.

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	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	40.1µg/m3	Derby City Council Air Quality Action Plan 2020	The AQAP is available here .
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	32.3µg/m3	Derby City Council Air Quality Action Plan 2020	The AQAP is available here .

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

Defra's appraisal of last year's ASR can be found in Table 2.3.

Derby City Council has taken forward a number of direct measures during the current reporting year of 2020 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. 22 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 2020 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 include:

- LCWIP is complete, subject to approval and consultation
- Some elements of Roadside NO₂ scheme have now been completed
- Derby City Council's AQAP was approved by Cabinet in Nov 2020
- Tranche 1 of the DfT Emergency Active Travel Fund has been delivered. The delivery of Tranche 2 is now in progress
- E-Scooter hire scheme has been delivered; 35 scooters are in operation, with funding until April 2022
- Beat the Street now complete

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

- LCWIP cabinet approval to be secured and public consultation due this year
- Fleet and travel plans to be completed
- Anti-idling enforcement policy
- AQ Planning Policy
- NO₂ Roadside Scheme due to be fully complete in summer
- Delivery of Tranche 2 Emergency Active Travel Funding

Derby City Council's priorities for the coming year are:

- TCF and FTZ program progression
- Progressing review of AQMA boundaries

- Locking in benefits of Covid-19 lockdown, such as working from home and increased cycling

The principal challenges and barriers to implementation that Derby City Council anticipates facing are:

- Trying to deliver on the various programmes in Table 2.2 given that there are other priorities due to the Covid-19 pandemic.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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	Local Cycling and Walking Infrastructure Plan (LCWIP)	Transport Planning and Infrastructure	Cycle network	2019	2021	DCiC, NCiC, DfT	D2N2 Funding (to create Plan)	NO	Funded	£50k - £100k	Implementation	Reduced vehicle emissions from mode shift.	Completion of Plan	Completed	Completed
2	Updated Council Staff and Fleet Travel Plans and updated Cleaner Fleet Policy	Promoting Travel Alternatives	Workplace Travel Planning	2019	2022	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.
3	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		Aborted	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.
4	Capability Programme	Promoting Travel Alternatives	Workplace Travel Planning	2021	2022	DCiC	LA and Partners through Access Fund, Local Growth Fund and Capability Fund.	NO	Not Funded		Planning	Reduced vehicle emissions	Capability Fund analysis	Awaiting result of Capability Fund bid	
5	EV Charging Infrastructure	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2020	2023	DCiC, NCC, OLEV, EV Charging Providers	OLEV (Go Ultra Low Cities) Funded. Also now TCF and FTZ. Also potential procurement through D2N2 scheme.	NO	Funded		Planning	Reduced vehicle emissions	# New EV Charge Points	21 Charge points installed in DCC owned car parks under OLEV now complete. Commitment to incorporate EV charging into TCF and FTZ mobility hubs. Cabinet Report being produced on possible re-entry into D2N2 scheme.	Needs to be Supported by EV Charging Planning Policy (local and government). Concerns over future costs of maintaining publicly owned EV infrastructure, especially in light of Covid-19 financial recovery.

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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	Bus Retrofit Programme (CBTF)	Vehicle Fleet Efficiency	Vehicle Retrofitting programmes	2020	2020	DCiC, Arriva	Delivered by local private bus operators using CBTF Funding with LA support	YES	Funded	£1 million - £10 million	Completed	Reduced bus emissions	# completed retrofitted buses	All Arriva buses now retro-fitted.	Completed (but only partially as some bus upgrades were not taken forward)
7	Anti-idling Enforcement	Traffic Management	Anti-idling enforcement	2020	2021	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.
8	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.
9	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.

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
10	Derby Roadside NO2 Local Air Quality Plan - Traffic Management Scheme	Traffic Management	UTC, Congestion management, traffic reduction	2020	2021	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	Measures currently being delivered. Due for completion in early summer 2021.	Implementation going ahead, subject to ongoing government advice.
11	National Bus Strategy	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services		2022	DCiC and Local Bus Service Providers	Requirement on all LAs	NO	Funded	£10k - 50k	Planning	Variety of measures within Bus Partnership e.g. anti-idling, emissions standards etc	Completion of Bus Partnership Scheme	Bus Partnership Scheme required to be delivered by April 2022	
12	Updated Air Quality Action Plan (AQAP)	Other	Other	2019	2020	DCiC	LA funded	NO	Funded	£10k - 50k	Completed	Variety of measures proposed following source apportionment modelling across AQMAs	Completion of AQAP	Completed and approved by Cabinet in November 2020.	Resource/staff constraints and ownership of measures following completion of Plan.
13	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?
14	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.

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
15	Review Derby Bonfire Enforcement Policy	Other	Other		2021	DCiC	Derby City Council / PHE	NO	Partially Funded	£10k - 50k	Planning	NO2 and PM2.5 emissions reduction. Hard to quantify.	Completion of Policy.	Political discussion initiated. Next stage is to draft a new policy and undertake public engagement.	Some equalities issues to consider and conflicts with Bonfire Night celebrations. Political/public pressure needs to be considered fully.
16	Transforming Cities Fund (TCF) implementation	Alternatives to private vehicle use	Other	2020	2023	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. Hard to quantify in some cases.	Large variety of measures being delivered under TCF. Examples include: No. of people using new cycling/walking infrastructure and converting car trips to sustainable modes, delivery of EV Charging infrastructure etc	See extensive work programme	See extensive work programme
17	Future Transport Zones (FTZ) Programme	Transport Planning and Infrastructure	Other	2020	2024	DCiC jointly with NCiC	Derby CC delivery jointly with Nottingham CC - £20m awarded under FTZ Fund.	NO	Funded	> £10 million	Planning	Emission reductions to be modelled. 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
18	Moving Derby Forward Programme (Covid-19 emergency transport measures)	Traffic Management	Other	2020	2021	DCiC, DfT	DfT Emergency Active Travel Fund - £238k from tranche 1. More funding being delivered under tranche 2.	NO	Funded	£100k - £500k	Implementation	Emergency measures, so focus is on implementation rather than theoretical measurement.	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	Restrictions on Corporation Street and Victoria Street/Albert Street delivered. Awaiting tranche 2 funding.	

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19	Creation of Air Quality Project Board	Policy Guidance and Development Control	Other policy		2021	DCiC	Derby CC	NO	Funded	< £10k	Planning	Not possible to calculate.	Creation of Board and board meeting programme completed. First meeting taken place.	Board member selection process initiated.	Challenge to get buy-in and commitment from relevant senior officers.
20	Local Growth Fund (LGF)	Alternatives to private vehicle use	Other	2020	2023	DCiC, NCiC, DCC and NCC	Local Growth Fund (LGF) £50k per year until March 2023	NO	Funded	£100k - £500k	Implementation	Emission reductions from mode change trips	No. of businesses provided with support – No. of installed cycle storage bays, shower facilities etc	Ongoing for next 3 years	Main barrier is business engagement
21	Beat the Street	Promoting Travel Alternatives	Promotion of walking	2021	2021	Move More Derby, DCC, Intelligent Health	National Lottery, Sport England	NO	Funded	£50k - £100k	Completed	Reduced vehicle emissions	6 month follow up survey to be sent in September this year which will look at long term behaviour.	28,227 participants (10.7% of Derby population) took part between 31/03/21 and 12/05/21. 81 out of 82 schools took part.	
22	e-Scooter Hire Scheme	Promoting Low Emission Transport	Other	2021	2021	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.	Cost of use of scooters may be a barrier.
23	eRT link Cathedral Quarter to Pride Park (D2200)	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	2020	2023	DCC and Private Partners	TCF	NO	Funded	> £10 million	Implementation	Reduced vehicle emissions by encouraging electric vehicle use	Completion of infrastructure. No. of users.	Draft report due end of June.	
24	3 x P&R Smart Hubs, bus lanes and cycle lanes (D1100)	Transport Planning and Infrastructure	Bus route improvements	2020	2023	DCC and Private Partners	FTZ	NO	Funded	£1 million - £10 million	Implementation	Reduced vehicle emissions	Completion of hubs	A52 Megaloughton Lane issues being discussed. Final Hub layout for A6 Boulton Moor to be agreed. Encouraging potential patronage figures for A38 Royal Derby Hospital.	Issues regarding A38 Royal Derby Hospital to be discussed before site progresses.
25	Derby Strategic corridors (D2300)	Transport Planning and Infrastructure	Bus route improvements	2020	2023	DCC, Bus Providers and Private Partners	TCF	NO	Funded	£1 million - £10 million	Implementation	Reduced bus emissions		Draft reports for corridor improvements issued for review. Work has started on mapping and packaging the remaining routes of the network.	

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
26	Public Realm work within the key areas of the city centre (A4100 + 4200)	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	2020	2023	DCC and Private Partners	TCF	NO	Funded	£1 million - £10 million	Implementation	Reduced vehicle emissions	Completion of infrastructure. No. of users.	Design work ongoing and monitoring underway on Corporation Street.	
27	Derby bus station vehicular entrance/exit upgrades (A3100)	Transport Planning and Infrastructure	Bus route improvements	2020	2023	DCC	TCF	NO	Funded	£1 million - £10 million	Implementation	Reduced bus emissions	Completion of works	3 draft reports presented. Final report due end of June.	
28	City Centre to Derby Rail Station Access Improvement Scheme (A3400)	Transport Planning and Infrastructure	Cycle network	2020	2021	DCC	TCF	NO	Funded	£1 million - £10 million	Implementation	Reduced vehicle emissions by encouraging walking and cycling	Completion of infrastructure. No. of users and vehicle road miles saved.	Final Scoping Report due end of June.	
29	DRT for Infinity Park, RR, Bombardier, bus/rail station, city centre (D2100)	Transport Planning and Infrastructure	Bus route improvements	2020	2023	DCC/Private Bus Company	Primarily delivered privately with DCC support	NO	Funded	£1 million - £10 million	Implementation	Reduced vehicle emissions	Road miles saved and use of service	Core zones identified.	
30	Strategic cycle link (Derby) (B1100 + 1200)	Transport Planning and Infrastructure	Cycle network	2020	2023	DCC	TCF	NO	Funded	£1 million - £10 million	Implementation	Reduced vehicle emissions by encouraging cycling		Work currently on hold.	Nottingham City Council legal procurement issue regarding placing orders with VIA East Midlands.
31	City centre - Mickleover cycle route (D3100)	Transport Planning and Infrastructure	Cycle network	2020	2023	DCC with private partners	TCF	NO	Funded	£1 million - £10 million	Implementation	Reduced vehicle emissions by encouraging cycling		Scoping Report received and under consideration.	Possibly constrained by land ownership and development issues
32	Pentagon Island - Spondon (Nottm Rd) cycleway (D3200)	Transport Planning and Infrastructure	Cycle network	2020	2023	DCC	TCF	NO	Funded	£1 million - £10 million	Implementation	Reduced vehicle emissions by encouraging cycling		Scoping Report proposals issued.	
33	City Centre - Raynesway (A52) cycleway (D3300 to 3600)	Transport Planning and Infrastructure	Cycle network	2020	2023	DCC	TCF	NO	Funded	£1 million - £10 million	Implementation	Reduced vehicle emissions by encouraging cycling		Chequers Road Phase 2 completed January 2021. Phase 3 commenced February 2021 and due for completion in June 2021. Highfield Lane and Meadow Lane cycle route scheme due to commence September 2021. Meadow Lane to	

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	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
														Raynesway cycle route scheme construction began in May 2021.	
34	Inter-urban bus lane and traffic light priority (Derby) (B3200)	Transport Planning and Infrastructure	Bus route improvements	2020	2023	DCC/Bus Partners	TCF	NO	Funded	£1 million - £10 million	Implementation	Reduced bus emissions		Recommendations for identified pinch points due in June 2021. Contract roles identified. Start dates in August 2021.	
35	Derby Contactless EMV upgrades and RH integration (B3100)	Transport Planning and Infrastructure	Bus route improvements	2020	2023	DCC with private partners	TCF/FTZ	NO	Funded	£100k - £500k	Implementation	Reduced bus emissions by increasing speed and efficiency of payment system	Scheme completion	Final report submitted.	Delay in awarding work to consultants due to delays experienced between expiry date and commencement of ESPO framework.
36	Continued funding of the 'Workplace Travel Service' business support and grants package (Derby) (D4100)	Promoting Travel Alternatives	Workplace Travel Planning	2021	2023	DCC		NO	Funded	£100k - £500k	Implementation			Strategic Director approval received.	
37	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		Planning	No. of Zero Emission Buses purchased	Successful bid first step	Currently preparing bid under ZEBRA fund	

Table 2.3 – Responses to DEFRA Comments on Derby City Council’s ASR (2020)

No.	Comments from DEFRA on Derby City Council’s ASR (2020)	Response (if required)
1	It has been suggested for the Council to consider reviewing their monitoring regime to include a co-location site. This is still advised, and derivation of a local bias adjustment factor is encouraged, however use of the national factor is appropriate.	No co-location studies were carried out during 2020, therefore a national bias adjustment factor has been used.
2	The Council are commended on their excellent and incredibly detailed interactive map of monitoring locations. The inclusion of modelled future concentrations, in addition to historic concentrations, is extremely beneficial. However, the map has not been updated to include NO ₂ concentrations for 2019. It is advised that the Council update their map accordingly to include the most recent NO ₂ concentrations.	Derby City Council have updated the map with the monitored NO ₂ concentrations from 2020.
3	Though the Council have provided trend graphs for NO ₂ , it does not appear as though they have plotted all monitoring locations. The trend graphs do not show any exceedances within the district despite their being 5. It is understood that it may not be practical to present all monitoring locations as the Council currently has 71. However, it is advised that the Council present all monitoring locations within an AQMA (particularly those displaying an exceedance) to understand how NO ₂ trends are changing within the AQMAs.	The trend graphs in this ASR (Figures A1 – A9) present the NO ₂ concentrations from all monitoring locations. The NO ₂ concentration at each monitoring location within each of the two AQMAs are shown in Figures A1 – A5.
4	It is encouraging to see the Council responding to the comments raised in the previous reporting year. This is indicative of good practice.	No comment required.
5	There are errors in the accompanying excel spreadsheet. Table 2.1 is not fully completed and, like in the main report, Table 2.2 is incorrectly filled out. Can the Council please ensure that the data in the excel spreadsheet matches the main report and that all relevant sections are completed.	This issue was resolved, and the updated spreadsheet and ASR were submitted to and accepted by DEFRA.
6	As Table 2.2 is incorrectly filled the ASR cannot be accepted. The Council are advised to amend Table 2.2 and the accompanying excel spreadsheet and resubmit their ASR.	This issue was resolved, and the updated spreadsheet and ASR were submitted to and accepted by DEFRA.

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

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of PM_{2.5} (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM_{2.5} has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Whilst Derby City Council continues to focus on the need to meet the EU Limit Value for NO₂, many of the proposed measures e.g., the new Local Air Quality Plan, are expected to aid the reduction of fine particulate matter concentrations.

Derby City Council already implements the following measures that are designed to address the emission of PM_{2.5}, such as:

- The enforcement of a city-wide smoke control area, a zero-tolerance approach to the burning of trade waste and a general policy to discourage bonfires;
- Attempt to ensure the submission and agreement of Construction Management Plans with detailed dust management measures, by planning condition/s for all significant developments in the City;
- Development of an air quality focussed policy on the installation and use of domestic and all other non-permit threshold biomass boilers.

Vehicle brake and tyre wear is a well-known source of PM_{2.5} emissions, therefore, it is acknowledged that schemes and projects, such as Cycle Derby, personal and employee Personalised Travel Planning (PTP), eBikes Derby (now ended), and other work to encourage the shift from road traffic to walking/cycling is an important part of local action to reduce PM_{2.5}. The Council advocate that centrally led work to encourage the manufacturing industry to implement significant improvements in tyre and brake materials to minimise, or even avoid, wear, is a vital part of the programme to reduce PM_{2.5}.

Derby City Council works closely with Derbyshire County Council via the Air Quality Working Group (AQWG) to develop measures aimed at reducing PM_{2.5} across the County. This Group has now committed to reporting on air quality to the Health Protection Board and the City's Health and Well Being Board and has developed an Action Plan in order to address the PM_{2.5} targets under the Public Health Outcomes Framework.

Derby City Council outline several measures for managing PM_{2.5} in our AQAP, including regulating emissions from small combustion sources, Derby being a smoke control area, and expanding the remit of the Public Protection team to include further smoke enforcement.

Derby City Council are also considering the development of an up-to-date Bonfire Policy aimed at discouraging bonfires more widely, possibly through greater enforcement. The existing Bonfire Policy has been reviewed in the Air Quality Action Plan.

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

This section sets out the monitoring undertaken within 2020 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 2016 and 2020 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

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 available for 2020. 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.

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. The site is part of the AURN and has been calibrated by DEFRA to national standards.

3.1.2 Non-Automatic Monitoring Sites

Derby City Council undertook non-automatic (i.e., passive) monitoring of NO₂ at 71 sites during 2020. Table A.2 in Appendix A presents the details of the non-automatic sites. 2 new non-automatic locations have been implemented since 2019 (CR1 and KOR1). Monitoring was undertaken at KOR1 for three months but was not able to be continued due to access issues. This location therefore has insufficient data, particularly as one of its three months' worth of data were recorded during the first Covid-19 national lockdown. A link to maps showing the location of the monitoring sites is 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 33%), and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO₂)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40µg/m³. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2020 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.

SS1 is located at traffic lights on Stafford Street within the No.1 Ring Roads AQMA, meaning that it is still exposed to the pollutants from queuing traffic despite the Covid-19 lockdown.

As acknowledged in previous reports, the boundary of the inner/outer ring road AQMA is out of date and no longer reflective of current circumstances and subsequently, work is being undertaken to re-design the boundaries of this AQMA. The new boundaries are currently being finalised and the AQMA is due to be formally amended, subject to local consultation and approval.

As there are no NO₂ annual mean concentrations of more than 60µg/m³, it is likely that there are no exceedances of the 1-hour mean objective for NO₂.

3.2.2 Particulate Matter (PM₁₀)

Derby City Council have not undertaken any PM₁₀ monitoring since 2013. These data have been presented in previous reports and are not repeated here; measured concentrations were well below the relevant objectives.

3.2.3 Particulate Matter (PM_{2.5})

Derby City Council does not currently monitor PM_{2.5} concentrations and currently have no plans to do so in the future.

3.2.4 Sulphur Dioxide (SO₂)

Derby City Council does not currently monitor SO₂ concentrations and currently have 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) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
AURN	St Alkmund's Way AURN	Roadside	435763	336306	NO2	Yes - Derby NO ₂ AQMA No.1 Ring 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) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	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
AS3	8/10 Agard Street	Roadside	434712	336490	NO2	Y - No.1 Ring Roads	0.0	2.0	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) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
CC1	Castward 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
CR1	49 Derby Road, Chellaston	Roadside	437814	330456	NO2	N	0.0	7.0	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

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)
HS1	16/18 Harrow Street	Roadside	437196	334410	NO2	Y - No.1 Ring Roads	0.0	8.0	No	1.8
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
KOR1	232 Kedleston Old Road	Roadside	433857	337647	NO2	N	0.0	6.5	No	1.8
KR1	8 Kedleston Road (Chiropodist)	Roadside	434775	337086	NO2	Y - No.1 Ring Roads	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.2 A52	0.0	9.8	No	1.8
ML1	25 Morledge	Roadside	435477	336176	NO2	N	N/A	11.0	No	1.8
MR1	14 Mansfield Road	Roadside	435439	336817	NO2	Y - No.1 Ring Roads	0.0	3.0	No	1.8
NR1	24 Nottingham Road	Roadside	439899	335348	NO2	Y - No.2 A52	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

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)
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
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	N	10.0	N/A	No	1.8
RS1	150 Radbourne Street	Roadside	433118	336650	NO2	N	0.0	4.0	No	1.8
RT1	Royal Telegraph Pub	Roadside	435653	335706	NO2	Y - No.1 Ring Roads	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

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)
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	N	0.0	12.8	No	1.8
SR1	1 Station Road	Roadside	439789	335412	NO2	Y - No.2 A52	0.0	8.0	No	1.8
SS1	Stafford Street Burleigh Mews Flats	Roadside	434748	336352	NO2	Y - No.1 Ring Roads	0.0	4.0	No	1.8
SS2	Roman House, Stafford Street	Roadside	434766	336329	NO2	N	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
ST1	64 St Thomas Road	Roadside	435294	334202	NO2	N	0.0	3.9	No	1.8
UNR2	414 Uttoxeter New Road	Roadside	433190	335380	NO2	Y - No.1 Ring Roads	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	N	0.0	2.0	No	1.8
UNR6	126 Uttoxeter New Road	Roadside	434227	335958	NO2	N	0.0	10.0	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) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
UNR7	Rowleys Mill Flats, Uttoxeter New Road	Roadside	434461	336041	NO2	Y - No.1 Ring Roads	0.0	4.9	No	1.8
UOR1	208 Uttoxeter Old Road	Roadside	433877	335850	NO2	N	0.0	4.0	No	1.8
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
WR1	124 Walbrook Road	Roadside	434852	334055	NO2	N	0.0	3.9	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 NO₂ Monitoring Results: Automatic Monitoring (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
AURN	435763	336306	Roadside	98	98		37	36	35	26

Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.TG16.

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

Notes:

The annual mean concentrations are presented as µg/m³.

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

All means have been “annualised” as per LAQM.TG16 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 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 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
AB1	434846	335657	Roadside	67.9	67.9	33.0	29.0	29.0	29.0	24.0
AR1	433633	336850	Roadside	100.0	100.0		42.0	43.0	38.0	30.8
AR2	433459	336918	Roadside	100.0	100.0			31.0	29.0	22.2
AR3	433796	336786	Roadside	100.0	100.0	31.0	29.0	29.0	27.0	20.5
AR4	434307	336565	Roadside	90.4	90.4	35.0	33.0	32.0	29.0	24.5
AS1	434545	336570	Roadside	100.0	100.0			32.0	32.0	25.1
AS2	434579	336571	Roadside	100.0	100.0				28.0	23.6
AS3	434712	336490	Roadside	92.3	92.3	35.0	35.0	31.0	32.0	20.3
BR1	435764	336306	Urban Background	100.0	100.0			37.0	39.0	28.4
BUR1	434785	335241	Roadside	92.3	92.3	31.0	33.0	31.0	32.0	25.2
BUR2	435025	335508	Roadside	49.6	49.6	32.0	32.0	33.0	30.0	28.8
CAV1	434820	336505	Roadside	100.0	100.0	28.0	26.0	23.0	23.0	17.8
CC1	435725	335802	Kerbside	83.6	83.6			25.0	28.0	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 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
CH1	435496	336294	Urban Centre	100.0	100.0	27.0	29.0	25.0	25.0	19.9
CM1	435262	336157	Roadside	100.0	100.0	26.0	26.0	23.0	22.0	16.8
CR1	437814	330456	Roadside	91.2	91.2					13.8
DER1	438942	335864	Roadside	100.0	100.0	29.0	30.0	29.0	28.0	24.6
DR1	434814	337041	Roadside	100.0	100.0	32.0	27.0	26.0	27.0	19.9
DR2	434937	336916	Roadside	100.0	100.0	35.0	29.0	29.0	27.0	21.7
EG1	436064	336487	Roadside	92.1	92.1	47.0	45.0	43.0	40.0	31.1
FG1	434718	336375	Roadside	100.0	100.0				28.0	21.5
FG2	434450	336523	Roadside	100.0	100.0				31.0	23.3
FG3	434497	336510	Roadside	92.6	92.6	39.0	33.0	35.0	33.0	25.1
GC1	439776	335696	Roadside	100.0	100.0	29.0	27.0	25.0	24.0	18.7
HL1	437382	336044	Roadside	100.0	100.0	28.0	30.0	24.0	26.0	21.3
HS1	437196	334410	Roadside	90.4	90.4	30.0	32.0	30.0	29.0	22.8
KL1	440206	335650	Roadside	100.0	100.0	29.0	29.0	25.0	24.0	19.4

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 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
KL2	440198	335611	Roadside	100.0	100.0	26.0	25.0	22.0	21.0	16.7
KOR1	433857	337647	Roadside	100.0	24.9					34.2
KR1	434775	337086	Roadside	100.0	100.0	31.0	31.0	29.0	27.0	20.9
LR1	437676	334090	Roadside	100.0	100.0	44.0	44.0	40.0	42.0	35.1
LR2	438162	333654	Roadside	100.0	100.0	35.0	35.0	33.0	33.0	26.2
LW1	439647	335575	Roadside	100.0	100.0			23.0	23.0	19.3
ML1	435477	336176	Roadside	100.0	100.0	39.0	38.0	34.0	34.0	25.1
MR1	435439	336817	Roadside	84.7	84.7	30.0	31.0	27.0	28.0	21.5
NR1	439899	335348	Roadside	100.0	100.0			34.0	37.0	32.2
NR2	436700	336637	Roadside	100.0	100.0	47.0	48.0	45.0	44.0	36.2
NR3	435795	336625	Roadside	84.7	84.7	32.0	32.0	30.0	29.0	23.2
NR4	435586	336642	Roadside	91.2	91.2	30.0	33.0	30.0	29.0	24.8
NS1	435091	333526	Roadside	92.3	92.3	41.0	38.0	37.0	31.0	25.6
NS2	435022	333581	Roadside	100.0	100.0	41.0	36.0	38.0	33.0	29.2

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 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
OPR1	436809	332826	Roadside	100.0	100.0	27.0	27.0	27.0	27.0	20.6
OPR2	435716	333327	Roadside	90.7	90.7	43.0	36.0	36.0	37.0	29.5
OR1	436992	332713	Roadside	100.0	100.0	26.0	26.0	24.0	24.0	19.9
OR2	436046	334857	Roadside	100.0	100.0	33.0	34.0	33.0	31.0	26.5
OR3	435534	335467	Roadside	100.0	100.0	34.0	37.0	35.0	34.0	29.2
OR4	435440	335717	Roadside	100.0	100.0	33.0	31.0	28.0	29.0	22.4
PL1	434364	337881	Urban Background	100.0	100.0	17.0	16.0	15.0	15.0	11.1
RS1	433118	336650	Roadside	90.4	90.4	31.0	28.0	25.0	24.0	18.8
RT1	435653	335706	Roadside	91.2	91.2	39.0	38.0	36.0	33.0	24.0
RW1	438535	333508	Roadside	100.0	100.0	31.0	32.0	31.0	31.0	25.4
SMC1	435203	336779	Roadside	100.0	100.0	41.0	40.0	38.0	37.0	28.5
SMC2	435249	336785	Roadside	100.0	100.0			25.0	25.0	19.9
SR1	439789	335412	Roadside	100.0	100.0	31.0	36.0	32.0	29.0	21.9
SS1	434748	336352	Roadside	90.7	90.7	51.0	48.0	45.0	45.0	40.1

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 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
SS2	434766	336329	Roadside	90.4	90.4				28.0	21.9
SS3	434703	336213	Roadside	100.0	100.0				27.0	23.1
SS4	434688	336155	Roadside	100.0	100.0	37.0	36.0	37.0	34.0	28.1
ST1	435294	334202	Roadside	100.0	100.0				37.0	28.8
UNR2	433190	335380	Roadside	100.0	100.0			28.0	27.0	21.9
UNR3	433186	335327	Roadside	100.0	100.0	31.0	48.0	44.0	27.0	21.9
UNR4	433786	335778	Roadside	75.3	75.3	41.0	40.0	37.0	36.0	27.8
UNR5	433887	335804	Roadside	100.0	100.0	32.0	35.0	33.0	32.0	27.1
UNR6	434227	335958	Roadside	100.0	100.0				26.0	20.8
UNR7	434461	336041	Roadside	100.0	100.0			23.0	22.0	18.5
UOR1	433877	335850	Roadside	100.0	100.0				28.0	23.5
UOR2	434182	336329	Roadside	100.0	100.0				23.0	18.6
UOR3	434109	336255	Roadside	82.7	82.7				28.0	23.9
UOR4	434310	336533	Roadside	100.0	100.0				31.0	25.2

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 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
WH1	433161	336692	Roadside	100.0	100.0				26.0	19.9
WR1	434852	334055	Roadside	100.0	100.0				30.0	23.5

Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.

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_2 annual mean objective of $40\mu\text{g}/\text{m}^3$ are shown in **bold**.

NO_2 annual means exceeding $60\mu\text{g}/\text{m}^3$, 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.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Figure A.1 – Trends in Annual Mean NO₂ Concentrations Measured in No.1 Ring Road AQMA

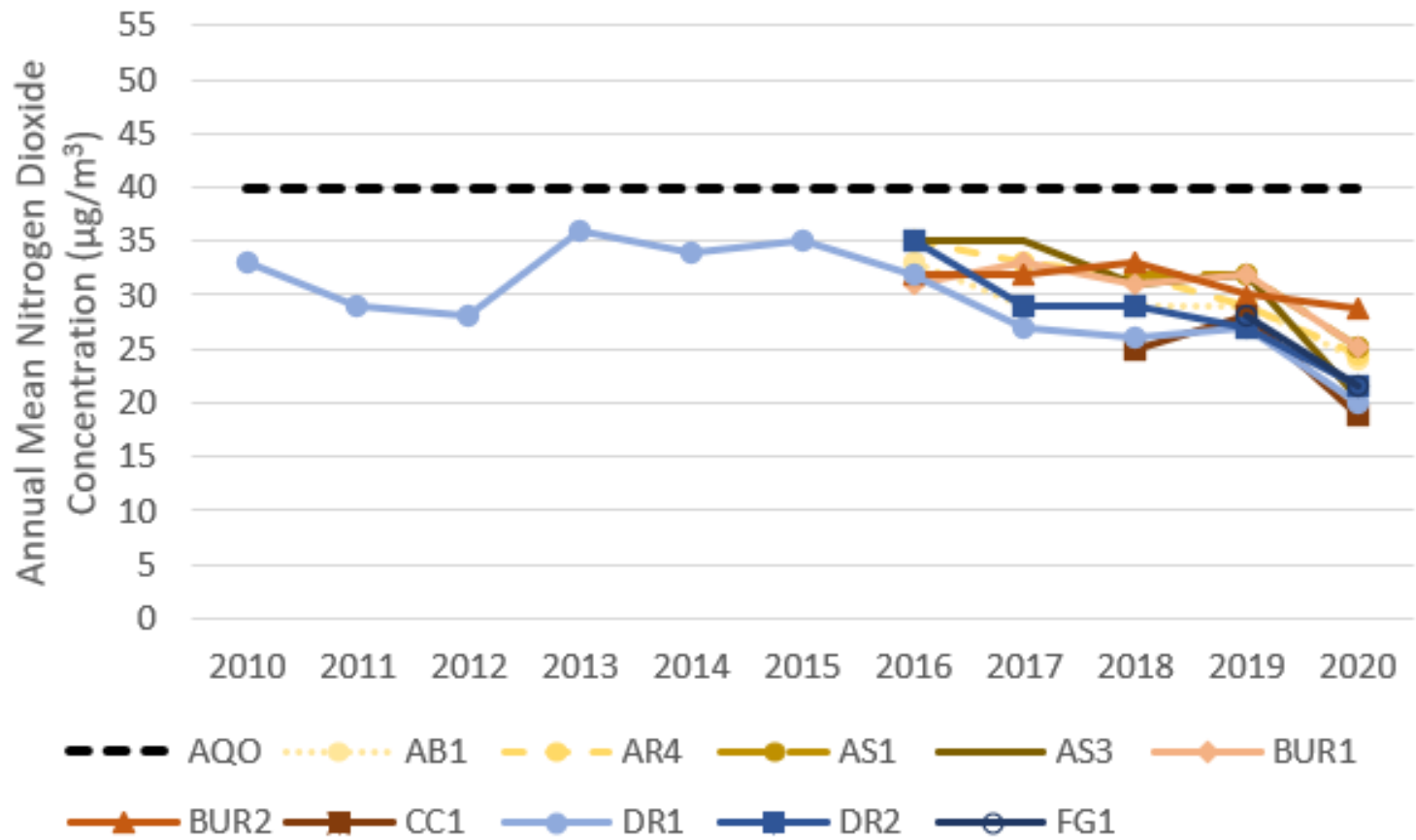


Figure A.2 – Trends in Annual Mean NO₂ Concentrations Measured in No.1 Ring Road AQMA continued

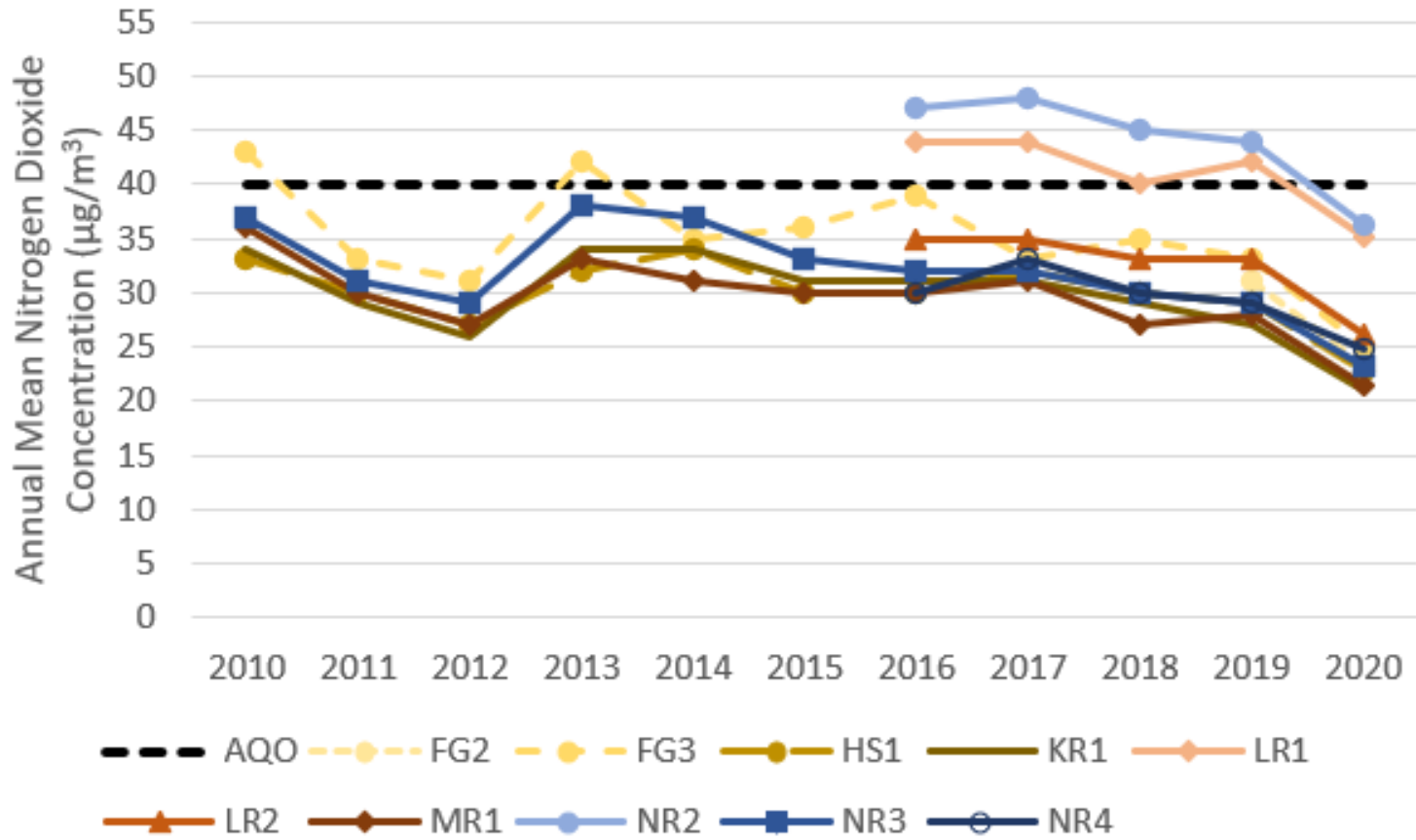


Figure A.3 – Trends in Annual Mean NO₂ Concentrations Measured in No.1 Ring Road AQMA continued

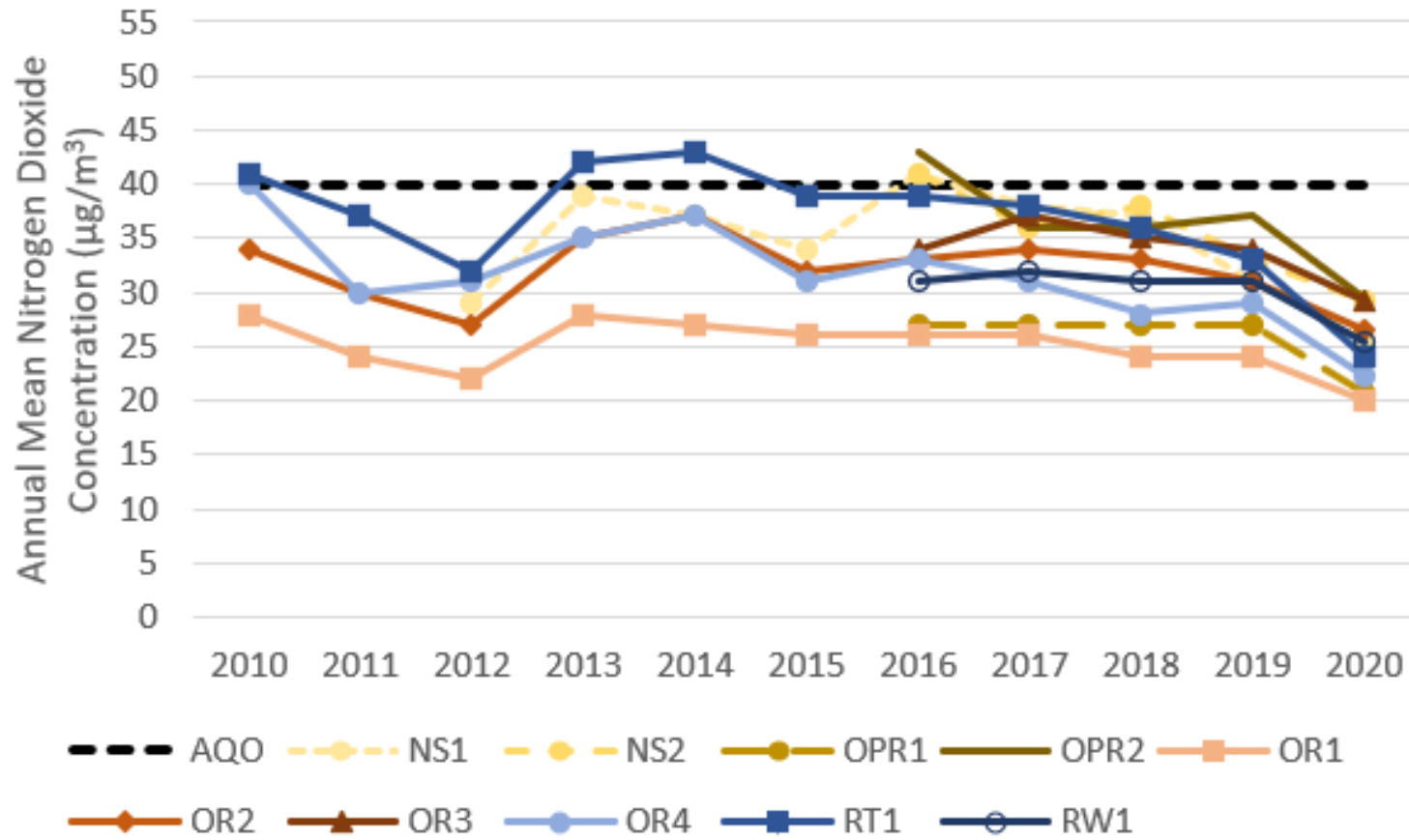


Figure A.4 – Trends in Annual Mean NO₂ Concentrations Measured in No.1 Ring Road AQMA continued

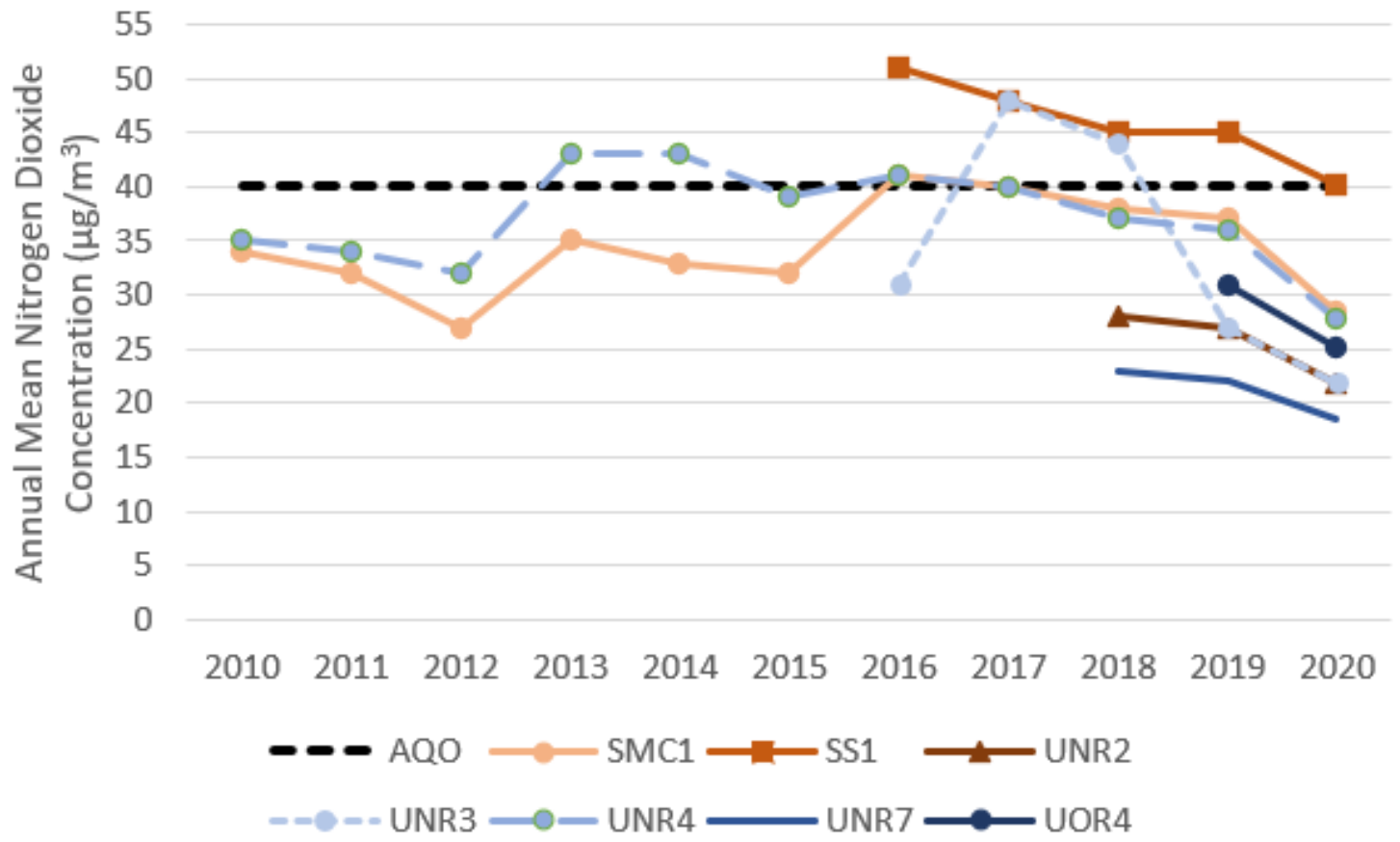


Figure A.5 – Trends in Annual Mean NO₂ Concentrations Measured in No.2 A52 AQMA

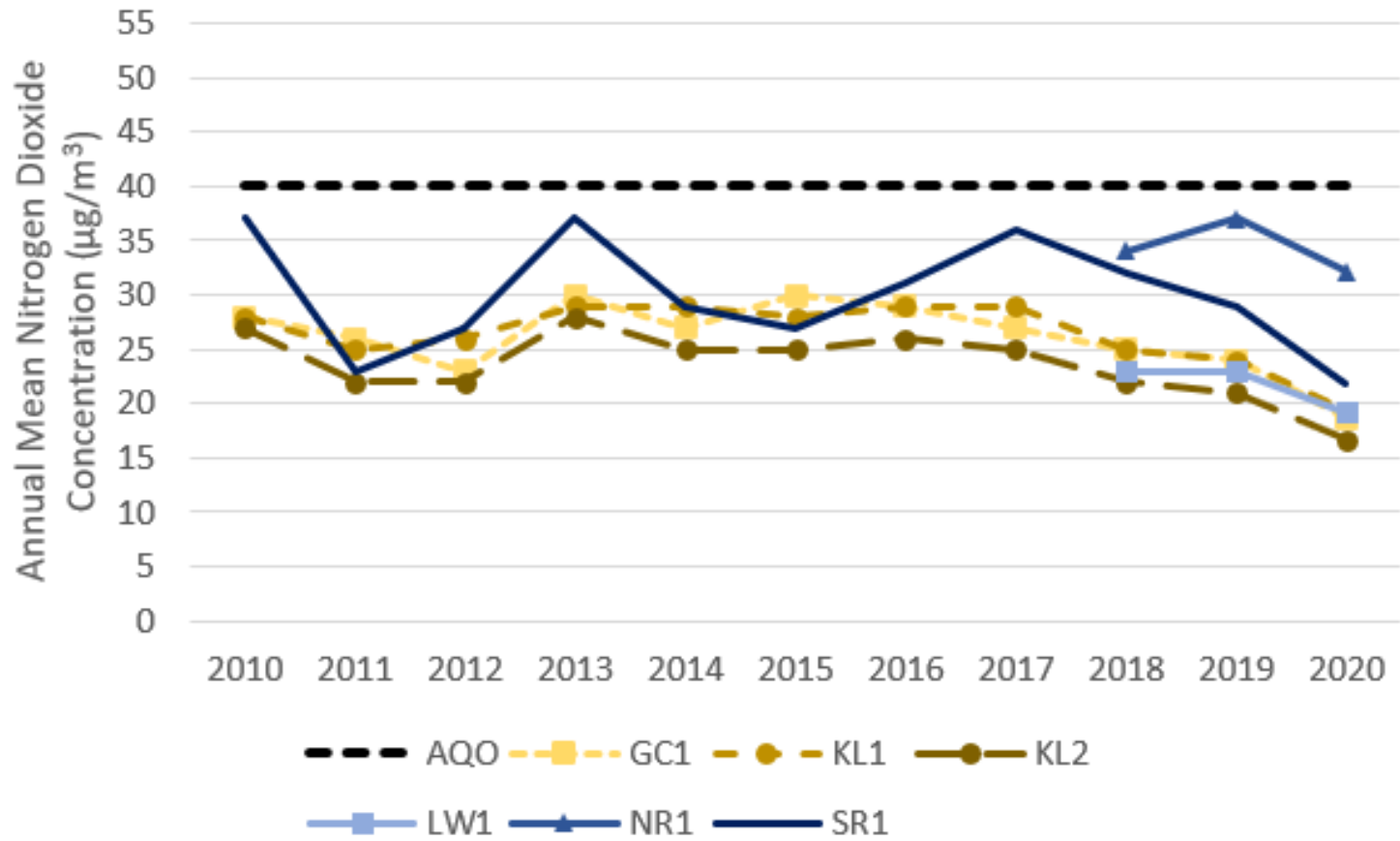


Figure A.6 – Trends in Annual Mean NO₂ Concentrations Measured outside of AQMAs – West Derby

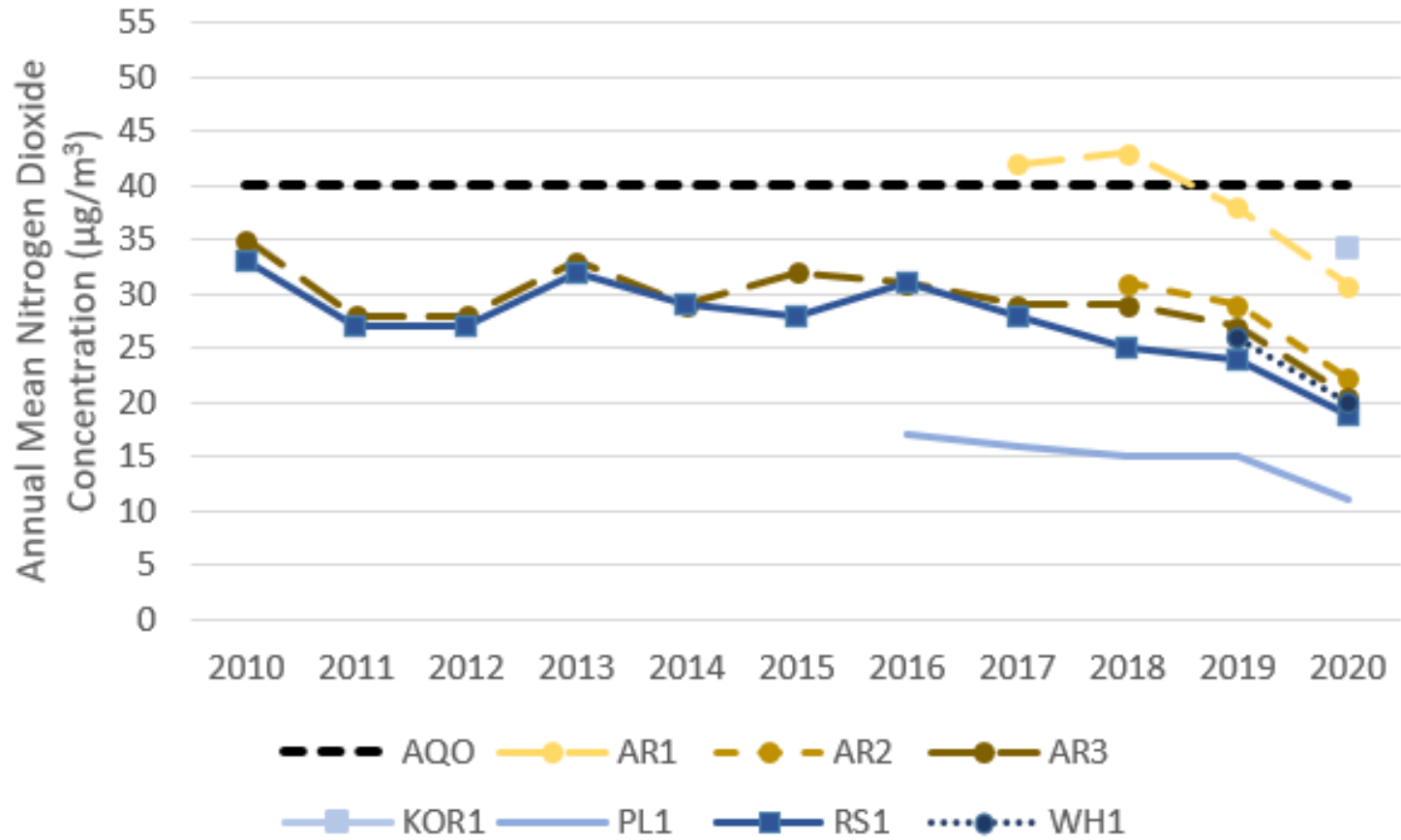


Figure A.7 – Trends in Annual Mean NO₂ Concentrations Measured outside of AQMAs – West of Inner Ring Road/Uttoxeter Road

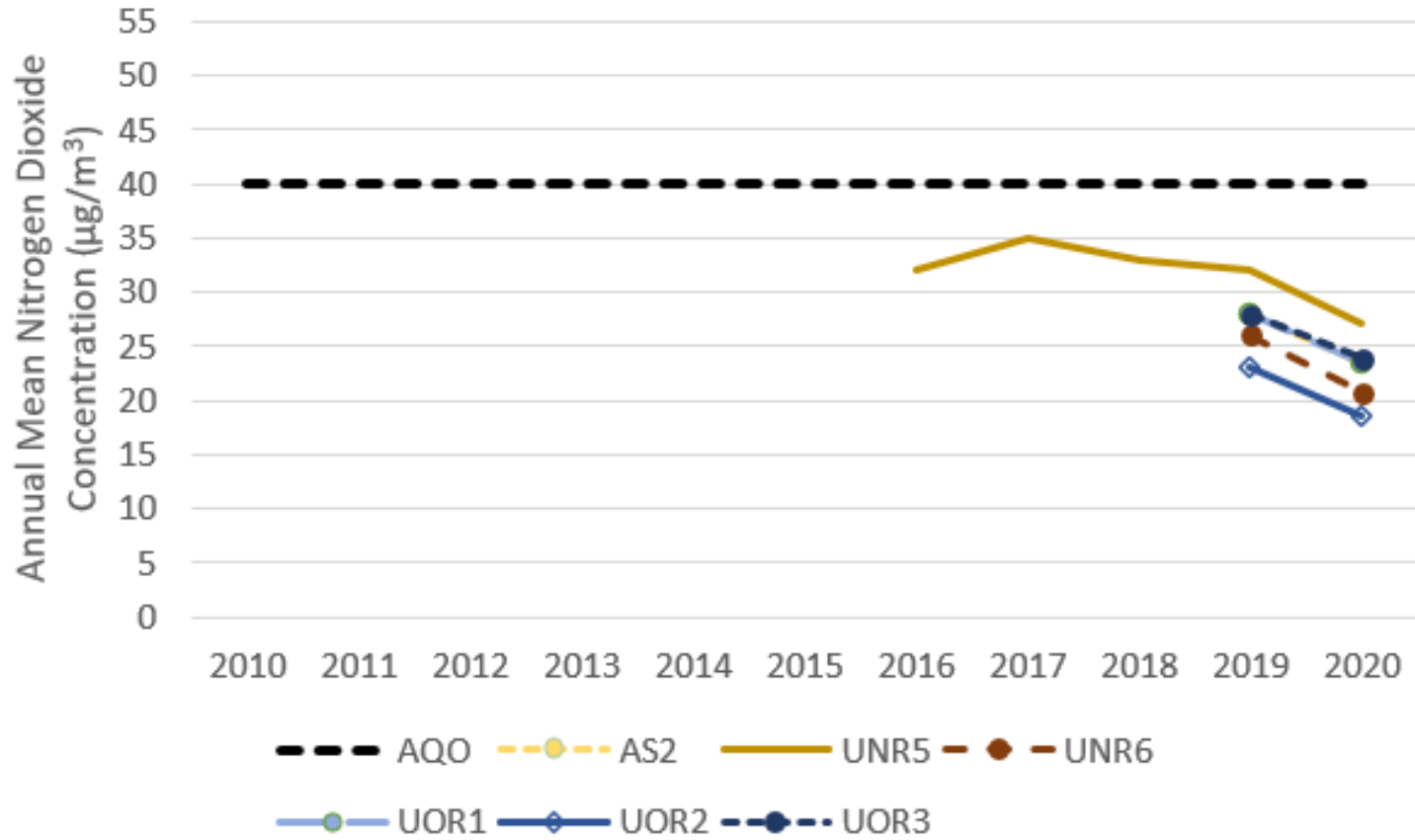


Figure A.8 – Trends in Annual Mean NO₂ Concentrations Measured outside of AQMAs – Inner Ring Road

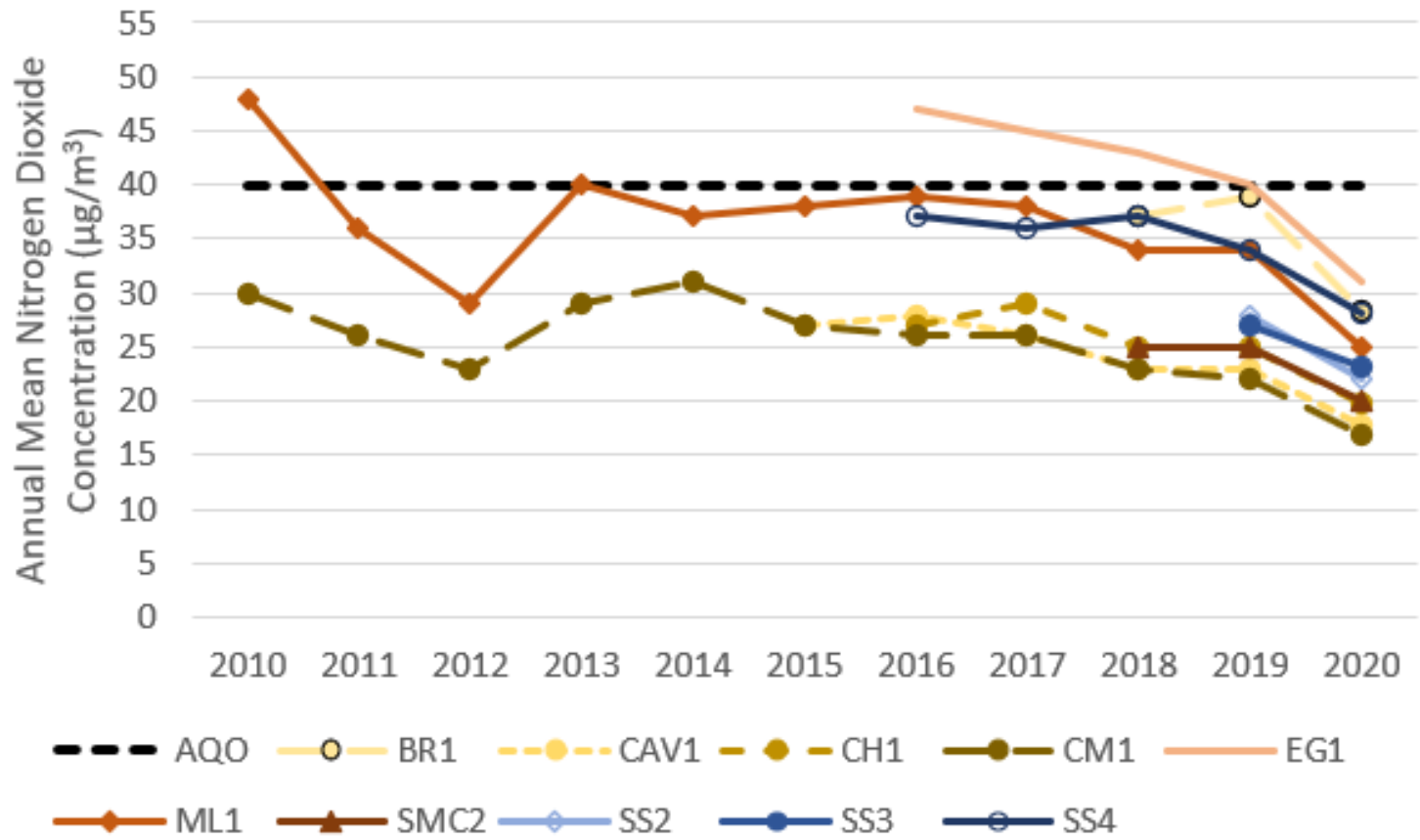


Figure A.9 – Trends in Annual Mean NO₂ Concentrations Measured outside of AQMAs – East and South Derby

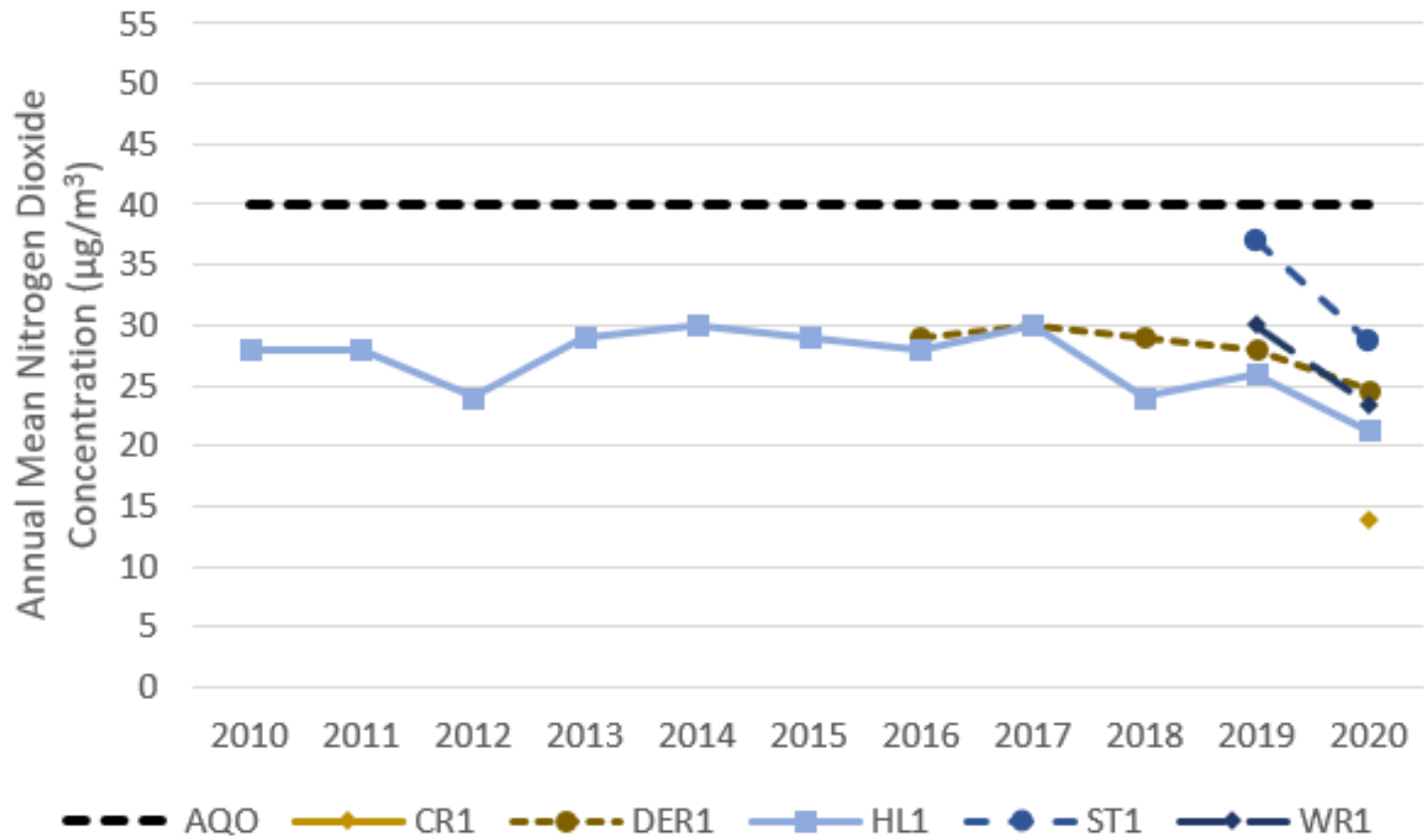


Table A.5 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
AURN	435763	336306	Roadside	98	98		0	0	0	0

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m³ have been recorded.

Exceedances of the NO₂ 1-hour mean objective (200µg/m³ 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 2020

Table B.1 – NO₂ 2020 Diffusion Tube Results (µg/m³)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
AB1	434846	335657	37.1		31.7		14.0	27.6	18.3	34.7	35.8		41.1		30.0	24.0	-	
AR1	433633	336850	53.7	44.8	36.9	25.7	27.8	37.8	35.9	37.4	41.5	43.2	48.5	46.8	40.0	30.8	-	
AR2	433459	336918	35.1	27.1	29.6	21.8	29.1	30.0	31.7	29.6	25.9	29.5	29.4	27.6	28.9	22.2	-	
AR3	433796	336786	36.3	25.4	27.9	18.6	18.0	27.4	19.8	24.6	28.0	28.2	29.9	36.0	26.7	20.5	-	
AR4	434307	336565	47.5	36.5	28.9	18.9	19.3	28.0	28.1		27.3	31.8	39.7	44.0	31.8	24.5	-	
AS1	434545	336570	52.3	42.6	27.7	19.3	21.8	24.7	28.0	29.7	33.0	35.9	39.1	37.6	32.6	25.1	-	
AS2	434579	336571	35.4	25.2	27.3	30.5	25.9	30.5	20.6	34.7	36.8	33.5	32.2	35.8	30.7	23.6	-	
AS3	434712	336490		35.0	16.2	16.3	13.7	22.3	20.9	23.4	30.8	37.3	35.8	38.9	26.4	20.3	-	
BR1	435764	336306	73.0	46.5	16.1	24.7	21.0	26.9	27.2	27.7	38.1	41.8	49.7	49.6	36.9	28.4	-	
BUR1	434785	335241	45.7	36.9	34.4	24.5	18.9	27.1	27.1	29.6		34.9	39.9	40.3	32.7	25.2	-	
BUR2	435025	335508	46.1				21.4	28.2	24.2	31.9	40.2				32.0	28.8	-	
CAV1	434820	336505	36.9	26.6	20.7	14.4	13.1	20.7	15.2	20.4	22.7	25.9	29.7	31.5	23.2	17.8	-	
CC1	435725	335802	50.9		24.2	14.8	13.7	20.8	15.2	21.3	25.0	27.9		30.0	24.4	18.8	-	
CH1	435496	336294	45.4	32.3	27.4	14.9	10.8	17.1	15.8	19.2	24.8	29.5	37.2	35.4	25.8	19.9	-	
CM1	435262	336157	39.1	25.1	23.4	14.2	11.6	15.6	15.1	17.6	19.6	22.6	30.1	27.8	21.8	16.8	-	
CR1	437814	330456	24.0	16.0	14.6	15.5	13.6	17.1	12.0	17.2	22.4	19.5		25.2	17.9	13.8	-	
DER1	438942	335864	53.0	40.8	29.9	19.7	18.6	25.4	24.1	28.3	30.5	35.5	38.7	39.0	32.0	24.6	-	
DR1	434814	337041	42.8	32.0	19.6	17.3	15.0	18.6	15.8	24.2	27.4	31.5	31.1	35.5	25.9	19.9	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DR2	434937	336916	43.0	29.2	29.7	18.3	18.0	21.1	20.1	25.7	27.9	31.7	33.7	39.2	28.1	21.7	-	
EG1	436064	336487	53.0	41.1	24.6		31.6	36.5	36.1	40.2	48.1	46.2	46.8	40.6	40.4	31.1	-	
FG1	434718	336375	46.7	24.2	20.3	21.3	22.0	26.7	17.7	23.4	27.0	31.3	39.9	35.3	28.0	21.5	-	
FG2	434450	336523	40.6	29.5	26.9	19.8	17.0	27.8	24.7	28.6	34.7	35.5	38.1	39.9	30.3	23.3	-	
FG3	434497	336510	39.3	32.0	33.0	22.7	22.0	29.4		34.2	37.6	37.3	37.7	33.3	32.6	25.1	-	
GC1	439776	335696	42.4	32.2	18.1	14.6	15.2	21.3	18.5	21.1	23.9	25.8	30.1	28.0	24.3	18.7	-	
HL1	437382	336044	56.5	43.9	20.9	12.6	12.3	16.3	21.3	23.2	25.1	31.8	36.8	32.0	27.7	21.3	-	
HS1	437196	334410	49.4	32.0		16.4	16.4	22.4	25.0	28.1	32.1	36.1	38.5	29.8	29.7	22.8	-	
KL1	440206	335650	42.8	30.8	21.5	17.2	14.6	19.5	20.2	19.0	25.1	27.0	31.9	32.4	25.2	19.4	-	
KL2	440198	335611	33.8	25.3	18.5	15.5	14.5	17.0	16.7	17.5	20.6	21.3	30.6	28.8	21.7	16.7	-	
KOR1	433857	337647	55.5	42.3	35.4										44.4	34.2	-	
KR1	434775	337086	39.4	26.3	19.6	16.8	17.5	20.5	24.6	27.7	32.1	35.1	34.0	32.5	27.2	20.9	-	
LR1	437676	334090	68.2	48.8	40.2	25.8	26.2	38.1	40.9	36.7	49.6	50.2	65.8	56.6	45.6	35.1	-	
LR2	438162	333654	52.9	41.8	27.9	22.3	16.9	29.7	31.8	31.8	35.1	32.7	42.5	42.2	34.0	26.2	-	
LW1	439647	335575	41.5	31.5	20.5	14.6	16.4	16.8	23.1	19.7	25.8	24.2	34.1	32.1	25.0	19.3	-	
ML1	435477	336176	51.1	35.5	20.9	20.8	19.3	27.4	28.1	32.5	36.1	41.6	42.2	35.1	32.6	25.1	-	
MR1	435439	336817			31.5	15.9	13.6	25.8	21.6	28.0	32.4	34.3	41.7	34.5	27.9	21.5	-	
NR1	439899	335348	67.3	43.1	35.9	26.5	29.5	33.3	36.3	40.0	42.7	48.4	52.0	46.5	41.8	32.2	-	
NR2	436700	336637	70.9	56.2	26.3	29.6	37.0	37.0	41.2	42.8	50.8	53.9	60.1	58.8	47.1	36.2	-	
NR3	435795	336625	46.2	34.8	31.0		17.6	20.9		25.7	30.9	26.4	39.1	28.4	30.1	23.2	-	
NR4	435586	336642	56.6	45.1	29.3	17.9	13.4	22.1	27.2	29.9	33.8	32.1		46.2	32.1	24.8	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
NS1	435091	333526	38.5	31.9	27.7	32.3	27.4	32.6	24.5	38.1	41.9		29.9	41.2	33.3	25.6	-	
NS2	435022	333581	43.0	32.6	36.7	35.0	34.3	41.3	29.5	35.7	40.1	36.5	46.4	44.5	38.0	29.2	-	
OPR1	436809	332826	34.1	28.6	18.0	23.7	21.4	25.9	20.6	25.1	31.2	27.3	32.5	32.9	26.8	20.6	-	
OPR2	435716	333327	54.8	40.8	32.1	31.1	28.9		28.8	36.6	38.5	39.7	44.1	46.6	38.4	29.5	-	
OR1	436992	332713	35.4	28.0	25.7	19.8	17.9	21.4	19.7	24.9	30.1	30.0	33.2	24.4	25.9	19.9	-	
OR2	436046	334857	48.9	36.0	32.9	28.1	24.5	29.8	25.1	34.3	35.4	35.2	40.8	42.4	34.5	26.5	-	
OR3	435534	335467	52.2	44.3	30.9	22.2	23.2	28.9	30.7	31.8	39.6	48.7	52.2	50.5	37.9	29.2	-	
OR4	435440	335717	42.7	26.5	25.6	16.9	15.4	22.7	21.8	28.6	31.0	35.5	39.0	42.8	29.0	22.4	-	
PL1	434364	337881	23.7	17.3	10.9	10.7	7.7	11.2	9.8	10.9	14.5	17.4	19.3	20.0	14.5	11.1	-	
RS1	433118	336650	32.9	24.0		18.5	18.6	19.5	21.1	21.8	27.8	27.1	30.0	27.5	24.4	18.8	-	
RT1	435653	335706	45.1	41.6	19.9	25.6	21.2	24.8	25.0	30.5	33.0	35.1	41.5		31.2	24.0	-	
RW1	438535	333508	46.3	31.5	27.6	24.1	25.5	30.0	25.3	32.3	34.0	37.7	43.2	39.0	33.0	25.4	-	
SMC1	435203	336779	51.8	41.8	36.2	22.9	27.4	35.1	35.2	32.6	36.4	41.1	41.4	43.0	37.1	28.5	-	
SMC2	435249	336785	42.7	31.7	23.3	15.9	15.1	18.8	18.7	21.1	24.9	28.9	33.6	36.1	25.9	19.9	-	
SR1	439789	335412	47.1	42.0	27.2	20.0	15.9	18.4	18.9	18.6	26.1	29.8	35.6	41.2	28.4	21.9	-	
SS1	434748	336352	71.8	58.4	47.4	32.0	36.4		47.0	52.7	56.3	54.7	59.7	56.9	52.1	40.1	-	
SS2	434766	336329	34.9	24.0		20.5	19.1	28.7	21.3	28.6	31.3	32.4	36.5	36.2	28.5	21.9	-	
SS3	434703	336213	44.8	33.9	33.7	21.3	19.3	21.9	23.6	25.5	30.7	35.5	33.3	36.4	30.0	23.1	-	
SS4	434688	336155	48.0	35.9	36.1	29.1	25.3	34.5	25.9	34.3	37.1	39.2	47.1	45.4	36.5	28.1	-	
ST1	435294	334202	45.7	38.5	18.9	26.8	30.9	33.1	34.2	40.5	46.6	41.9	46.1	45.5	37.4	28.8	-	
UNR2	433190	335380	46.6	35.8	23.5	18.0	16.9	19.9	21.0	24.3	29.9	34.0	38.2	33.7	28.5	21.9	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
UNR3	433186	335327	45.5	30.9	28.6	18.9	18.4	21.7	23.9	23.6	30.6	31.3	34.9	33.3	28.5	21.9	-	
UNR4	433786	335778	51.5		11.8	28.5	28.6	34.1			45.7	38.9	42.9	43.0	36.1	27.8	-	
UNR5	433887	335804	52.3	42.1	34.7	20.6	19.8	25.6	26.6	27.9	31.0	35.9	52.8	53.1	35.2	27.1	-	
UNR6	434227	335958	36.6	27.5	24.9	18.7	18.6	22.7	22.6	24.4	30.2	31.1	33.7	33.3	27.0	20.8	-	
UNR7	434461	336041	32.9	24.1	25.4	17.6	16.0	17.2	16.7	20.7	27.2	26.0	31.9	32.0	24.0	18.5	-	
UOR1	433877	335850	44.8	35.6	29.5	19.9	16.1	23.9	24.8	29.1	31.7	35.4	39.3	35.8	30.5	23.5	-	
UOR2	434182	336329	34.2	25.1	23.7	17.4	15.4	22.5	15.2	23.2	27.4	26.5	31.3	28.1	24.2	18.6	-	
UOR3	434109	336255	48.5	33.4	30.9	18.6	21.2	25.8	22.0		32.0		40.6	37.0	31.0	23.9	-	
UOR4	434310	336533	47.5	33.3	29.6	20.8	21.7	28.0	26.3	30.4	35.2	37.3	43.0	40.1	32.8	25.2	-	
WH1	433161	336692	34.6	27.9	15.1	21.4	15.4	17.9	20.4	22.9	30.9	32.0	36.6	34.8	25.8	19.9	-	
WR1	434852	334055	31.4	30.4	23.2	28.9	26.2	25.5	24.0	29.8	34.8	34.2	38.0	39.3	30.5	23.5	-	

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 >33% in line with LAQM.TG16.

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 2020 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**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 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 2020

Derby City Council has not identified any new sources relating to air quality within the reporting year of 2020, other than the major developments listed in the Executive Summary. However, there are plans for the incinerator plant, which has not been operational for two years, to be brought back into operation in the future.

Additional Air Quality Works Undertaken by Derby City Council During 2020

Derby City Council has not completed any additional works within the reporting year of 2020.

QA/QC of Diffusion Tube Monitoring

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

- Tube Type: 50% TEA : 50% Acetone
- Uncertainty: "Diffusion Tubes for Ambient NO₂ Monitoring: Practical Guidance" categorises diffusion tubes as an indicative method, and as such the uncertainty is defined as $\pm 25\%$. During in field intercomparisons, SOCOTEC's diffusion tubes perform at $\pm 10\%$ uncertainty.
- Quality Control: A quality control (QC) sample of known concentration is run with the samples. The data generated is then assessed using a Shewhart control chart to determine the process is under statistical control.
- Analytical Repeatability: In 2020, 7400+ QC samples were analysed, achieving a relative standard deviation of 0.84%.
- Confidence Intervals: $2\sigma \pm 1.67\%$ $3\sigma \pm 2.51\%$

- Limit of Detection: The analytical limit of detection is 0.03µg NO₂. Over a 4-week exposure this would equate to 0.6µg/m³, or 0.3ppb.
- Quality Assurance: The manufacture and analysis of NO₂ diffusion tubes is covered by SOCOTEC's UKAS accreditation.
- SOCOTEC's laboratory has taken part in the AIR (previously WASP) proficiency scheme since its inception. To achieve the highest ranking of "Satisfactory", a laboratory must achieve a z-score of <2. For 2020, SOCOTEC had an average z-score of 0.42.
- SOCOTEC bought in ISO Guide 34 and ISO/IEC 17025 certified standards, which are used to prepare calibration and QC standards.
- 2% of tubes are checked for blankness during manufacture to ensure there is no contamination introduced during the manufacturing process.
- The method meets the requirements laid out in DEFRA's "Diffusion Tubes for Ambient NO₂ Monitoring: A Practical Guidance."

Derby City Council's diffusion tube supplier did not change during 2020. There were no supply issues with SOCOTEC during 2020, other than a minor delay during March and April due to the first national Covid-19 lockdown. SOCOTEC quickly caught up with demand and no further issues were experienced.

Diffusion tube monitoring dates deviated slightly from the 2020 Diffusion Tube Monitoring Calendar due to the practicality and feasibility of diffusion tube installations.

Diffusion Tube Annualisation

Missing diffusion tubes meant that two monitoring locations did not achieve the minimum data requirements (75%) during 2020. The data for these sites (AB1 and BUR2) have therefore been adjusted to an annual mean, based on the ratio of concentrations during the short-term monitoring period to those over the 2020 calendar year. KOR1 also did not achieve 75% data capture, but the data from this monitor has not been annualised as it achieved less than 33% data capture. 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.2. The Diffusion Tube Data Processing Tool was utilised to annualise the data from AB1 and BUR2.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2020 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.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO₂ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Derby City Council have applied a national bias adjustment factor of 0.77 to the 2020 monitoring data. A summary of bias adjustment factors used by Derby City Council over the past four years is presented in Table C.1. The national bias adjustment factor for the 50% TEA in acetone method for SOCOTEC Didcot is 0.77 (taken from spreadsheet 03/21, based on 22 studies; available at <https://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>).

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	National	03/21	0.77
2019	National	03/19	0.75
2018	National	03/18	0.77
2017	National	03/17	0.77

NO₂ Fall-off with Distance from the Road

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

Following the Diffusion Tube Data Processing Tool, no diffusion tube NO₂ monitoring locations within Derby City Council required distance correction during 2020.

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 monitoring location within Derby City Council recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 33% do not require annualisation.

NO₂ Fall-off with Distance from the Road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure should be estimated using the NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1.

No automatic NO₂ monitoring locations within Derby City Council required distance correction during 2020.

Table C.2 – Annualisation Summary (concentrations presented in $\mu\text{g}/\text{m}^3$)

Site ID	Annualisation Factor Nottingham Centre	Annualisation Factor Chesterfield Loundsley Green	Annualisation Factor Burton-on-Trent Horninglow	Annualisation Factor Leicester University	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
AB1	1.0389	1.0524	1.0500	1.0159	1.0393	30.0	31.2	
BUR2	1.1578	1.1909	1.1976	1.1362	1.1706	32.0	37.5	

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>.

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England⁷

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (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

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

Appendix F: Impact of COVID-19 upon LAQM

COVID-19 has had a significant impact on society. Inevitably, COVID-19 has also had an impact on the environment, with implications to air quality at local, regional and national scales.

COVID-19 has presented various challenges for Local Authorities with respect to undertaking their statutory LAQM duties in the 2021 reporting year. Recognising this, Defra provided various advice updates throughout 2020 to English authorities, particularly concerning the potential disruption to air quality monitoring programmes, implementation of Air Quality Action Plans (AQAPs) and LAQM statutory reporting requirements. Defra has also issued supplementary guidance for LAQM reporting in 2021 to assist local authorities in preparing their 2021 ASR. Where applicable, this advice has been followed.

Despite the challenges that the pandemic has given rise to, the events of 2020 have also provided Local Authorities with an opportunity to quantify the air quality impacts associated with wide-scale and extreme intervention, most notably in relation to emissions of air pollutants arising from road traffic. The vast majority (>95%) of AQMAs declared within the UK are related to road traffic emissions, where attainment of the annual mean objective for nitrogen dioxide (NO₂) is considered unlikely. On 23rd March 2020, the UK Government released official guidance advising all members of public to stay at home, with work-related travel only permitted when absolutely necessary. During this initial national lockdown (and to a lesser extent other national and regional lockdowns that followed), marked reductions in vehicle traffic were observed; Department for Transport (DfT) data⁸ suggests reductions in vehicle traffic of up to 70% were experienced across the UK by mid-April, relative to pre COVID-19 levels.

This reduction in travel in turn gave rise to a change of air pollutant emissions associated with road traffic, i.e. nitrous oxides (NO_x), and exhaust and non-exhaust particulates (PM). The Air Quality Expert Group (AQEG)⁹ has estimated that during the initial lockdown period in 2020, within urbanised areas of the UK reductions in NO₂ annual mean concentrations were between 20 and 30% relative to pre-pandemic levels, which

⁸ Prime Minister's Office, COVID-19 briefing on the 31st of May 2020

⁹ Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020

represents an absolute reduction of between 10 to 20 $\mu\text{g}/\text{m}^3$ if expressed relative to annual mean averages. During this period, changes in PM_{2.5} concentrations were less marked than those of NO₂. PM_{2.5} concentrations are affected by both local sources and the transport of pollution from wider regions, often from well beyond the UK. Through analysis of AURN monitoring data for 2018-2020, AQEG have detailed that PM_{2.5} concentrations during the initial lockdown period are of the order 2 to 5 $\mu\text{g}/\text{m}^3$ lower relative to those that would be expected under business-as-usual conditions.

As restrictions are gradually lifted, the challenge is to understand how these air quality improvements can benefit the long-term health of the population.

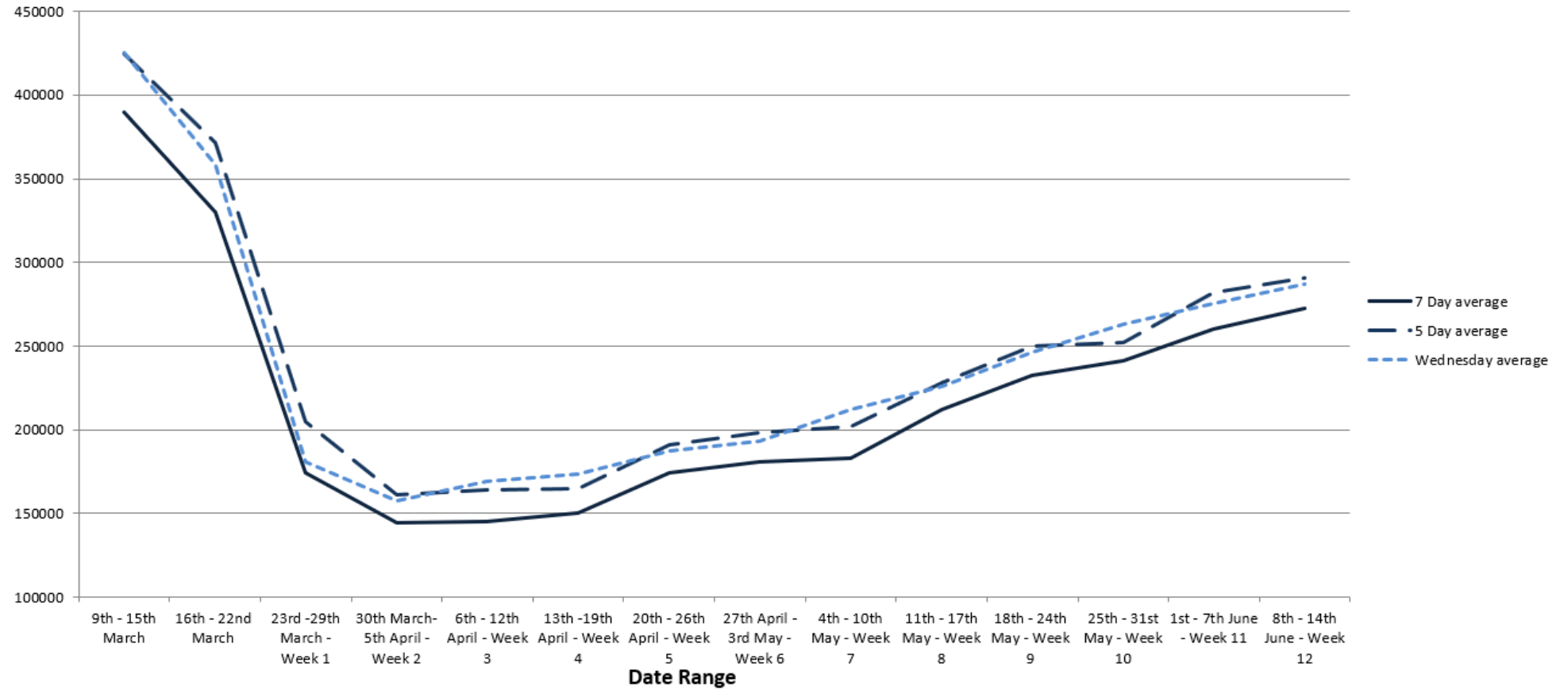
Impacts of COVID-19 on Air Quality within Derby City Council

The Covid-19 pandemic put pressure on Derby City Council resources, but the diffusion tube monitoring programme was maintained and not significantly affected.

Derby City Council has begun comparing monthly datasets from 2019 and 2020 to assess the impact of the Covid-19 pandemic and subsequent lockdown on local NO₂ concentrations. It has been found that, on average, NO₂ concentrations were 29.3% lower in March 2020 than in March 2019, and 44.8% lower in April 2020 than in April 2019.

Derby City Council has also analysed how the Covid-19 lockdown affected traffic flow in Derby between the first week of national lockdown in March 2020 and June 2020, as shown in Figure F.1. The annual average daily traffic (AADT) during this time was around 30% lower than the 2019 AADT. The 2019 AADT was very similar to the week of the 9th-15th March, which was two weeks prior to the national lockdown. Traffic was at its lowest point during the second week of lockdown between 30th March and 5th April, where flows were at approximately 63% lower than the 2019 AADT. The graphs and data track the changes for the 5-day and 7-day averages and Wednesday daily flows. The Wednesday figures give an indication throughout lockdown of a comparison unaffected by the bank holidays.

Figure F.10 – Derby City AADT (15 sites) March 9th 2020 – June 14th 2020



Opportunities Presented by COVID-19 upon LAQM within Derby City Council

Derby City Council has identified several opportunities presented by COVID-19, including:

- presenting data to show the impact that we can have by reducing traffic. This may be presented via Derby City Council's website, contacting schools directly, contacting businesses directly, or air quality campaign, to get this information out to public.
- locking in the air quality benefits of the "new normal", by promoting activities which benefitted air quality during lockdown, such as increased working from home and increased cycling.
- evaluating the effectiveness of Covid Emergency Active Travel. Corporation Street was closed to cars during lockdown as part of Covid Emergency Active Travel. By evaluate the effectiveness of this scheme and others, Derby City Council can decide whether to continue, remove, or enhance these schemes.

Challenges and Constraints Imposed by COVID-19 upon LAQM within Derby City Council

The Covid-19 pandemic put pressure on Derby City Council resources, but the diffusion tube monitoring programme was maintained and not significantly affected. **Impact Rating: None.**

As with previous years, a national bias adjustment factor has been utilised to adjust the diffusion tube results for 2020. In the 2019 ASR, there were 21 co-location studies that were utilised to calculate the bias factor for the laboratory and preparation method used. For 2020, this number has increased to 22 studies. Therefore, the uncertainty associated with the resultant annual mean NO₂ concentrations in 2020 should be low than in previous years. **Impact Rating: None.**

Diffusion tube monitoring dates deviated slightly from the 2020 Diffusion Tube Monitoring Calendar due to the practicality and feasibility of diffusion tube installations. **Impact Rating: None.**

Tubes were stored for longer than normal in the laboratory, but laboratory guidance was still adhered to. **Impact Rating: Small.**

Given the impact of the Covid-19 pandemic on resources, the review of Derby City Council's bonfire policy has been delayed. **Impact: Small.**

Derby City Council have recently prepared a new Air Quality Action Plan (AQAP), which was approved by Cabinet in November 2020 and submitted to DEFRA in December 2020.

Impact Rating: None.

The impact of Covid-19 meant that the *Derby and Derbyshire Air Quality Working Group* was not as active as normal, as Public Health had other priorities.

Table F 1 – Impact Matrix

Category	Impact Rating: None	Impact Rating: Small	Impact Rating: Medium	Impact Rating: High
Automatic Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Automatic Monitoring – QA/QC Regime	Adherence to requirements as defined in LAQM.TG16	Routine calibrations taken place frequently but not to normal regime. Audits undertaken alongside service and maintenance programmes	Routine calibrations taken place infrequently and service and maintenance regimes adhered to. No audit achieved	Routine calibrations not undertaken within extended period (e.g. 3 to 4 months). Interruption to service and maintenance regime and no audit achieved
Passive Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Passive Monitoring – Bias Adjustment Factor	Bias adjustment undertaken as normal	<25% impact on normal number of available bias adjustment colocation studies (2020 vs 2019)	25-50% impact on normal number of available bias adjustment studies (2020 vs 2019)	>50% impact on normal number of available bias adjustment studies (2020 vs 2019) and/or applied bias adjustment factor studies not considered representative of local regime
Passive Monitoring – Adherence to Changeover Dates	Defra diffusion tube exposure calendar adhered to	Tubes left out for two exposure periods	Tubes left out for three exposure periods	Tubes left out for more than three exposure periods
Passive Monitoring – Storage of Tubes	Tubes stored in accordance with laboratory guidance and analysed promptly.	Tubes stored for longer than normal but adhering to laboratory guidance	Tubes unable to be stored according to be laboratory guidance but analysed prior to expiry date	Tubes stored for so long that they were unable to be analysed prior to expiry date. Data unable to be used
AQAP – Measure Implementation	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP
AQAP – New AQAP Development	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP

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 Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
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
QA/QC	Quality Assurance and Quality Control
SO ₂	Sulphur Dioxide

References

- Local Air Quality Management Technical Guidance LAQM.TG16. April 2021. 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.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.