



2019 Air Quality Annual Status Report (ASR)

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

June 2019

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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 and older people, and those with 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 annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion³.

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. 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.

Air quality monitoring locations are reviewed annually. While the majority of historical sites continue to be monitored into 2018, some sites were removed and new have been sites added. The primary reasons for removing sites will be:

- Site exhibits concentrations well below AQ Objectives;
- Site has experienced unmanageable levels of tampering;
- Site not relevant to Objectives e.g. not representative of relevant receptor.

Full details of 2018 monitoring locations are included in the monitoring data section of this report.

The concentrations of NO₂ detected at long-term monitoring sites indicate that there is little change in most areas, however, some areas have begun to show a decrease in ambient NO₂ concentrations.

¹ Environmental equity, air quality, socioeconomic status and respiratory health, 2010

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

³ Defra. Abatement cost guidance for valuing changes in air quality, May 2013

In response to the Government's National AQ Plan towards compliance of the EU Directive on ambient air quality, Derby City Council have now submitted their Local NO₂ Plan Full Business Case (FBC) to DEFRA (March 2019). The FBC proposals revolve around implementing a traffic management solution to tackle areas of poor air quality, this is a single location at Stafford Street where an exceedance is predicted.

Under the Local Air Quality Management (LAQM) regime, the main air pollutants of concern in Derby are nitrogen dioxide (NO₂) and fine particulate matter (PM_{2.5}). According to local monitoring and assessment, exceedances of the National Air Quality Objectives only occur in relation to annual average NO₂. As a result, two Air Quality Management Areas (AQMAs) have been declared in Derby, covering the inner and outer ring roads and a section of the A52 around Spondon. The extent of the AQMAs can be viewed at <http://derby.maps.gov.uk>.

It is acknowledged that the extent of the Derby City AQMAs are now significantly out of date and therefore do not now accurately represent current conditions.

Consequently, the AQMA boundaries are currently being revised after detailed NO₂ modelling.

Actions to Improve Air Quality

Over the last few years, air quality improvement has been managed by the Council in a variety of ways.

A Low Emission Strategy (LES) was developed in 2017 which included some overarching AQ improvement measures. Along with detailed traffic and AQ modelling funded under the Clean Air Zone Feasibility Study Fund, this Strategy assisted in the design of a package of measures presented under the Local Roadside NO₂ Plan FBC, submitted to DEFRA in March 2019.

In addition to the Local Roadside NO₂ Plan, Derby City Council has also been developing an updated Air Quality Action Plan (AQAP), following further modelling and source-apportionment work with a stakeholder engagement meeting held in May 2019. The AQAP is due to go out to consultation soon and should be completed in the summer 2019.

The AQAP will cover actions relating to the following areas:

- Promoting Low Emission Transport;
- Transport Planning and Infrastructure;
- Promoting Travel Alternatives;
- Traffic Management;
- Public Information;
- Policy Guidance and Development Control; and
- Vehicle Fleet Efficiency.

Aside from the specific air quality improvement measures developed under the LES, Local Roadside NO₂ Plan and AQAP, the Council is also involved in a large range of other schemes which will help to improve local air quality. Notable examples include:

- the installation of EV Charge Points (OLEV funding)
- Low Emission Taxis project (CAZ early measures funding)
- significant investment in cycling and walking infrastructure (Access Fund and Transforming Cities Fund).

Further details of the wide range of air quality improvement measures currently being implemented in Derby are in Section 2 of this Report and can be viewed on the Council website here:

<https://www.derby.gov.uk/media/derbycitycouncil/contentassets/documents/environmentalprotection/181129-draft-other-air-quality-action-v3.pdf>

Conclusions and Priorities

Overall, ambient NO₂ concentrations within the Ring Roads AQMA have either decreased or remained at levels similar to previous years. Concentrations of NO₂ within the Spondon AQMA have decreased since last year, lending support to the potential revocation of this AQMA. Exceedances occurred outside of AQMAs in three locations, which provides justification to the current work being undertaken to amend

the AQMA boundary. 2018's NO₂ monitoring results for these locations have shown slight improvements (reductions) in ambient NO₂ concentrations on previous years.

The main legal priority for the council is to comply with the EU NO₂ Limit Value as quickly as practicable. The full business case for the Local Roadside NO₂ Plan to combat exceedances in ambient NO₂ concentrations has been submitted to the government. Derby will continue to work towards the revocation of AQMAs within its administrative area by bringing them into compliance.

Derby is currently revising the 2011 Air Quality Action Plan (AQAP). The new version will include both new and ongoing measures for the reduction of ambient NO₂ concentrations, based on detailed source-apportionment modelling. These measures will be complementary to reducing ambient PM_{2.5} concentrations.

The anticipated key challenges are:

- obtaining funding for implementing measures
- ensuring that measures are appropriate to the needs of the residents of Derby, while considering the existing AQMAs and any potential changes to AQMAs.

Local Engagement and How to get Involved

Everyone can help to improve air quality within Derby. Travel choices can have a significant impact on pollutant emissions; reducing single occupancy car travel; using alternatives such as public transport; and walking and cycling for short journeys all help to reduce emissions. There are several online tools available to help you plan your journey, including walkit.com and cyclestreets.net. When you have to travel by car, avoiding excessive acceleration and hard braking will also reduce the impact of the journey. Derby City Council supports Clean Air Day which was on the 20th June in 2019.

To find out how you can get involved in future Clean Air Day events, go to:

<https://www.cleanairday.org.uk/Pages/Category/get-involved-in-nationalclean-air-day>.

For suggestions of how you can reduce the amount of air pollution you create, go to:

www.cleanairday.org.uk/reduce-air-pollution



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1 Local Air Quality Management

This report provides an overview of air quality in Derby during 2018. 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 can be found in **Table E.1** in Appendix E.

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 must prepare an Air Quality Action Plan (AQAP) within 12-18 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. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=77. Alternatively, see

Appendix D: Map(s) of Monitoring Locations and **AQMAs**, which provides for a map of air quality monitoring locations in relation to the AQMA(s).

We have commissioned a review of AQMA boundaries within the Derby City Council administrative area considering the results of monitoring in recent years. The outcome is likely to include revision and possible extension of the boundary of AQMA No. 1 Ring Roads to encompass properties in St Mary's Court and on Ashbourne Road. These areas currently lie outside of the existing AQMA boundary; however, monitoring has identified the risk of air quality objective exceedances in these areas.

Monitoring within the Spondon AQMA in recent years indicates that it may be possible to revoke this AQMA. The decision to revoke has been postponed pending the results of further monitoring, which has been instigated to confirm the effects of recent road reconfiguration works in the area, namely the A52 Wyvern Transport Improvement Scheme. Section 3.2 provides further details.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)				Action Plan		
						At Declaration		Now		Name	Date of Publication	Link
No. 1 Ring Roads	Declared 01/08/2001, Amended 01/09/2002 and 23/10/2006	NO ₂ annual mean	Derby	An AQMA encompassing the Inner and Outer Ring-Roads in the city, as well as some sections of radial roads and the entire length of Osmaston Road.	NO	63.6	µg/m ³	45.2	µg/m ³	Air Quality Action Plan	2011	The current AQAP is available here The revised AQAP will be released in 2019
No.2 A52	Declared 01/08/2001, Amended 01/09/2002 and 23/10/2006	NO ₂ annual mean	Spondon	Sections of the A52, Derby Road and Nottingham Road in Spondon.	YES	40.6	µg/m ³	34	µg/m ³	Air Quality Action Plan	2011	The current AQAP is available here The revised AQAP will be released in 2019

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

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

Defra's appraisal of last year's ASR concluded that "The report is well structured, and comprehensive, and provides the information specified in the Guidance, using the latest template". Defra's comments, as well as Derby City Council's response, are available on pages 10-12 of this report.

Derby City Council has taken forward a number of direct measures during the current reporting year of 2018 in pursuit of improving local air quality:

- The development of the business case for the Local Air Quality Plan which sets out the preferred option to combat exceedances of the legal NO₂ level in Derby.
- The Low Emissions Strategy (LES) for Derby City was drafted in July 2018, which shortlists air quality improvement measures.
- Improvement of walking and cycling in Derby such as: eBikes Derby, is the country's largest electric bike share scheme, which launched in the summer of 2018; The South Derby Cycle Package; and plans to implement a series of cycle network improvement measures, known as the Connected Cycle City Western Corridor Extension.

Derby City Council is working alongside Defra's Joint Air Quality Unit, Public Health England, the East Midlands Air Quality Network, Derbyshire County Council, Derbyshire Air Quality Working Group, local bus operators and businesses, and developers to implement and deliver proposed measures.

Derby City Council is currently preparing a new Air Quality Action Plan (AQAP). Ongoing air quality improvement measures from the 2018 ASR will be taken forward and included in the revised AQAP. The revised AQAP is due to be made available in the summer of 2019.

Table 2.2 – Progress on Measures to Improve Air Quality

The majority of the direct measures that were implemented or continued through the reporting year of 2017 and were included in the 2018 annual status report (ASR) are still ongoing. The details of these measures are available in table 2.2. The newly revised AQAP, due for publication in summer 2019, will supersede this with the introduction of new measures and an update on the progress of currently ongoing measures.

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Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Local Cycling and Walking Infrastructure Plan (LCWIP)	Transport Planning and Infrastructure	Cycle network	D2N2 Funding	Complete	Ongoing	Completion of Plan	Reduced vehicle emissions from mode shift.	Near completion	Due to be complete by November 2019	N/A
2	Updated Council Grey Fleet Travel Plan	Promoting Travel Alternatives	Workplace Travel Planning	LA - existing budget	Ongoing	TBC	# of low emission vehicles in Council grey fleet and # business mode shift journeys	Reduced vehicle emissions	Development Phase initiated in June 2019	TBC	Employee contractual issues and Trade Union agreement
3	Cleaner Taxis Project	Promoting Low Emission Transport	Taxi Licensing conditions	LA using CAZ Early Measures and AQ Grant Funding	Ongoing	TBC	# of taxis meeting minimum NOx emissions standards	Reduced vehicle emissions	Taxi Licensing proposals out for consultation (Incl. new minimum age Policy). Taxi fleet emission study complete. Investment in Taxi E-Hubs and EV Taxi-only stands	TBC. Electric Taxis Project no longer possible following failure to secure funding under CAF	First phase successful, however further funding refused under Clean Air Fund bid
4	Travel Behaviour Change Programme	Promoting Travel Alternatives	Other	LA and Partners through Access Fund	Complete	Ongoing	AF data analysis	Reduced vehicle emissions	Implementation ongoing	31st March 2020	N/A
5	EV Charging Infrastructure	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	LA and OLEV (Go Ultra Low Cities) Funded	Ongoing	Summer 2019	# New EV Charge Points	Reduced vehicle emissions	Planning ongoing	TBC	Council resource pressures

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6	Bus Retrofit Programme (CBTF)	Vehicle Fleet Efficiency	Vehicle Retrofitting programmes	To be delivered by local private bus operators using CBTF Funding with LA support	Ongoing	Imminent	# completed retrofitted buses	Reduced bus emissions	Funding now not being taken forward by all operators. Current position is retrofit of 55 buses by one operator	end of 2019/20	Main barrier has been lacking Council authority over private bus operators (no publicly owned buses in Derby) and the inherent variety of bus operator business plans, preferring vehicle replacement programmes over retrofitting
7	Council HGV Retrofit Programme	Vehicle Fleet Efficiency	Vehicle Retrofitting programmes	DEFRA AQ Grant	Complete	Cancelled	N/A	N/A	Project Cancelled	N/A	Project cancelled due to lack of retrofit technology accreditation and perceived unworkable additional maintenance costs
8	Anti-idling Enforcement	Traffic Management	Anti-idling enforcement	LA Enforcement	Initiated in June 2019	Summer 2019	New expanded PPO enforcement service operational, then # of Notices Served	Reduced vehicle emissions	Being considered as part of new Public Protection Officer Service	PPO service due to be expanded in Summer 2019	Question over remit of PPO Service and whether this can include anti-idling enforcement. Relevant powers of authority require approval.
9	Area and Regional Co-ordination of AQ Measures through AQWG and EMAQN	Other	Other	Using existing funding to work with Derbyshire and other East Midlands Authorities	Complete	Ongoing	AQWG Work Plan Implementation and annual reporting to Health Protection Board and Health and Well-being Boards	Wide range of measures proposed under Work Plan	Operational since 2016	Ongoing	Continued officer resource allocation possible barrier

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10	AQ and Planning	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	LA resourced	ongoing	ongoing	Completion of Local Plan AQ Policy and subsequently, completion of Supplementary Planning Guidance on AQ. Also developing specific Planning Guidance on consideration of Derby Roadside NO2 Local AQ Plan	Ensuring AQ is at the heart of planning decisions	Ongoing	Ongoing	LA resource constrained
11	Derby Roadside NO2 Local Air Quality Plan - Traffic Management Scheme	Traffic Management	UTC, Congestion management, traffic reduction	Subject to DEFRA Funding	Complete	2019/20 - Measures to bring forward compliance to 2020	Compliance with EU Limit Values	Reduction in annual average NO2 along Stafford Street to below 40µgm-3 by 2020 (reduction of 9.4µgm-3 NO2 based on 2020 baseline)	Feasibility study now complete and FBC submitted to DEFRA in March 2019	Measures for compliance - by 2020. Measures to maintain compliance - continued until 2025	Reliant on scheme costs being funded (by central government) and timely approvals processes - currently not fully funded.
12	Derby Roadside NO2 Local Air Quality Plan - EV Charging Strategy	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	Bid under Clean Air Fund (CAF)	Complete	cancelled	# EV Charge points in City	Modelled decrease of 21.2 tonnes NOx and 1.25 tonnes of PM2.5 by 2025	No funding awarded to take project forward. No further action possible due to resource constraints	N/A	No grant funding awarded.
13	Derby Roadside NO2 Local Air Quality Plan - Clean Air Mobility Scheme (CAMS)	Promoting Travel Alternatives	Other	Bid under Clean Air Fund (CAF)	Complete	cancelled	# people exchanging high emission vehicle for mobility credits	NOx savings of 8.83 and 2.2 tonnes per year, under Phase 1 and 2 respectively	No funding awarded to take project forward. No further action possible due to resource constraints	N/A	No grant funding awarded.

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14	Updated Air Quality Action Plan (AQAP)	Other	Other	LA Funded	Ongoing	Ongoing	Completion of AQAP	Variety of measures proposed following source apportionment modelling across AQMAs	In Draft form, Due to go to public consultation in summer	Late summer 2019	Resource constraints and ownership of measures following completion of Plan
15	Air Quality Awareness-Raising	Public Information	Via other mechanisms	LA Delivery using CAZ Feasibility Study and Implementation Funding	Complete	Ongoing	# stakeholders actively engaged, assessed via click-through rates and average view length time on social media and web pages and # mailshots/ letters	Indirect reductions in pollutant concentrations due to behavioural change resulting from information	Taxi-engagement workshop and Clean Air Day events complete. Ongoing updating of website including useful info and signposting.	Ongoing	Current funding up to 2020

No.	Comments from Defra on Derby City Council's ASR (2018)	Response (if Required)
1	The Annual Status report for 2018 continues to provide an update on the status of air quality in Derby, and a brief update on progress with plans for developing a Clean Air Zone.	No comment required.
2	The latest monitoring results for 2017 continue to suggest that the only exceedances of air quality objectives are located close to the Ring Road AQMA.	No comment required.
3	We agree it would be appropriate for the Council to consider reviewing the boundary of AQMA1 and consider steps towards reviewing the status of AQMA 2 at Spondon, with the option of revocation if future monitoring continues to remain well below objective levels.	No comment required.
4	The Council should carefully continue to review the existing monitoring strategy, as a means of ensuring all pollution hotspots have been detected. They will clearly be used as future indicators of success of future measures to reduce emissions and deliver the air quality objectives. Monitoring results for comparison to objective levels should be expressed at positions of relevant exposure to provide consistency in reporting.	Derby City Council continues to undertake an annual review of monitoring. Furthermore, additional monitoring is now being carried out/proposed in accordance with the Local NO ₂ Plan Monitoring and Evaluation process.
5	The submission of the Annual Status report continues amidst the development of measures towards delivering the air quality objectives based upon a Clean Air Zone, which is being addressed as a separate initiative to this report. Hence the development of CAZ measures will not be considered further within this appraisal.	No comment required.
6	However, it will be important in future ASR reports to ensure that CAZ measures are incorporated into Table 2.2 for annual updating and review in the ASR.	Derby City Council's Local Roadside NO ₂ Plan has now been submitted and approved. The proposed measures will continue to be considered in conjunction with Annual Status Reports and the developing AQAP.
7	The Council are reminded that the process for developing effective measures to reduce emissions in AQMAs is clearly described for the development of Air Quality Action Plans, within the latest Policy and Technical Guidance from Defra, particularly Chapter 2 of LAQM TG(16), which details the recommended approach for developing an action plan. The basis of the approach involves gaining an understanding of the current level of excess emissions giving rise to the air quality exceedance, with knowledge from a source apportionment of which pollution sources are contributing to the	Source apportionment modelling has now been completed (by Ricardo AEA) and used in the development of the Council's emerging AQAP, due to be published in the summer of 2019, in accordance with DEFRA Guidance.

	excess. Without this approach, there is no basis for assuming that measures that are otherwise prescribed to reduce emissions are likely to be effective. These principles should be used to underpin the development of all future action plan measures.	
8	We repeat previous recommendations relating to the importance of understanding the local options for traffic management, based upon knowledge of traffic congestion, queuing, and delays on the relevant road sections.	No comment required.
9	It is only when emissions from congested traffic are accounted for that a realistic picture of traffic emissions can be considered as a basis for developing further actions.	Congestion has been considered within the recent AQ modelling work completed in support of the developing AQAP. It is important to note however, that AQ modelling for annual average NO ₂ is inherently poor at accurately reflecting queuing/congestion due to the use of AADTs and average speeds, which does not take into account shorter term variations in queuing.
10	Equally, source apportionment of local emission sources is vital to provide an understanding of which emission sources need to be targeted in addressing the pollution exceedances. It is likely that traffic management measures that consider the management of congested traffic through the AQMA area will be required to address the pollution exceedances.	See response 7 above.
11	This process is described in detail within the latest Technical Guidance LAQM TG(16) from Defra in Chapter 2, Section 7.104-106 and Box 7.6. The Guidance makes clear that: <i>"The AQAP should only be considered in detail once the source and extent of the problem are clearly understood"</i> . [Ref: LAQM TG(16) para 2.30]	See response 7 above.
12	Hence air pollution emissions reduction targets, should underpin the further development of Action Plan.	See response 7 above.

13	<p>The latest Technical Guidance LAQM TG(16), para 2.69 makes clear, as a minimum AQAP's should include the following:</p> <ul style="list-style-type: none"> • Quantification of source contributions (e.g. HGVs, buses, taxis, other transport, industrial or domestic sources etc.) responsible for the exceedance of the relevant objective; knowing the source of the problem will allow the AQAP measures to be effectively targeted; • Quantification of impacts of proposed measures including, where feasible, expected emission and concentration reductions (either locally obtained and/or via national monitoring/modelling statistics). It is important that the local authority shows how it intends to monitor and evaluate the effectiveness of the plan; 	See response 7 above.
14	<p>We agree that AQMA2 for Spondon may be considered for revocation following the results of additional monitoring and AQMA1 amended to include additional areas of exceedance. The Council may wish to consider the fast track procedure, as detailed in LAQM TG(16) for the AQMA amendment.</p>	No comment required.

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, 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}.

Finally, 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.

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how it compares with objectives.

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 2018. Table A.1 in Appendix A shows the details of the 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 (passive) monitoring of NO₂ at 76 sites during 2018. Table A.2 in Appendix A shows the details of the sites. Several diffusion tubes have been relocated since 2017 to areas that better represent levels of exposure (Tube ID numbers 4, 6, 12, 26, 27, 28, 47, 55, 57, 64, and 74). This follows the review of all monitoring sites in 2015, and the establishment of new monitoring areas to support the implementation of the CAZ.

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” and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO₂)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

For diffusion tubes, the full 2018 dataset of monthly mean values is provided in Appendix B.

Table A.4 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

The results of the fully adjusted (bias adjusted, and annualised where appropriate), show that there are 6 locations where there are potential exceedances of the annual mean objective which have been measured in 2018. Three of these locations are within the existing Ring Road AQMA. The remaining three locations are outside of the existing AQMAs:

DT11 is a roadside monitoring location established in 2016, just outside of the AQMA boundary on Eastgate. The NO₂ concentration measured in 2016 was 46.5µg/m³. This has reduced steadily in the following years, to 44.75µg/m³ in 2017, and 43.45µg/m³ in 2018. There is no relevant exposure for the annual mean objective near to this site, and therefore no further action is required for LAQM purposes. This monitoring site has been established to inform compliance with the EU Limit Value, which apply at all locations (except where members of the public do not have access and there is no fixed habitation; on factory premises or at industrial processes; and on the carriageway of roads / central reservations of roads, except where there is normally pedestrian access).

DT34 is a kerbside monitoring location adjacent to the A38, established in 2016. The measured concentration in 2016 was 60 µg/m³, and this increased to 61.9 µg/m³ in 2017. In 2018, measured concentrations decreased slightly to 59.3 µg/m³. Currently, there is no AQMA in the vicinity of the monitoring site. There is potential exposure

nearby; however DT33 is located on the façade of nearby properties. In 2018, the concentration measured at DT33 was 24.8 $\mu\text{g}/\text{m}^3$; which is well below the air quality objective. This is an improvement on 2017's 30.9 $\mu\text{g}/\text{m}^3$. Historically, measured concentrations at DT33 have been below the objective, therefore, no further action is required in this area.

DT60 is a monitoring location established in 2016, adjacent to the A52 (Ashbourne Road) on the façade of a residential property. The concentration in 2016 and 2017 was 42.3 $\mu\text{g}/\text{m}^3$ and 42.9 $\mu\text{g}/\text{m}^3$ respectively. The concentration measured in 2018 is 42 $\mu\text{g}/\text{m}^3$. No AQMA's are located close to this monitoring site. Concentrations measured at nearby monitoring locations, DT61 and DT74 are below the objective, measuring 29.0 $\mu\text{g}/\text{m}^3$ and 30.8 $\mu\text{g}/\text{m}^3$ respectively.

Seven locations have monitors within the **Spondon AQMA**. Measured concentrations at each of the seven sites have been below 40 $\mu\text{g}/\text{m}^3$ since 2011. There are ongoing changes to the road layout in the area as a result of the A52 Wyvern Improvement Scheme and therefore the decision to revoke has been postponed pending the results of further monitoring and completion of this scheme. A city-wide AQMA boundary review is also currently underway. Once finished, this may result in amendments to the current AQMA boundaries.

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	Y OS Grid Ref	Pollutants Monitored	In 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	NO ₂	YES	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

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
DT1	23 Gilbert Close	R	439776	335696	NO2	Y	0	10	No	1.8
DT2	10 Kirkleys Ave North	R	440206	335650	NO2	Y	0	10	No	1.8
DT3	27 Kirkleys Ave South	R	440198	335611	NO2	Y	0	12	No	1.8
DT4	24 Nottingham	R	439896	335350	NO2	Y	0	5.8	No	1.8
DT5	1 Station Road	R	439789	335412	NO2	Y	0	8	No	1.8
DT6	18 Leeway	R	439647	335575	NO2	Y	0	9.8	No	1.8
DT7	1 Drury Avenue	R	439851	335674	NO2	Y	0	9.5	No	1.8
DT8	198 Derby Road	R	438942	335864	NO2	N	0	2	No	1.8
DT9	109 Highfield Lane	R	437382	336044	NO2	N	2	19	No	1.8
DT10	203/201 Nottingham Road	R	436700	336637	NO2	Y	0	2	No	1.8
DT11	Eastgate (Pentagon)	R	436064	336487	NO2	N	N/A	3	No	1.8
DT12	Bass Recreation Ground/The Holmes	UB	435764	336306	NO2	N	N/A	4	No	1.8
DT13	16/18 Harrow Road	R	437196	334410	NO2	Y	0	8	No	1.8
DT14	713 London Road	R	437090	334432	NO2	N	0	5	No	1.8

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
DT15	938 London Road	R	437676	334090	NO2	Y	0	3	No	1.8
DT16	1178 (1170) London Road	R	438162	333654	NO2	Y	0	5	No	1.8
DT17	7 Raynesway	R	438535	333508	NO2	Y	0	8	No	1.8
DT18	772 Osmaston Road	R	436836	332961	NO2	Y	0	2	No	1.8
DT19	831 Osmaston Road	R	436992	332713	NO2	Y	0	10	No	1.8
DT20	113 Chellaston Road	R	437175	332111	NO2	Y	0	10	No	1.8
DT21	376 Osmaston Park Road	K	436869	332783	NO2	N	0	1	No	1.8
DT22	523 Osmaston park Road	R	436809	332826	NO2	Y	0	3	No	1.8
DT23	104 Osmaston Park Road	R	435716	333327	NO2	Y	0	4.5	No	1.8
DT24	32 Newdigate Street	R	435091	333526	NO2	Y	0	2	No	1.8
DT25	80 Newdigate Street	R	435022	333581	NO2	Y	0	2	No	1.8
DT26	35 Allan Avenue	R	431261	333654	NO2	Y	0	30.5	No	1.8
DT27	414 Uttoxeter New Road	R	433190	335380	NO2	Y	0	7.7	No	1.8
DT28	Rowleys Mill Flats, Uttoxeter New Road	R	434461	336041	NO2	Y	0	4.9	No	1.8
DT29	2a Lime Walk	R	433688	334507	NO2	Y	0	2	No	1.8

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
DT30	430 Uttoxeter New Road	R	433076	335299	NO2	Y	0	7	No	1.8
DT31	431 Uttoxeter New Road	R	433186	335327	NO2	Y	0	9	No	1.8
DT32	266 Uttoxeter New Road	R	433786	335778	NO2	Y	0	2	No	1.8
DT33	150 Radbourne Street	R	433118	336650	NO2	N	0	4	No	1.8
DT34	Kingsway / A38	R	433174	336737	NO2	N	N/A	5	No	1.8
DT35	199 Uttoxeter New road	R	433887	335804	NO2	N	0	2	No	1.8
DT36	59a Stafford Street	R	434688	336155	NO2	N	0	2	No	1.8
DT37	4 Dunkirk	R	434773	335977	NO2	N	0	5	No	1.8
DT38	Wilson Street West	R	434900	335846	NO2	N	0	16	No	1.8
DT39	201 Abbey Street	R	434846	335657	NO2	Y	0	2	No	1.8
DT40	315 Burton Road	R	434279	334921	NO2	N	0.2	2	No	1.8
DT41	220 Burton Road	R	434785	335241	NO2	Y	0	3	No	1.8
DT42	114a Burton Road	R	435025	335508	NO2	Y	0	2	No	1.8
DT43	131 Green Lane	R	435189	335760	NO2	N	0	6	No	1.8
DT44	57 Normanton Road	R	435198	335537	NO2	Y	0.2	2	No	1.8

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
DT45	29 Ivy Square off Osmaston Road	R	436046	334857	NO2	Y	0	6	No	1.8
DT46	114 Osmaston road	R	435534	335467	NO2	Y	0	2	No	1.8
DT47	Casteward Court, Traffic Street	K	435725	335802	NO2	Y	0	35	No	1.8
DT48	London Road/Westfield	K	435484	335813	NO2	Y	N/A	2	No	1.8
DT49	59 Osmaston Road	R	435440	335717	NO2	Y	0.1	2	No	1.8
DT50	Royal Telegraph Pub	R	435653	335706	NO2	Y	0	2	No	1.8
DT51	176 Siddals Road	R	436008	335943	NO2	Y	0	5	No	1.8
DT52	123 Nottingham Road	R	435795	336625	NO2	Y	0	3	No	1.8
DT53	63 Nottingham Road	R	435586	336642	NO2	Y	0	3	No	1.8
DT54	14 Mansfield Road	R	435439	336817	NO2	Y	0	3	No	1.8
DT55	1 Wood Street	R	435487	336706	NO2	N	0	19.5	No	1.8
DT56	St Marys Court 1	R	435203	336779	NO2	Y	0	3	No	1.8
DT57	St Marys Court 2	K	435249	336785	NO2	N	0	12.8	No	1.8
DT58	171/182 Cavendish Court	R	434820	336505	NO2	N	0	15	No	1.8

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
DT59	Stafford Street Burleigh Mews Flats	R	434748	336352	NO2	Y	0	4	No	1.8
DT60	189/191 Ashbourne road	R	433633	336850	NO2	N	0	4	No	1.8
DT61	148 Ashbourne road	R	433796	336786	NO2	N	0	3	No	1.8
DT62	Millgate, Ashbourne Road	R	434276	336576	NO2	Y	0	4	No	1.8
DT63	Friargate / Bridge street corner	R	434497	336510	NO2	Y	0	7	No	1.8
DT64	Kenneth House, Agard Street	R	434545	336570	NO2	Y	0	2.5	No	1.8
DT65	8/10 Agard Street	R	434712	336490	NO2	Y	0	2	No	1.8
DT66	69 King Street	R	435013	336734	NO2	Y	0	4	No	1.8
DT67	26 / 24a Penny Long Lane	UB	434364	337881	NO2	N	10	N/A	No	1.8
DT68	Duffield Road (55West Avenue)	R	434819	337072	NO2	Y	0	2	No	1.8
DT69	8 Kedleston Road (Chriopodist)	R	434775	337086	NO2	Y	0	8	No	1.8
DT70	Duffield Road/North Street	R	434814	337041	NO2	Y	2	4	No	1.8

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
DT71	5 Duffield Road	R	434937	336916	NO2	Y	0	4	No	1.8
DT72	14 The Strand	R	435131	336256	NO2	N	N/A	2	No	1.8
DT73	Victoria Street/Corn Market	R	435262	336157	NO2	N	N/A	5	No	1.8
DT74	259 Ashbourne Road	R	433459	336918	NO2	N	N/A	14.5	No	1.8
DT75	25 Morledge	R	435477	336176	NO2	N	N/A	11	No	1.8
DT76	Council House	UC	435496	336294	NO2	N	N/A	>50	No	1.8

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on/adjacent to the façade of a residential property).

(2) N/A if not applicable.

(3) Site type: R – Roadside, K – Kerbside, UB – Urban Background, UC – Urban Centre.

(4) 0m means the monitor is on the façade of relevant exposure.

(5) N/A - not applicable; there is no nearby relevant exposure for the annual mean objective, or the site is an UB location.

Table A.3 – Annual Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2014	2015	2016	2017	2018
AURN	R	Automatic	100	100				37	36
DT1	R	Diffusion Tube	92	92	27	30	29	27	25
DT2	R	Diffusion Tube	100	100	29	28	29	29	25
DT3	R	Diffusion Tube	100	100	25	25	26	25	22
DT4	R	Diffusion Tube	100	100					34
DT5	R	Diffusion Tube	100	100	29	27	31	36	32
DT6	R	Diffusion Tube	83	83					23
DT7	R	Diffusion Tube	100	100			27	25	22
DT8	R	Diffusion Tube	100	100			29	30	29
DT9	R	Diffusion Tube	100	100	30	29	28	30	24
DT10	R	Diffusion Tube	100	100			47	48	45
DT11	R	Diffusion Tube	100	100			47	45	43
DT12	R	Diffusion Tube	42	42					37
DT13	R	Diffusion Tube	100	100	34	30	30	32	30
DT14	R	Diffusion Tube	100	100	23	23	27	25	24
DT15	R	Diffusion Tube	100	100			44	44	40
DT16	R	Diffusion Tube	100	100			35	35	33
DT17	R	Diffusion Tube	100	100			31	32	31
DT18	R	Diffusion Tube	100	100			27	24	25
DT19	R	Diffusion Tube	100	100	27	26	26	26	24
DT20	R	Diffusion Tube	83	83			27	23	22

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2014	2015	2016	2017	2018
DT21	K	Diffusion Tube	92	92			25	22	22
DT22	R	Diffusion Tube	100	100			27	27	27
DT23	R	Diffusion Tube	67	67			43	36	36
DT24	R	Diffusion Tube	92	83	37	34	41	38	37
DT25	R	Diffusion Tube	83	83			41	36	38
DT26	R	Diffusion Tube	92	92					20
DT27	R	Diffusion Tube	92	92					28
DT28	R	Diffusion Tube	92	92					23
DT29	R	Diffusion Tube	100	100			27	25	25
DT30	R	Diffusion Tube	100	100			27	24	23
DT31	R	Diffusion Tube	100	100			31	48	44
DT32	R	Diffusion Tube	92	92	43	39	41	40	37
DT33	R	Diffusion Tube	100	100	29	28	31	28	25
DT34	R	Diffusion Tube	92	92			60	62	59
DT35	R	Diffusion Tube	92	92			32	35	33
DT36	R	Diffusion Tube	100	100			37	36	37
DT37	R	Diffusion Tube	92	92	25	23	26	27	25
DT38	R	Diffusion Tube	92	92	22	21	23	23	21
DT39	R	Diffusion Tube	92	92			33	29	29
DT40	R	Diffusion Tube	100	100			29	28	28
DT41	R	Diffusion Tube	100	100			31	33	31
DT42	R	Diffusion Tube	75	75			32	32	33

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2014	2015	2016	2017	2018
DT43	R	Diffusion Tube	92	100			28	25	25
DT44	R	Diffusion Tube	100	100			38	33	32
DT45	R	Diffusion Tube	100	100	37	32	33	34	33
DT46	R	Diffusion Tube	100	92			34	37	35
DT47	K	Diffusion Tube	100	58					25
DT48	K	Diffusion Tube	83	75			37	39	35
DT49	R	Diffusion Tube	100	67	37	31	33	31	28
DT50	R	Diffusion Tube	100	67	43	39	39	38	36
DT51	R	Diffusion Tube	100	100			30	28	27
DT52	R	Diffusion Tube	100	92	37	33	32	32	30
DT53	R	Diffusion Tube	100	92			30	33	30
DT54	R	Diffusion Tube	42	100	31	30	30	31	27
DT55	R	Diffusion Tube	100	92					23
DT56	R	Diffusion Tube	100	100	33	32	41	40	38
DT57	K	Diffusion Tube	100	100					25
DT58	R	Diffusion Tube	100	100	27	27	28	26	23
DT59	R	Diffusion Tube	100	100			51	48	45
DT60	R	Diffusion Tube	100	92			42	43	42
DT61	R	Diffusion Tube	100	75	29	32	31	29	29
DT62	R	Diffusion Tube	83	100			35	33	32
DT63	R	Diffusion Tube	92	100	35	36	39	33	35
DT64	R	Diffusion Tube	100	100					32

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2014	2015	2016	2017	2018
DT65	R	Diffusion Tube	67	100			35	35	31
DT66	R	Diffusion Tube	83	100			26	25	25
DT67	UB	Diffusion Tube	83	92			17	16	15
DT68	R	Diffusion Tube	92	42	38	36	35	36	34
DT69	R	Diffusion Tube	92	100	34	31	31	31	29
DT70	R	Diffusion Tube	92	92	34	35	32	27	26
DT71	R	Diffusion Tube	100	100			35	29	29
DT72	R	Diffusion Tube	100	75			32	29	27
DT73	R	Diffusion Tube	100	92	31	27	26	26	23
DT74	R	Diffusion Tube	92	100					31
DT75	R	Diffusion Tube	100	100	37	38	39	38	34
DT76	UC	Diffusion Tube	92	92			27	29	25

- Diffusion tube data has been bias corrected
- Annualisation has been conducted where data capture is <75%
- If applicable, 2018 data has been distance corrected for relevant exposure

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**.

(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%).

(3) Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Figure A.1 – Trends in Annual Mean NO₂ Concentrations Measured in the Spondon AQMA (Sites DT1 – DT5)

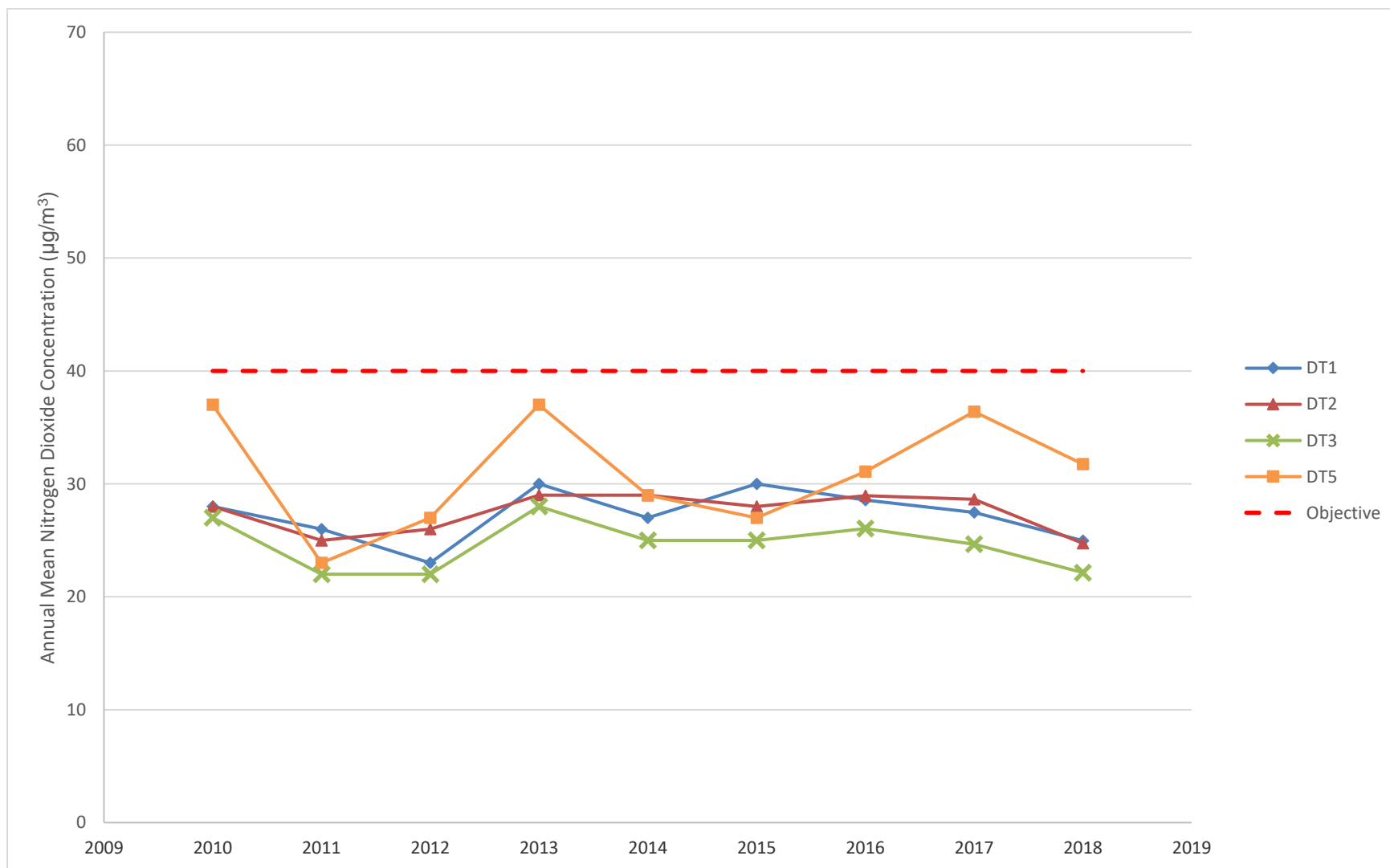


Figure A.2 – Trend in Annual Mean NO₂ Concentrations Measured at Diffusion Tube Monitoring Sites DT9 – DT24

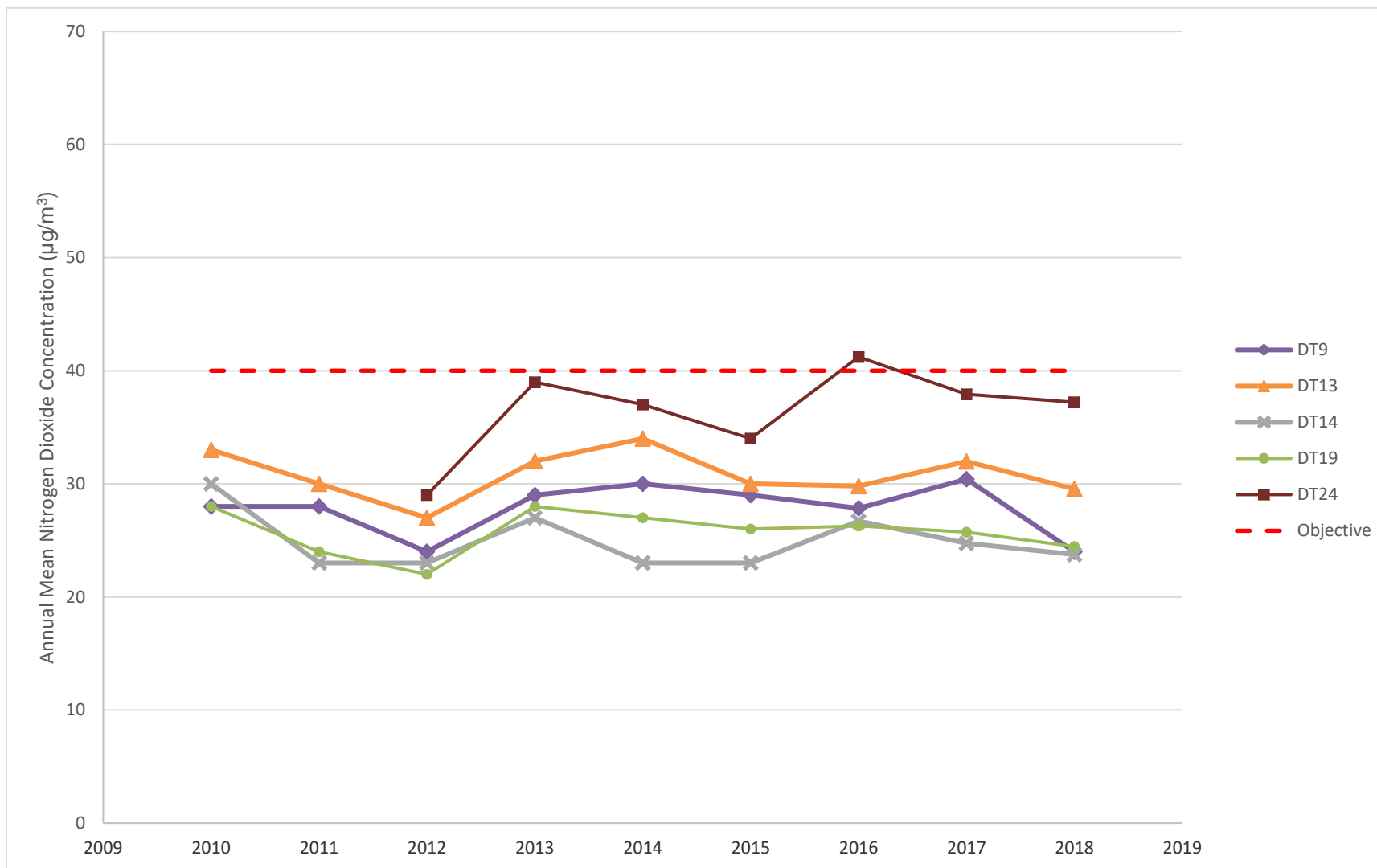


Figure A.3 – Trend in Annual Mean NO₂ Concentrations Measured at Diffusion Tube Monitoring Sites DT32 – DT45

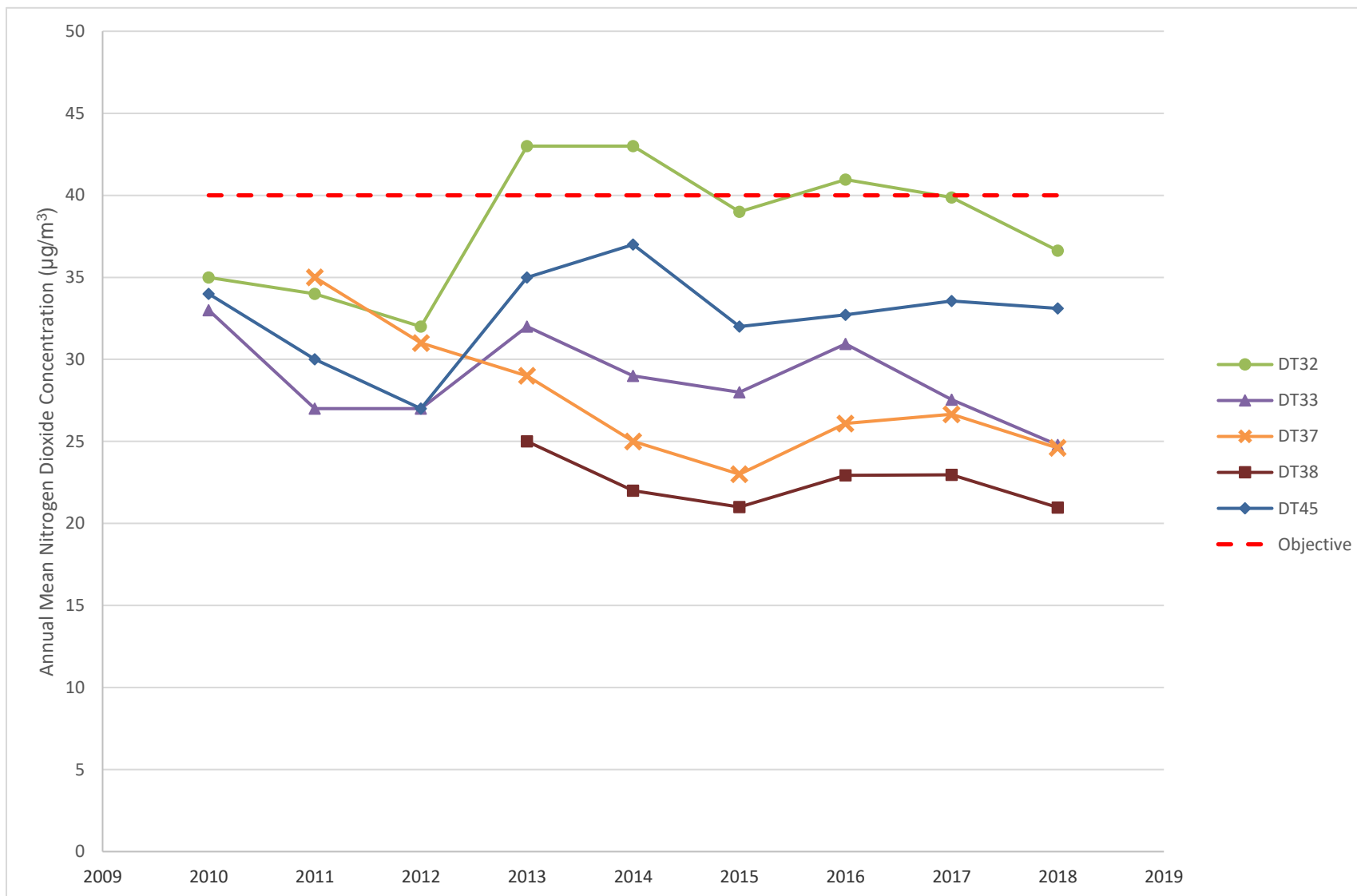


Figure A.4 – Trend in Annual Mean NO₂ Concentrations Measured at Diffusion Tube Monitoring Sites DT49 – DT61

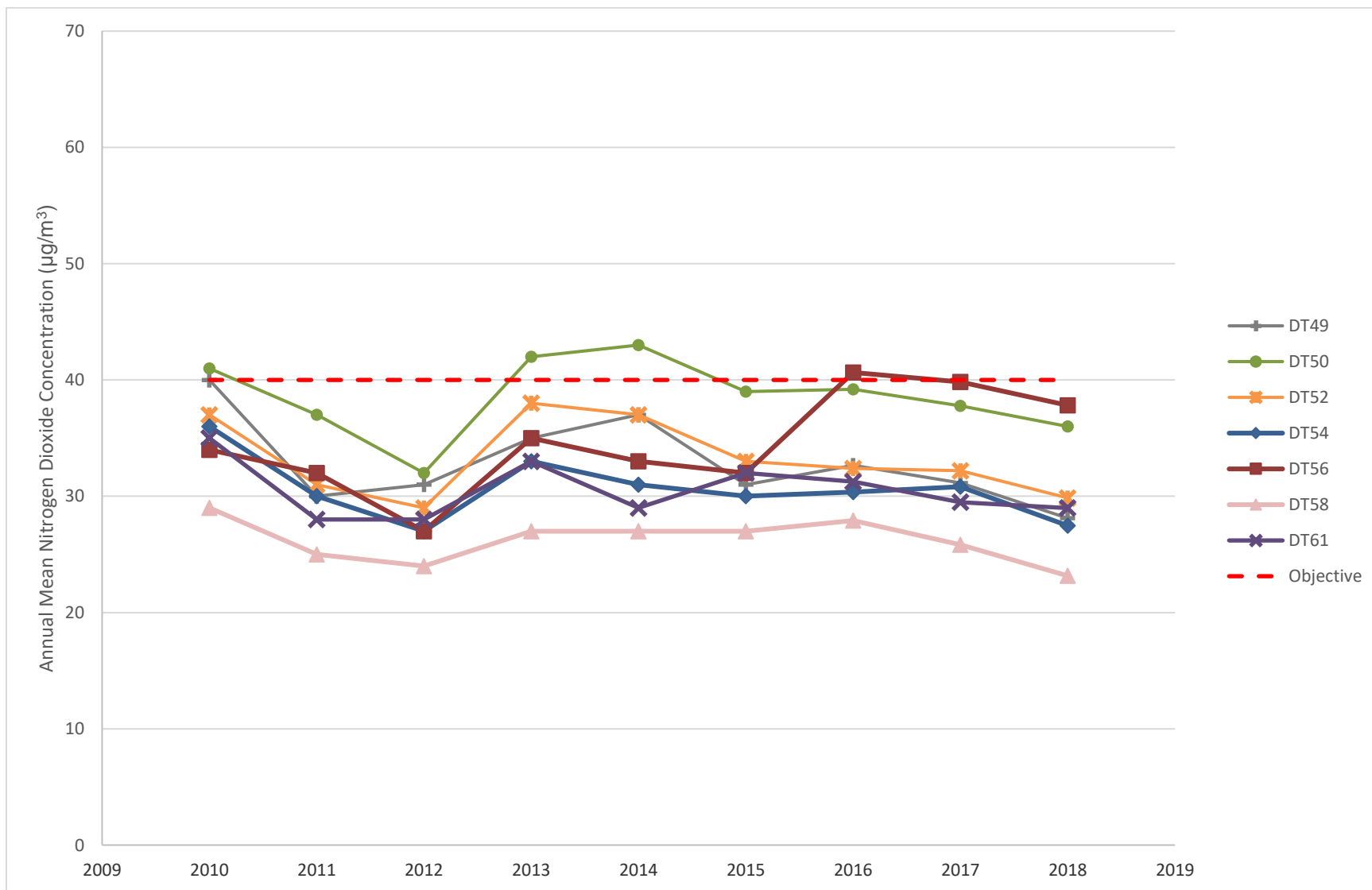


Figure A.5 – Trend in Annual Mean NO2 Concentrations Measured at Diffusion Tube Monitoring Sites DT63 – DT75

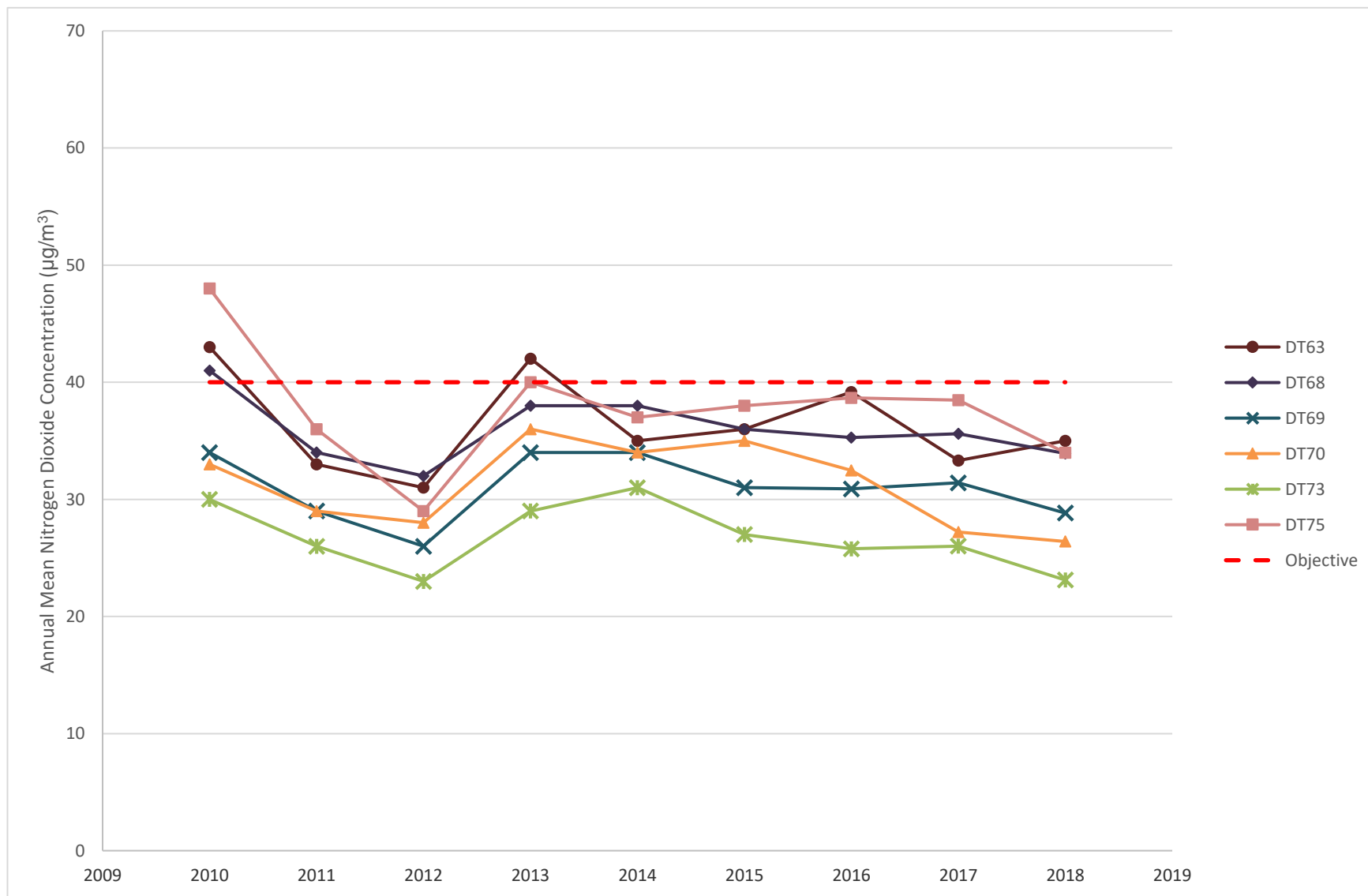


Table A.4 – 1-Hour Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ 1-Hour Means > 200µg/m ³ ⁽³⁾				
					2014	2015	2016	2017	2018
AURN	R	Automatic	100	100	-	-	-	0	0

Notes:

Exceedances of the NO₂ 1-hour mean objective (200µg/m³ not to be exceeded more than 18 times/year) are shown in **bold**.

(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%).

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

Appendix B: Full Monthly Diffusion Tube Results for 2018

Table B.1 – NO₂ Monthly Diffusion Tube Results - 2018

Site ID	NO ₂ Mean Concentrations (µg/m ³)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.76) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
DT1		40.1	36.2	33.4	28.8	25.7	29.9	27.5	23.1	31.7	42.5	42.4	32.8	25.0	
DT2	42.1	37.8	37.7	30.7	25.2	23.2	29.8	28.4	25.7	31.5	36.3	42.1	32.5	24.7	
DT3	37.4	35.6	32.3	25.7	25.9	23.8	23.9	22.3	24.2	31.2	29.1	38.2	29.1	22.1	
DT4	55.2	53.4	52.8	42.3	39.9	34.4	39.7	33.2	35.7	42.1	47.6	55.9	44.4	33.7	
DT5	52.4	69.3	72.1	42.9	31	23.1	26.1	24.4	29.2	33.8	46.5	50.6	41.8	31.8	
DT6			31.2	29.6	24.5	22.1	27.7	28.8	31.3	32	32.3	41.2	30.1	22.9	
DT7	38	34	30.5	29.1	23.7	21.4	22.2	20.4	24.3	31.5	29.9	38	28.6	21.7	
DT8	49.7	39.3	39.1	39.1	30.7	26.5	36.6	34.7	32.7	40.6	42.6	41.6	37.8	28.7	
DT9	45.4	36.7	31.1	32.1	20.3	16.1	25.3	30.5	30.8	29.8	41.2	44	31.9	24.3	24
DT10	77.7	69.5	73.6	61.9	56.3	50.5	45.4	48.2	57.2	58.4	62.1	53.3	59.5	45.2	
DT11	52.1	63.4	60.9	59.1	58.3	60.1	60.9	48	50.7	58.5	57.1	55.4	57.0	43.4	
DT12	59.1	41.4		45.3		50.7			48				48.9	36.7	
DT13	48.3	37.5	40	38.6	27.9	26	35.7	33.5	34.9	43.7	50.1	50.2	38.9	29.5	
DT14	35	34.4	35.5	31.6	28.7	23.7	26.5	24.5	25.6	32	38.2	39.1	31.2	23.7	
DT15	53.6	52.3	62.8	50.1	43.5	39.5	52.1	51	49.3	57.1	59.8	58	52.4	39.8	

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DT16	46.1	47.9	44.3	48.8	36	29.2	41.9	41.9	39.5	47.5	46.2	51	43.4	33.0	
DT17	46.8	47.9	45.1	44.1	40.4	32	37.9	31.6	33.2	38.2	47	41.5	40.5	30.8	
DT18	35.6	36.6	37	32.6	31.7	26.9	29.2	24.1	27.9	35.2	32.8	39.2	32.4	24.6	
DT19	33.6	35.6	30.3	36	32.4	26.4	29.3	26.6	27.5	37.7	30.3	40.4	32.2	24.5	
DT20	30.1	35	33.4		24.6	25.1	28.7	25.6	25.7	32.6	34.5		29.5	22.4	
DT21	26.3	25.4	32	30.7	31.3	27.9	27.8		23.6	26.3	33.6	34.1	29.0	22.0	
DT22	36.1	37.5	39.1	35.6	37.3	29	31	26.8	30.1	36.9	41	38.5	34.9	26.5	
DT23			53.3		43.7		44.1	38.2	39.1	47	57.6	56.7	47.5	36.2	
DT24	52.2	58.8	59.9	54.1	57.9	44.1	44.1	31	34.6	5.5	53.1		45.0	34.2	
DT25	49.9	58.5	49.1	50.9	51.8		50.5		37.6	45.7	51.4	58.1	50.4	38.3	
DT26	38.3	28		25.6	21	15.9	22.4	21.9	24.6	26.9	32.9	36.8	26.8	20.3	
DT27	42.8	41.4		37.6	31.7	26.2	31.1	32.1	31.1	35.1	42.4	47	36.2	27.5	
DT28	32.6	38	32.8	30.8	27.9	23.9	23.6	20.6		30.9	36.2	40.9	30.7	23.4	
DT29	35.5	43.8	38.4	34	31.7	29.8	8.7	24.9	28.9	37.7	40.8	40.7	32.9	25.0	
DT30	35.8	38.7	36.4	32.9	27.9	23.8	12.1	20.9	21.4	28	41.4	38.4	29.8	22.7	
DT31	49.5	46	59.7	35.5	96.2	52.1	68.9	55.9	73.7	78.5	33.8	46.2	58.0	44.1	
DT32	55.7	54.9	47.9	50.4	55	41.5	41.9	39.8	39	49.9	54.2		48.2	36.6	
DT33	36	28	34.3	34.5	31.2	25.2	29.6	30.4	32.8	36.9	34.3	38.1	32.6	24.8	
DT34	78.6	92.9	91	79.7	85.6	76.5	79.9	65.9	67.5	69.3	71.4		78.0	59.3	
DT35	52.4	47.6	39.6	51.7	36.6		40.3	35.8	35.2	41.8	50.8	51.3	43.9	33.4	
DT36	56.3	52.4	54.4	51.3	47.5	40	45.2	33.9	35.8	49.1	60.3	54.3	48.4	36.8	
DT37	39.8		65.8	32.1	27.8	19.3	22.2	18.2	24	31.8	39	36.1	32.4	24.6	
DT38	33.7	36.2	31.9	23.4	24.9		19.5	20	20.1	25.2	32.6	36.1	27.6	21.0	
DT39	39.5		42.5	44.5	40.4	33.1	32.3	24.9	27.1	40.8	48.1	43	37.8	28.8	
DT40	37.5	43.6	38.5	38.1	33.4	28.5	30.7	29	30.9	34.9	46.8	47.2	36.6	27.8	27.6
DT41	48.4	50.1	41.9	46.3	38.6	30	37.9	34.3	35.5	37.5	41.6	49.7	41.0	31.1	
DT42	51.6	50.3	45.5	41.2		31.1		34.9	35.7	47.5		47.4	42.8	32.5	

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DT43	15.6	38.1	41.7	34.3	36.9	28.1	29.4	26.3	24.9	35.9	43.9	42.8	33.2	25.2	
DT44	44.3	52.8	53.7	46.1	45.7	39.1	36.1	29.4	29.8	43	48.7	47.7	43.0	32.7	32.3
DT45	46.1	49.3	48.7	44	38.6	34.9	40.8	36.6	40.3	43.6	46.8	53	43.6	33.1	
DT46	46.4		49.8	48.4	36.3	35.7	44.8	43.9	46.2	44.4	52.5	57.3	46.0	34.9	
DT47			39.8		26	21.5	25.3	29.2	31.1		40.4		30.5	25.2	
DT48	52.7	55.2	49.1		41.9	36.1	41.7		41.6	48.8	50.1		46.4	35.2	
DT49	41.6	47.8	35.2			28	34.3	28.8		39.1		44.8	37.5	28.1	28.3
DT50	53.6	55.3			43.4		45.6	44.5	40.9	48.2		56.9	48.6	36.0	
DT51	43.8	38.1	39.3	37.4	36.7	30.5	31.9	29	31.2	38	40.1	37.5	36.1	27.5	
DT52	50.3	47.9	45.1	35.6		24.9	33.6	31.9	29.7	44.7	48.6	39.7	39.3	29.8	
DT53	51	44.4	43.8		30.6	24.5	34.1	34.8	38.2	40	48.5	50.7	40.1	30.4	
DT54	41.3	38.1	38.1	39.6	30.3	24	30.4	30.9	32.9	38.2	42.3	47.5	36.1	27.5	
DT55	42.2	35.4	33.9	33.7	23.2	17.3	26.7	28.7	30.2	32.6		35.6	30.9	23.5	
DT56	58.4	45	52.9	52.8	51.5	47.6	53	44.4	46.4	47.5	45.9	51.8	49.8	37.8	
DT57	18.8	40	33.4	38.8	29.3	22.7	30.2	28.4	31.6	35.2	42.3	44.4	32.9	25.0	
DT58	36.5	36.3	33.5	31.6	24.9	14.5	25.1	24.8	29.2	31.3	39.2	38.7	30.5	23.2	
DT59	59.9	56.1	51.2	59.6	61.1	58	65.2	53.5	53.7	66.3	51.8	66.6	58.6	44.5	
DT60	65.9		57.5	56.5	49.6	45.6	49.4	48.7	49.5	56.7	66	62.7	55.3	42.0	
DT61	42.9	49.1		35.1	36.9	29.7			28.7	36.4	43.3	41.1	38.1	29.0	
DT62	38.9	48.2	51.9	42	50.2	40.5	37.3	26.9	33.3	47.8	41.6	41	41.6	31.6	
DT63	43.6	49.8	52.2	45	54.7	46.5	40.1	34.3	37.3	44	50.5	54.5	46.0	35.0	
DT64	49.9	45.5	43.2	45.5	38.6	29	42.1	39.9	40.2	39.2	49.2	47.7	42.5	32.3	
DT65	50.6	41.7	43.4	43	42.4	30.3	36	34.4	33.4	40.6	50	49.4	41.3	31.4	
DT66	41.1	39.1	37.9	25.3	28	23.5	28.1	24.9	24.4	34.4	42.7	39.4	32.4	24.6	
DT67	27.6	25.2	22.7	16.8	15	9.8	13.6	15.8		20.9	24.5	26.1	19.8	15.1	
DT68							38.7		43.7	47.3	48.4	52.7	46.2	33.9	
DT69	38.5	43.4	39.5	39.1	34.9	31.4	36.3	33	38.3	41.3	40.8	38.7	37.9	28.8	

DT70	43.7	38.1	44.2	36.2		23.1	32.7	24.5	31.1	34.9	47.7	44.3	36.4	27.7	26.4
DT71	46.6	39.5	43.3	36.2	36.9	32.4	30.8	23.7	31	36.9	47.3	49.9	37.9	28.8	
DT72		41.2	44.5	33.3	38.1	33.1	34	25.4	25.9		43.2		35.4	26.9	
DT73		36.5	37.6	30.6	25.2	22.7	24.8	22.5	27.8	33.1	35.2	38.6	30.4	23.1	
DT74	49.6	42.4	38	32.9	46.1	52.1	37.6	37.1	37.3	39.2	34.2	39.4	40.5	30.8	
DT75	51.1	45.2	50.7	47.6	41.4	35.8	39.9	37.7	40.3	41.8	50.5	54.5	44.7	34.0	
DT76	39.8	39.9	36.9	33.7	25.7		22	22.8	25.6	35.3	40.2	40.3	32.9	25.0	

- Local bias adjustment factor used
- National bias adjustment factor used
- Annualisation has been conducted where data capture is <75%
- Where applicable, data has been distance corrected for relevant exposure

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**.

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure.

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

Diffusion Tube QA/QC

Derby City Council deploy diffusion tubes prepared and analysed by SOCOTEC Didcot (50% TEA in acetone method). Tubes are changed on a monthly basis.

Bias Adjustment Factors from Local Co-location Studies

Derby City Council do not currently undertake a co-location study. It is therefore not possible to calculate a local bias adjustment factor.

National Bias Adjustment Factor

The national bias adjustment factor for SOCOTEC Didcot in 2018 is 0.76 (taken from spreadsheet 03/19, based on 21 studies; available at: <http://laqm.defra.gov.uk/biasadjustment-factors/national-bias.html>). This factor has been applied to all 2018 diffusion tube data.

Short-term to Long-term Data Adjustment (Annualisation)

Missing diffusion tubes meant that six monitoring locations did not achieve the minimum data requirements (75%) during 2018. The data for these sites (DT12, DT23, DT47, DT49, DT50, DT68) have therefore been adjusted to an annual mean, based on the ratio of concentrations during the short-term monitoring period to those over the 2018 calendar year. This has utilised data from the three closest urban background monitoring sites whose data are available from the Automatic Urban and Rural Network (AURN; <https://uk-air.defra.gov.uk>) where long-term NO₂ data are available (with data capture >90%).

DT12; 04 Jan – 28 Feb, 03 Apr – 03 May, 06 Jun – 06 Jul, 03 Sept – 04 Oct 2018

Site	2018 Annual Mean	Period Mean	Ratio
Leicester University	23.1	23.5	0.979
Nottingham Centre	27.2	27.5	0.990
Stoke-on-Trent Centre	23.4	23.4	1.000
		Average	0.990

DT23; 28 Feb – 03 Apr, 03 May – 06 Jun, 06 Jul 2018– 07 Jan 2019

Site	2018 Annual Mean	Period Mean	Ratio
Leicester University	23.1	22.98	1.003
Nottingham Centre	27.2	26.86	1.014
Stoke-on-Trent Centre	23.4	23.40	1.002
		Average	1.006

DT47; 28 Feb – 03 Apr, 03 May – 04 Oct, 30 Oct – 06 Dec 2018

Site	2018 Annual Mean	Period Mean	Ratio
Leicester University	23.1	21.11	1.092
Nottingham Centre	27.2	25.22	1.081
Stoke-on-Trent Centre	23.4	21.46	1.092
		Average	1.088

DT49; 04 Jan – 03 Apr, 06 Jun – 03 Sept, 04 Oct – 30 Oct, 06 Dec – 07 Jan 2019

Site	2018 Annual Mean	Period Mean	Ratio
Leicester University	23.1	23.28	0.990
Nottingham Centre	27.2	27.34	0.997
Stoke-on-Trent Centre	23.4	23.85	0.983
		Average	0.990

DT50; 04 Jan – 28 Feb, 03 May – 06 Jun, 06 Jul – 30 Oct, 07 Dec 2018 – 07 Jan 2019

Site	2018 Annual Mean	Period Mean	Ratio
Leicester University	23.1	24.01	0.961
Nottingham Centre	27.2	27.10	1.006
Stoke-on-Trent Centre	23.4	24.23	0.967
		Average	0.978

DT68; 06 Jul – 02 Aug, 03 Sept 2018 – 07 Jan 2019

Site	2018 Annual Mean	Period Mean	Ratio
Leicester University	23.1	23.76	0.970
Nottingham Centre	27.2	27.44	0.993
Stoke-on-Trent Centre	23.4	24.86	0.943
		Average	0.969

Fall off with Distance Calculator

Site Name/ID	Distance (m)		NO ₂ Annual Mean Concentration (µg/m ³)			Comment
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor	
DT9	19.0	21.0	19.2	24.3	24.0	Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution. Warning: your monitor is more than 10m further from the kerb than your receptor - treat result with caution.
DT40	2.0	2.2	18.3	27.8	27.6	
DT44	2.0	2.2	14.5	32.7	32.3	
DT49	2.0	2.1	14.5	28.5	28.3	
DT70	4.0	6.0	16.6	27.7	26.4	

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 England

Pollutant	Air Quality Objective ⁴	
	Concentration	Measured as
Nitrogen Dioxide (NO ₂)	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m ³	Annual mean
Particulate Matter (PM ₁₀)	50 µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m ³	Annual mean
Sulphur Dioxide (SO ₂)	350 µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean

⁴ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Air quality Annual Status Report
CAZ	Clean Air Zone
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
FBC	Full Business Case – submitted to the government to support the implementation of the Local Air Quality Action Plan
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) 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