



2021 Air Quality Annual Status Report (ASR)

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

Date: June 2021

| Information | Rugby Borough Council Details |
|--------------------------------|--|
| Local Authority Officer | Henry Biddington |
| Department | Environmental Health |
| Address | Rugby Borough Council, Environment and Public Realm, Commercial Regulation Team, Town Hall, Evreux Way, Rugby CV12 2RR |
| Telephone | (01788) 533 607 |
| E-mail | henry.biddington@rugby.gov.uk |
| Report Reference Number | RBC-AQ-ASR-2021 |
| Date | June 2021 |

Executive Summary: Air Quality in Our Area

Air Quality in Rugby Borough Council

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.

The main pollutants of concern in Rugby, as in most areas of the UK, are associated with road traffic, in particular nitrogen dioxide (NO₂) and particulate matter (PM) at locations close to busy, congested roads where people may live, work or shop. Previous Review and Assessment reports and local knowledge have identified areas where UK Air Quality Strategy (AQS) objectives may be exceeded. Rugby Borough Council (RBC) declared an Air Quality Management Area (AQMA) in 2004 for exceedances of the annual mean NO₂ AQS objective. This area covers the whole urban area of Rugby bounded by the southern boundary with Daventry District Council, the A5, the M6, minor roads west of Long Lawford, the A45 and M45 (https://uk-air.defra.gov.uk/aqma/details?aqma_ref=267#109).

Monitoring data for 2020 showed a continuation of an overall decreasing trend in annual mean NO₂ concentrations since 2016. Concentrations in 2020 decreased at all monitoring locations in compared to 2019. There were no exceedances of the annual mean NO₂ AQS objective in 2020, with a highest annual mean concentration of 33.5 µg/m³. The reduced

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

NO₂ concentrations in 2020 are likely to be in part due to the COVID-19 pandemic and associated government restrictions.

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 AQMAs are designated due to elevated concentrations heavily influenced by transport emissions.

Key actions to target sources of pollution within the area over the past reporting year include the approval of the new Taxi Policy, which sets out exhaust emission standards for all new vehicles from March 2021, and all existing vehicles from January 2022. In addition, RBC has continued its work alongside Coventry and Warwickshire Air Quality Alliance, a partnership comprising Environmental Health, Public Health, Planning and Transport officers from the Coventry and Warwickshire local authorities to implement the air quality aims of the Health Protection Strategy 2017-2021.

Conclusions and Priorities

During 2020, there were no exceedances of the annual mean NO₂ AQS objective. The highest recorded annual mean NO₂ concentration was 33.5 µg/m³ at S2 (not within AQMA). The highest measured annual mean NO₂ concentration within the Rugby AQMA was 28.5 µg/m³ at S54. However, it is likely concentrations during 2020 were impacted by the COVID-19 pandemic. Thus, the Council will continue to monitor closely before considering any changes to AQMAs.

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

RBC' priorities for the coming year are:

1. An Air Quality and Planning Supplementary Planning Document⁷ has been developed for publication. This will provide guidance to planners outlining what type of developments require Air Quality Assessments and what mitigation is suitable to minimise the negative impacts on air quality, thereby implementing policy HS5:1 of the Local Plan⁸. This is now due to go to cabinet for approval in June 2021.
2. In February 2021 Warwickshire County Council (WCC) put out a public consultation to seek views of residents and businesses to help refresh the Council's Local Transport Plan⁹. The current Local Transport Plan is scheduled to go through until 2026 but is now felt to be outdated due to a number of factors, notably the shift in attitudes towards fighting climate change and the response to COVID-19. Following the consultation and analysis of its findings, RBC will incorporate any updated policy that will directly affect air quality.
3. A Local Cycling and Walking Infrastructure Plan will be completed during 2021/22 and will include an updated cycling development network plan, including improvements to the town centre to Rugby Gateway development cycle route. This work is being funded by the Government's Active Travel Fund and developer contributions.
4. WCC has recently secured capital funding to expand its traffic monitoring and surveying capabilities and support evidence-based decision making in the County's approach to tackling climate impacts and air quality management. This includes a strategic asset management review and replacement programme – focusing on cycle counters, AQMA traffic counters and cordon monitoring sites, and the purchase of air quality modelling software to support scheme development, facilitate option assessments and prioritisation, and to inform development assessments and wider Local Plan air quality assessments. This will allow WCC to monitor the effectiveness of schemes and initiatives in tackling air quality issues and identify the impact of development proposals on air quality.
5. WCC will deliver improvements to the A426 Avon Mill roundabout and the junction of Hunter's Lane with Newbold Road. This will reduce congestion on the currently very

⁷ RBC. Draft Air Quality and Planning Supplementary Planning Document, February 2020.

⁸ RBC. Local Plan 2011-2031, June 2019.

⁹ WCC. Local Transport Plan (LTP3). April 2011.

congested A426 corridor and will provide additional crossing facilities for pedestrians and cyclists which will improve access to Rugby Town Centre via sustainable modes. WCC is currently working with the Department for Transport (DfT) and Midlands Connect to progress the scheme towards Outline Business Case stage by the end of 2021/22.

6. As part of the Rail Strategy 2019-2034¹⁰, WCC will work in partnership with other organisations including DfT, Network Rail, Train Operating Companies, Midlands Connect, Transport for West Midlands (TFWM) and West Midlands Rail Executive, to develop proposals for new stations and services in Warwickshire. This includes the proposed Rugby Parkway station at Houlton, close to M1 J18, which will provide a convenient point of access to the rail network from the surrounding area, promoting sustainable travel and drawing traffic away from the existing town centre rail station. The timescale for delivery is 2019-2026. Further proposals for Rugby rail station interchange will improve highway infrastructure to facilitate better access to the station by all modes, enabling a shift to pedestrian and cycle travel to the station.
7. WCC is actively working on behaviour change through the safer travel team (who not only work with schools, but also key employment sites) and two travel plan officers have been employed to take this work forward and assist with behavioural change to both active modes and public transport. Use of public transport has been particularly badly hit due to the COVID pandemic and the travel plan work will assist in its recovery. WCC is also providing Bikeability courses to both school students and adults. This is a national programme to increase skills and confidence for cyclists and enable more trips to be made by bicycle.
8. RBC are aiming to complete a new updated Air Quality Action Plan (AQAP) by the end of 2021.

Local Engagement and How to get Involved

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

¹⁰ WCC. Rail Strategy 2019-2034. February 2020.

- Purchasing low-emission electric and/or hybrid vehicles, with government funding and grants available;
- Upgrading boilers to newest and most efficient gas condensing boilers with lowest nitrous oxides (NO_x) (and carbon) emissions;
- Renewable energy generation via solar photovoltaics or wind turbine installation (although the individual effect on air quality is minor and non-local);
- Reducing the use of open fires and wood-burning stoves;
- Ensuring only permitted appliances and fuels are burnt in the 'Smoke Free Zone' across the urban area; and
- Following sustainable practices.

Further information can be found on the Council's website¹¹, and Defra's Local Air Quality Management (LAQM) website¹².

¹¹ Rugby Borough Council Air Pollution website: https://www.rugby.gov.uk/info/20021/pollution/217/air_pollution

¹² Defra LAQM website: <http://laqm.defra.gov.uk/>

Table of Contents

| | |
|---|-----------|
| Executive Summary: Air Quality in Our Area | i |
| Air Quality in Rugby Borough Council..... | i |
| Actions to Improve Air Quality | ii |
| Conclusions and Priorities | ii |
| Local Engagement and How to get Involved..... | iv |
| 1 Local Air Quality Management | 1 |
| 2 Actions to Improve Air Quality | 2 |
| Air Quality Management Areas..... | 2 |
| Progress and Impact of Measures to address Air Quality in Rugby Borough Council | 4 |
| PM _{2.5} – Local Authority Approach to Reducing Emissions and/or Concentrations | 15 |
| 3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance | 16 |
| Summary of Monitoring Undertaken | 16 |
| 3.1.1 Automatic Monitoring Sites | 16 |
| 3.1.2 Non-Automatic Monitoring Sites | 16 |
| Individual Pollutants | 16 |
| 3.1.3 Nitrogen Dioxide (NO ₂) | 17 |
| 3.1.4 Particulate Matter (PM ₁₀) | 18 |
| 3.1.5 Particulate Matter (PM _{2.5})..... | 18 |
| Appendix A: Monitoring Results | 19 |
| Appendix B: Full Monthly Diffusion Tube Results for 2020 | 37 |
| Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC | 40 |
| New or Changed Sources Identified Within Rugby Borough Council During 2020..... | 40 |
| Additional Air Quality Works Undertaken by Rugby Borough Council During 2020..... | 40 |
| QA/QC of Diffusion Tube Monitoring | 40 |
| Diffusion Tube Annualisation..... | 40 |
| Diffusion Tube Bias Adjustment Factors | 41 |
| NO ₂ Fall-off with Distance from the Road..... | 42 |
| Appendix D: Map(s) of Monitoring Locations and AQMAs | 44 |
| Appendix E: Summary of Air Quality Objectives in England | 48 |
| Appendix F: Impact of COVID-19 upon LAQM | 49 |
| Impacts of COVID-19 on Air Quality within Rugby Borough Council | 50 |
| Opportunities Presented by COVID-19 upon LAQM within Rugby Borough Council..... | 50 |
| Challenges and Constraints Imposed by COVID-19 upon LAQM within Rugby Borough Council | 50 |
| Appendix G: Summary of Planning Applications | 54 |
| Glossary of Terms | 56 |

References58

DRAFT

Figures

| | |
|---|----|
| Figure A.1 – Trends in Urban Background Annual Mean NO ₂ Concentrations..... | 32 |
| Figure A.2 – Trends in Kerbside Annual Mean NO ₂ Concentrations..... | 33 |
| Figure A.3 – Trends Roadside Annual Mean NO ₂ Concentrations (a)..... | 34 |
| Figure A.4 – Trends in Roadside Annual Mean NO ₂ Concentrations (b)..... | 35 |
| Figure A.5 – Trends in Roadside Annual Mean NO ₂ Concentrations (c)..... | 36 |
| Figure D.1 – Map of All Non-Automatic Monitoring Sites and Rugby AQMA..... | 44 |
| Figure D.2 – Map of Non-Automatic Monitoring Sites within Rugby AQMA..... | 45 |
| Figure D.3 – Map of Non-Automatic Monitoring Sites in Central Rugby..... | 46 |
| Figure D.4 – Map of Non-Automatic Monitoring Sites in Southern Rugby and Dunchurch..... | 47 |

Tables

| | |
|--|----|
| Table 2.1 – Declared Air Quality Management Areas..... | 3 |
| Table 2.2 – Progress on Measures to Improve Air Quality..... | 10 |
| Table A.1 – Details of Non-Automatic Monitoring Sites..... | 19 |
| Table A.2 – Annual Mean NO ₂ Monitoring Results: Non-Automatic Monitoring (µg/m ³)..... | 26 |
| Table B.1 – NO ₂ 2020 Diffusion Tube Results (µg/m ³)..... | 37 |
| Table C.1 – Bias Adjustment Factor..... | 41 |
| Table C.2 – Local Bias Adjustment Calculation..... | 43 |
| Table E.1 – Air Quality Objectives in England..... | 48 |
| Table F 1 – Impact Matrix..... | 52 |

1 Local Air Quality Management

This report provides an overview of air quality in Rugby Borough Council (RBC) 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 UK Air Quality Strategy (AQS) 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 AQS objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by RBC to improve air quality and any progress that has been made.

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

DRAFT

2 Actions to Improve Air Quality

Air Quality Management Areas

AQMAs are declared when there is an exceedance or likely exceedance of an AQS objective. After declaration, the authority should prepare an 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 RBC can be found in Table 2.1. The table presents a description of the one AQMA that is currently designated within RBC. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMA and also the air quality monitoring locations in relation to the AQMA. The AQS objective pertinent to the current AQMA designation is the nitrogen dioxide (NO₂) annual mean.

DRAFT

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 |
|-------------------------------|---------------------|---------------------------------------|--|--|----------------------------------|-----------------------------------|-----------------------------------|---|
| Rugby AQMA (NO ₂) | 16/12/2004 | NO ₂ Annual Mean | The area covers the whole urban area of Rugby bounded by the southern boundary with Daventry District Council, A5, M6, minor roads to the west of Long Lawford, A45 and M45. | YES | 59.3 µg/m ³ | 28.5 µg/m ³ | Rugby Borough Council AQAP, 2010 | http://aqma.defra.gov.uk/action-plans/RugbyBC%20AQAP%202010.pdf |

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

Rugby Borough Council confirm that all current AQAPs have been submitted to Defra.

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

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

1. Clarity is required around locations S54, S54a, and S54b as per paragraph 3. *The original S2 has been decommissioned, with S54a now renamed S2 and S54b renamed S54.*
2. Distance correction has been completed at every diffusion tube location. Distance correction should only be completed at monitoring sites that have an annual mean NO₂ concentration greater than 36 µg/m³ and the relevant exposure is within 20m of the monitoring location. *Distance correction was not required at any monitoring locations in 2020 as no locations exceeded an annual mean of 36 µg/m³.*
3. The maps provided within the ASR present all monitoring sites, labelled as referenced in the results tables, however it would be useful to have more detailed local maps presenting clusters of sampling locations more clearly than they are currently annotated. *Additional maps have been provided to show monitoring locations more clearly.*
4. Generally, the report is very good, provides a great deal of information and acts as a good first point of reference for concerned members of the Public. The Council should continue their hard work in developing partnerships and improving local air quality.

RBC 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. 21 measures are included within Table 2.2, with the type of measure and the progress RBC 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 the Action Plan for Rugby Borough Council¹³, Health Protection Strategy 2017-2021¹⁴, RBC's Local Plan 2011 – 2031⁸ and Air Quality and Planning Supplementary Planning Document⁷. Key completed measures are:

1. The Cabinet approved the new Taxi Policy in 2020, which includes exhaust emission standards. The exhaust emission standard is critical to the level of pollutants emitted. To improve air quality and reduce emissions, standards relating to exhaust emissions will be introduced as follows:
 - a) From 1 March 2021, any new application for a hackney carriage vehicle which is to be licensed for the first time must be new ultra-low emission or zero emission capable. This is defined as a vehicle emitting less than 50 gCO₂/km and capable of travelling at least 70 miles without emissions at all.
 - b) From 1 January 2022, all new and existing private hire vehicles will need to be up to three year old Euro 4 petrol or Euro 6 diesel engines. These vehicles are capable of being licensed for 10 years, however once the vehicle is over six years old, the licence must be renewed every six months.
2. RBC has continued its work alongside Coventry and Warwickshire Air Quality Alliance, a partnership comprising Environmental Health, Public Health, Planning and Transport officers from the Coventry and Warwickshire local authorities to implement the air quality aims of the Health Protection Strategy 2017-2021¹⁴. The Strategy provides:
 - a) Practical solutions to promote behaviour shifts and initiatives that reduce car journeys and promote physical activity, including in school and workplace environments;
 - b) More 'active' travel infrastructure solutions with increased cycle ways, and improved public transport infrastructure;
 - c) Evidence of designing in health through planning processes; and
 - d) Exploration of wider opportunities for improving fleet vehicles, and green procurement opportunities.

Our priorities for the coming year are:

¹³ RBC. 2010 Air Quality Progress Report and Action Plan Progress Report for Rugby Borough Council, May 2010.

¹⁴ Coventry and Warwickshire. Coventry and Warwickshire Health Protection Strategy 2017-2021. July 2017.

1. An Air Quality and Planning Supplementary Planning Document⁷ has been developed for publication. This will provide guidance to planners outlining what type of developments require Air Quality Assessments and what mitigation is suitable to minimise the negative impacts on air quality, thereby implementing policy HS5:1 of the Local Plan⁸. This is now due to go to cabinet for approval in June 2021.
2. In February 2021 Warwickshire County Council (WCC) put out a public consultation to seek views of residents and businesses to help refresh the Council's Local Transport Plan⁹. The current Local Transport Plan is scheduled to go through until 2026 but is now felt to be outdated due to a number of factors, notably the shift in attitudes towards fighting climate change and the response to COVID-19. The initial consultation is categorised into five themes with residents and businesses being invited to give their views around them. These are:
 - a) Environment: How the refreshed plan can encourage and promote sustainable travel;
 - b) Economy: How it will provide the infrastructure to attract and retain investment into the county;
 - c) Place: How it will help to create an attractive place;
 - d) Wellbeing: How the stress of being on the transport network can be alleviated; and
 - e) Road safety: How road accidents and casualties can be reduced.

Following the consultation and analysis of its findings, Cabinet will be asked to approve the drafting of a revised plan which will also go to consultation before going to the County Council for approval prior to being published in 2022.

3. A Local Cycling and Walking Infrastructure Plan will be completed during 2021/22 and will include an updated cycling development network plan. A first phase of improvement to the town centre to Rugby Gateway development cycle route is being delivered in 2020/21 to 2021/22. This involves a new Toucan crossing over the A426 Leicester Road and provision of traffic calming on Brownsover Lane to make this lightly trafficked road more attractive for cycling. This work is being funded by the Government's Active Travel Fund and developer contributions. A later phase to improve the connection between Boughton Road and the town centre will be developed subject to feasibility work and funding.
4. WCC has recently secured capital funding to expand its traffic monitoring and surveying capabilities and support evidence-based decision making in the County's approach to tackling climate impacts and air quality management. This includes a strategic asset

management review and replacement programme – focusing on cycle counters, AQMA traffic counters and cordon monitoring sites, and the purchase of air quality modelling software to support scheme development, facilitate option assessments and prioritisation, and to inform development assessments and wider Local Plan air quality assessments. This will allow WCC to monitor the effectiveness of schemes and initiatives in tackling air quality issues and identify the impact of development proposals on air quality. Air quality modelling software will allow WCC, in conjunction with its extensive suite of traffic models, to model the impacts of proposed schemes and initiatives on air quality in and around Rugby.

5. WCC will deliver improvements to the A426 Avon Mill roundabout and the junction of Hunter's Lane with Newbold Road. This will reduce congestion on the currently very congested A426 corridor and will provide additional crossing facilities for pedestrians and cyclists which will improve access to Rugby Town Centre via sustainable modes. The scheme is located on the A4071/A426 corridor in Rugby which has been designated by DfT as part of the Major Road Network (MRN) comprising the busiest and most economically-important local authority managed 'A' roads in England. Identified by Midlands Connect, the sub-National Transport Body for the pan-Midlands area, as one of seven regional priority schemes for delivery during MRN Period 1 (2020-2025), a Strategic Outline Business Case for the scheme was submitted to DfT in July 2019. WCC is currently working with DfT and Midlands Connect to progress the scheme towards Outline Business Case stage by the end of 2021/22.
6. As part of the Rail Strategy 2019-2034¹⁰, WCC will work in partnership with other organisations including DfT, Network Rail, Train Operating Companies, Midlands Connect, TFWM and WM Rail Executive, to develop proposals for new stations and services in Warwickshire. This includes the proposed Rugby Parkway station at Houlton, close to M1 J18, which will provide a convenient point of access to the rail network from the surrounding area, promoting sustainable travel and drawing traffic away from the existing town centre rail station. The timescale for delivery is 2019-2026. Further proposals for Rugby rail station interchange will improve highway infrastructure to facilitate better access to the station by all modes, enabling a shift to pedestrian and cycle travel to the station.
7. WCC is actively working on behaviour change through the safer travel team (who not only work with schools, but also key employment sites) and two travel plan officers have been employed to take this work forward and assist with behavioural change to both active modes and public transport. Use of public transport has been particularly badly hit due to

the COVID pandemic and the travel plan work will assist in its recovery. WCC are also providing Bikeability courses to both school students and adults. This is a national programme to increase skills and confidence for cyclists and enable more trips to be made by bicycle.

8. RBC is aiming to complete a new updated AQAP by the end of 2021.

The principal challenges and barriers to implementation that RBC anticipates facing are predominantly in the form of planning applications for developments that may impact negatively on existing air quality, as is the case for most local authorities. There have been several recently completed major developments in Rugby, along with a considerable number of large-scale developments in the pipeline and numerous smaller developments. The most significant planning applications and allocations in the Local Plan are listed below:

1. Coton Park East;
2. Long Lawford for around 150 dwellings off the Coventry Road;
3. Gala & Cemex House, Evreux Way;
4. Land to the north of Ashlawn Road;
5. Urban Expansion South West of Rugby;
6. Former Cattle Market, Rugby;
7. R19/1496 – 117 Newbold Road, Rugby;
8. R19/1528 – Butler's Leap, Clifton Road, Rugby;
9. R18/1466 – Former Herbert Gray College, Little Church St, Rugby; and
10. R19/1164 - Oakfield Recreation Ground, Bilton Road, Rugby.

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

1. Rugby Radio Station (Sustainable Urban Extension);
2. Rugby Gateway (Eden Park);
3. Leicester Road/Technology Drive; and
4. Cawston Extension.

See Appendix G: Summary of Planning Applications for more details on the planning applications and developments in Rugby.

Progress on the following measures has been slower than expected due to the COVID-19 pandemic (further details are provided in Appendix F: Impact of COVID-19 upon LAQM:

1. Air Quality and Planning Supplementary Planning Document;
2. Behaviour Change Intervention Project; and
3. Coventry and Warwickshire car share scheme.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, RBC anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of Rugby AQMA, once concentrations have returned to pre-pandemic levels. Recent exceedances outside of the AQMA in Shilton (in 2018 and 2019) may need further investigation to determine if an AQMA is required in the area should these also return in 2021 / 2022.

DRAFT

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 |
|-------------|---|---------------------------------------|---|-------------------------|------------------------------------|------------------------|----------------|------------------------|----------------|---------------------------|----------------|--|---|--|---|
| A | Rugby Western Relief Road (RWRR) | Transport Planning and Infrastructure | Other | 2010 | Completed September 2010 | WCC | WCC | - | - | - | Completed | 12% | Implementation of the scheme in full | The road was fully opened to traffic in September 2010. | N/A |
| B | Warwick Street Gyratory Improvements | Transport Planning and Infrastructure | Other | 2014 | Completed May 2015 | WCC | WCC | - | - | - | Completed | N/A | Implementation of the scheme in full | The major improvement to the Gyratory was completed in May 2015. | N/A |
| C | Improvements to Church Street/ North Street | Transport Planning and Infrastructure | Other | 2018 | Ongoing | WCC | WCC | - | - | - | Implementation | N/A | Implementation of the scheme in full | A scheme to extend the pedestrianised area of the town centre on Church Street/North Street was previously developed and consulted upon, however it was jointly agreed by Warwickshire County Council and Rugby Borough Council not to implement the scheme at that time. The Borough Council is now considering a number of public realm improvements as part of a wider strategy for the town centre, which for this area would supersede the previously developed proposals for Church Street/North Street. | The timescales for implementation of the scheme have changed as a result of the further consultation, which has been carried out on the revised proposal. |
| D | Decriminalisation of Parking Enforcement within Rugby Borough | Traffic Management | Other | 2005-2006 | 2006 | WCC | WCC | - | - | - | Completed | N/A | Implementation of the scheme in full | Scheme fully implemented in 2006 | Since the commencement of Decriminalisation of Parking (now referred to as Civil Parking Enforcement CPE) on 02/10/06 in Rugby, the introduction of parking charges on some town centre streets together with a high level of enforcement has resulted in less vehicles being parked on the streets and less congestion, and therefore emissions, due to inconsiderate parking. |
| E | Re-routing traffic - Lorry Route Maps and agreements | Traffic Management | UTC, Congestion management, traffic reduction | N/A | N/A | WCC | WCC | - | - | - | Planning | N/A | Reduction in complaints regarding inappropriate lorry movements | An initial Advisory Lorry Route Map for the County was produced in 2005. This was subsequently revised and reissued in 2009. HGV routing agreements are stipulated through the planning process with WCC. | |

| 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 |
|-------------|---|----------------------------------|--|-------------------------|------------------------------------|------------------------|----------------|------------------------|----------------|---------------------------|----------------|--|---|---|---|
| F | Variable Message Signing | Traffic Management | UTC, Congestion management, traffic reduction | 2009 | Completed in 2009 | WCC | WCC | - | - | - | Completed | N/A | Implementation of the scheme in full | Scheme fully implemented in 2009 | Evidence from other towns in Warwickshire that Variable Message Signing reduces the unnecessary distance travelled by vehicles looking for parking spaces. In Rugby town centre the impact of Variable Message Signing may have been masked by overall reductions in road traffic brought about by the opening of RWRR and road infrastructure improvements to the Warwick Street Gyratory. |
| G | Improve the Borough Council Fleet (interims of emissions) | Promoting Low Emission Transport | Company Vehicle Procurement - Prioritising uptake of low emission vehicles | - | Ongoing | RBC | RBC | - | - | - | Implementation | N/A | N/A | Euro 6 is now the latest technology with no further advancement on the horizon. Currently the Euro 6 vehicles we have consists of 13 x refuse freighters', 1 x road sweeper 1 x highways tipper and 7 x housing vans/tippers 3.5t. All replacement vehicles will be Euro 6. | Euro 6 is the most advanced technology available and is anticipated to deliver NO _x emissions reductions. |
| H | Improve Bus Emissions | Vehicle Fleet Efficiency | Promoting Low Emission Public Transport | - | Ongoing | RBC/WCC | RBC/WCC | - | - | - | Implementation | N/A | N/A | Urban Quality Bus Corridor improvements have been made on routes between the Town Centre and Lower Hillmorton/Long Lawford, between Woodlands and the Town Centre, and on the Inter-Urban route between Rugby and Coventry. Finance has been provided through developers of committed planning developments. | A lack of resources by the bus operators. However, the update older public service vehicles with those of the latest technologies should result in measurable emissions reductions of NO _x and PM ₁₀ . |
| I | Cycling | Promoting Travel Alternatives | Promotion of cycling | - | Ongoing | WCC | WCC | - | - | - | Implementation | N/A | Increase in cycling as a result of individual scheme implementation | The basis of a cycle network has been delivered in phases over the last 15 years, using a combination of on and off-carriageway routes. Additional routes will come forward as resources permit and in conjunction with new development. WCC and RBC provide cycle training for young people and adults who are keen to improve their cycle skills. Cycle facilities have been provided as part of RWRR. The Leicester Road viaduct Connect2 scheme opened in 2014. The A428 Lawford Road cycleway between Long Lawford and the RWRR was completed in 2014. A bid to the DfT's Cycle Safety fund was successful for a scheme to extend this cycleway from the RWRR to the Town Centre. The extension was completed in 2015. | |
| K | Workplace Travel Plans | Promoting Travel Alternatives | Workplace Travel Planning | - | N/A | WCC | WCC | - | - | - | Implementation | N/A | Number of Travel Plans agreed with existing employers | Workplace Travel Plans are secured through a S106 agreement as part of new development. | |

| 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 |
|-------------|--|---|------------------------------|-------------------------|------------------------------------|------------------------|----------------|------------------------|----------------|---------------------------|----------------|--|---|--|--|
| | | | | | | | | | | | | | and as part of new development | | |
| L | School Travel Plans and Safer Routes to School | Promoting Travel Alternatives | School Travel Plans | - | N/A | WCC | WCC | - | - | - | Implementation | N/A | Reduction in the number of car-based journeys to school | The majority of Local Authority run schools within the Borough now have a School Travel Plan in place. | |
| M | Public Transport Strategy, including the Bus Strategy | Promoting Travel Alternatives | Other | - | N/A | WCC | WCC | - | - | - | Implementation | N/A | Increase in bus patronage | Ongoing implementation of the various strategies which make up the Public Transport Strategy, including the Bus Strategy, Passenger Rail Strategy, Community Transport Strategy, Public Transport Information Strategy and Public Transport Interchange Strategy. | |
| N | Travel Awareness Campaigns | Promoting Travel Alternatives | Personalised Travel Planning | - | N/A | WCC | WCC | - | - | - | Implementation | N/A | Reduction in the number of car-based journeys being made within the Borough | Ongoing implementation of the Changing Travel Behaviour Strategy and other relevant LTP strategies. | |
| O | Energy efficiency improvements to Rugby housing & the reduction of fuel poverty. | Policy Guidance and Development Control | Low Emissions Strategy | - | N/A | RBC | RBC | - | - | - | Implementation | N/A | HECA report published March 2017, and will be updated at two yearly intervals | <p>Across the borough we have provided the following services:</p> <ul style="list-style-type: none"> • Worked with our partner, Act on Energy, to provide an energy advice phone line; • Organised advice sessions held at the Town Hall & library, flu clinics, Children's Centres and Older People's Drop-in session; • Held training sessions for front-line staff and community and voluntary workers; • Provided media coverage with Press Releases; articles in Tenant Times; twitter posts on coping with cold weather, energy savings tips, etc.; cold weather alerts issued to front-line staff and 100 community organisations; • Sent mail out to 1970 households in the Benn area with information about ECO funding for energy improvements, plus support available from Act on Energy; • Held presentation for local landlords about the Minimum Energy Efficiency Standards and provided information about new Carbon Monoxide legislation; and • Carried out initial feasibility assessment for District Heating <p>Council tenants have benefitted from these improvements and services:</p> <ul style="list-style-type: none"> • Electric to gas conversions for 173 properties; • New windows and doors to 2000 properties with | DECC statistics show that CO ₂ emissions by domestic use (Units kt CO ₂) have reduced from 215.7 in 2009 to 213.3 in 2013, a per capita reduction from 21.8 to 19.8. We aim to reduce CO ₂ emissions in the housing sector to 172.6kt CO ₂ of 2009 (215.7kt CO ₂) levels by 2020. This will be equivalent to a 20% reduction. |

| 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 |
|-------------|--|---|--|-------------------------|------------------------------------|------------------------|----------------|------------------------|----------------|---------------------------|----------------|--|------------------------------|--|---|
| | | | | | | | | | | | | | | windows and doors; <ul style="list-style-type: none"> • Central heating renewals – 235 gas to gas upgrades; • Since April 2013 to date, 607 upgrades to boilers were carried out as planned maintenance. The Council is budgeting £3.1m for upgrading older boilers, with another 390 planned conversion up to 2021; • Energy advice session held for tenants at Woodside Travellers Site; and • mail out to Sheltered Tenants and High Rise Residents about Warm Home Discount. | |
| P | Control Of Industrial Emissions | Environmental Permits | Measures to reduce pollution through IPPC Permits going beyond BAT | - | N/A | RBC | RBC | - | - | - | Implementation | N/A | 100% compliance improvements | 42 Permitted Industrial Pollution Process (100% inspections completed) achieved 100% compliance improvements. | 100% compliance improvements achieved. |
| Q | Emissions from Domestic and Commercial Sources | Environmental Permits | Other | - | N/A | RBC | RBC | - | - | - | Implementation | N/A | Reduction in complaints | Low priority. Low number of complaints. | Designated smoke Control Area (chimneys) and section 79 of the EPA 1990 actively implemented where problems are identified. |
| R | Control of Bonfires | Policy Guidance and Development Control | Other policy | - | N/A | RBC | RBC | - | - | - | Implementation | N/A | Reduction in complaints | Low priority. Low number of complaints. | Section 79 of the EPA 1990 actively implemented where problems are identified. |
| S | Planning Development and Planning Applications | Policy Guidance and Development Control | Air Quality Planning and Policy Guidance | - | Adoption June 2019 | RBC | RBC | - | - | - | Implementation | N/A | N/A | In June 2019 the Rugby Borough Council Local Plan 2011 – 2031 was approved. This introduced Policy HS5: Traffic Generation and Air. Development throughout the Borough of more than 1,000 sqm of floorspace or 10 or more dwellings or development within the Air Quality Management Area (see Appendix 8) that would generate any new floorspace must: 1. Achieve or exceed air quality neutral standards; or 2. Address the impacts of poor air quality due to traffic on building occupiers, and public realm or amenity space users by reducing exposure to and mitigating their effects, proportionate to the scale of the development. This can be achieved using design solutions that include: <ul style="list-style-type: none"> • Orientation and layout of buildings, taking into account building occupiers, public realm and amenity space users; • Appropriate abatement technologies; and • Urban greening appropriate for providing air quality benefits. 3. Where air quality neutral standards are not met, measures to offset any shortfall will be required, | Draft Air quality and Planning SPD submitted to Cabinet in March. Due to coronavirus pandemic this has not yet been approved. Due for approval June 2021 Supersedes previous SPDs and brings in Policy HS:5 of the Local Plan 2011 -2013. |

| 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 |
|-------------|--|----------------------------------|------------------------------|-------------------------|------------------------------------|------------------------|----------------|------------------------|----------------|---------------------------|----------------|--|---|---|---|
| | | | | | | | | | | | | | | according to the following hierarchy: <ul style="list-style-type: none"> • On-site measures; then • Off-site measures; then • Financial contributions. | |
| U | Promotion of Practical Guidance for use of open fires and wood burning stoves in domestic settings | Public Information | Via Internet | 2020 | Ongoing | RBC | RBC | - | - | - | Implementation | N/A | N/A | RBC are planning a promotion campaign using promotional guidance provided by DEFRA in relation to open fires and wood burning stoves. This will be done via the web page and social media communication platforms. | Website continually updated with latest guidance. |
| V | Promotion of Car Share Scheme | Promoting Travel Alternatives | Personalised Travel Planning | 2021 | Ongoing | RBC/WCC | RBC/WCC | - | - | - | Implementation | N/A | Reduction in the number of car-based journeys being made within the Borough | There is car share scheme operating across Coventry and Warwickshire. RBC looking at options for staff to join the scheme as an organisation with internal promotion through emails and updates. Promotion of the scheme externally via the website and Social Media platforms. | |
| W | Draft Taxi Policy | Promoting Low Emission Transport | Taxi Licensing conditions | 2021 | Ongoing | RBC | RBC | - | - | - | Implementation | N/A | Reduction in emissions from taxis | Rugby Borough Council's Licensing Team are drafting a Taxi Policy for 2020 which will include exhaust emission standards. | Taxi Policy past by Cabinet 2020. |

DRAFT

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.

The Public Health Outcomes Framework (see <https://fingertips.phe.org.uk/profile/public-health-outcomes-framework>) includes an indicator relating to the impact of particulate pollution on human health. Indicator D01 – Fraction of mortality attributable to particulate air pollution provides an estimation of the mortality burden associated with long-term exposure to PM_{2.5} as a percentage of the annual deaths from all causes in those aged 30+. The D01 indicator value for Rugby is 5.2% in 2019. This is comparable to the regional average for the West Midlands (5.3%) and the national English average (5.1%).

RBC is taking the following measures to address PM_{2.5}: Measure U in the AQAP involves the promotion of practical guidance on use of wood burners.

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

This section sets out the monitoring undertaken within 2020 by RBC and how it compares with the relevant AQS 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.

Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

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

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

3.1.2 Non-Automatic Monitoring Sites

RBC undertook non-automatic (i.e. passive) monitoring of NO₂ at 53 sites during 2020, including one co-located triplicate site. Table A.1 in Appendix A presents the details of the non-automatic sites.

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

Individual Pollutants

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

3.1.3 Nitrogen Dioxide (NO₂)

Table A.2 in Appendix A compare the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the AQS objective of 40 µg/m³. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment, 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. Please note that diffusion tube site S2 (3 Church Street) was previously named S54a in last year's ASR, and has replaced the monitoring location along A423 Marston Lay.

During 2020, there were no exceedances of the annual mean NO₂ AQS objective. The highest recorded annual mean NO₂ concentration was 33.5 µg/m³ at S2 (3 Church Street). This is a reduction from 2019, where there were two exceedances and a maximum concentration of 45.5 µg/m³, also at S2 (formerly S54a). The monitoring location S2, located on the junction of Church Road and Bulkington Road in Shilton, north of Coventry, has exceeded the AQS objective three times between 2016 and 2020, and with the exception of 2017 has recorded the highest annual mean concentrations in the borough. However, S2 is not currently located within the AQMA. As such, the Council will continue to closely monitor this site for changes in NO₂ concentration.

There were no monitoring locations which saw an annual mean greater than 60 µg/m³. This indicates it is unlikely that the 1-hour mean AQS objective for NO₂ was exceeded at any monitoring sites.

S54 (formerly S54b) was the other site to exceed the annual mean NO₂ AQS objective in 2019. S54 is located at the roadside of Warwick Street gyratory system near the town centre and is within the existing AQMA. Concentrations here have been declining since 2016, albeit with some fluctuations around the trend. 2020 has seen the lowest annual mean concentration of 28.5 µg/m³, almost 10 µg/m³ lower than the previous minimum of 38.7 µg/m³ in 2018. The longer term improvements can in part be attributed to major improvement works occurring to the gyratory system as part of the AQAP, which was completed in May 2015, but the sharp decline compared to 2019 is most likely due to COVID-19 restrictions.

Other monitoring sites which have shown notable improvements are S24 (in Dunchurch Square) and S49 (on the roundabout between Whitehall Road and Hillmorton Road). Both sites are within the AQMA. S24 fell below the AQS objective for the first time in 2019, and has fallen below 10% of the AQS objective in 2020.

Overall, between 2019 to 2020 all monitoring locations across Rugby Borough Council have seen a reduction in annual mean NO₂ concentrations, showing a continuation of a decreasing trend since 2016. However, it should be noted that most monitoring locations showed a notable drop between 2019 and 2020, and this is likely due to the impact of COVID-19 and associated travel restrictions.

3.1.4 Particulate Matter (PM₁₀)

Rugby Borough Council ceased PM₁₀ (particulate matter with an aerodynamic diameter of 10µm or less) monitoring in December 2017. Monitoring at the Parkfield Road location was originally commenced to investigate particulate matter concentrations at sensitive receptors near to the Cemex Climafuel facility, but there were no monitored exceedances of the PM₁₀ annual mean or short-term mean AQS objectives after several years of monitoring.

3.1.5 Particulate Matter (PM_{2.5})

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

Appendix A: Monitoring Results

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

| Diffusion Tube ID | Site Name | Site Type | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Pollutants Monitored | In AQMA? Which AQMA? | Distance to Relevant Exposure (m) ⁽¹⁾ | Distance to kerb of nearest road (m) ⁽²⁾ | Tube Co-located with a Continuous Analyser? | Tube Height (m) |
|-------------------|--------------------------------------|------------------|-------------------------|--------------------------|----------------------|----------------------|--|---|---|-----------------|
| S1 | 10 Newbold Road, Opp Shops | Kerbside | 449000 | 277178 | NO ₂ | Yes - Rugby AQMA | 0.0 | 0.5 | No | 2.5 |
| S2 | 3 Church St, Shilton | Roadside | 440416 | 284401 | NO ₂ | No | 0.0 | 1.5 | No | 2.5 |
| S3 | 69 School Street | Urban Background | 447316 | 276162 | NO ₂ | Yes - Rugby AQMA | 0.0 | 15.0 | No | 2.5 |
| S4 | Wolston School drainpipe | Urban Background | 441131 | 275648 | NO ₂ | No | 0.0 | 90.0 | No | 2.5 |
| S5 | High Street Ryton A45 post by subway | Kerbside | 438642 | 274418 | NO ₂ | No | 25.0 | 0.5 | No | 2.5 |
| S6 | 2 West Field Road | Urban Background | 449671 | 274795 | NO ₂ | Yes - Rugby AQMA | 0.0 | 10.0 | No | 2.5 |
| S7 | 68 Cymbiline Way | Urban Background | 448863 | 272786 | NO ₂ | Yes - Rugby AQMA | 0.0 | 10.0 | No | 2.5 |

| Diffusion Tube ID | Site Name | Site Type | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Pollutants Monitored | In AQMA? Which AQMA? | Distance to Relevant Exposure (m) ⁽¹⁾ | Distance to kerb of nearest road (m) ⁽²⁾ | Tube Co-located with a Continuous Analyser? | Tube Height (m) |
|-------------------|--------------------------------------|------------------|-------------------------|--------------------------|----------------------|----------------------|--|---|---|-----------------|
| S8 | Newbold Rd opp Benn Hall | Kerbside | 450138 | 275557 | NO ₂ | Yes - Rugby AQMA | 10.0 | 1.0 | No | 2.5 |
| S9 | (Argule Street) Cambridge St | Roadside | 451187 | 275334 | NO ₂ | Yes - Rugby AQMA | 0.0 | 5.0 | No | 2.5 |
| S10 | Webb Ellis Pub, Corporation Street | Roadside | 450069 | 275040 | NO ₂ | Yes - Rugby AQMA | 0.0 | 5.0 | No | 2.5 |
| S11 | 15 Oliver Street | Roadside | 449787 | 275224 | NO ₂ | Yes - Rugby AQMA | 0.0 | 5.0 | No | 2.5 |
| S12 | Boughton Leigh School, Hollowell Way | Urban Background | 451445 | 277245 | NO ₂ | Yes - Rugby AQMA | 0.0 | 56.0 | No | 2.5 |
| S13 | Avon Mill Pub, Newbold Road | Roadside | 450088 | 276229 | NO ₂ | Yes - Rugby AQMA | 15.0 | 3.0 | No | 2.5 |
| S14 | Binley Woods, Village Hall | Urban Background | 439450 | 277523 | NO ₂ | No | 0.0 | 20.0 | No | 2.5 |
| S15 | Lawford/Jubile St, Arnies Batch | Kerbside | 449168 | 275411 | NO ₂ | No | 0.0 | 0.5 | No | 2.5 |
| S16 | A45 Citrus Hotel | Roadside | 436867 | 275275 | NO ₂ | No | 0.0 | 19.0 | No | 2.5 |

| 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) |
|-------------------|--------------------------------------|-----------|-------------------------|--------------------------|----------------------|----------------------|--|---|---|-----------------|
| S17, S18, S19 | Stamford Gardens Rugby Road | Roadside | 431271 | 266404 | NO ₂ | No | N/A | 6.0 | Yes | 2.5 |
| S20 | Essex St/Newbold Rd | Roadside | 450137 | 275849 | NO ₂ | Yes - Rugby AQMA | 25.0 | 3.0 | No | 2.5 |
| S21 | Corner of Percival Rd & Ashlawn Rd | Roadside | 451698 | 273273 | NO ₂ | Yes - Rugby AQMA | 15.0 | 2.0 | No | 2.5 |
| S22 | Corner of Fisher Avenue & Ashlawn Rd | Roadside | 452403 | 273567 | NO ₂ | Yes - Rugby AQMA | 18.0 | 5.0 | No | 2.5 |
| S23 | Paddox Pub Corner | Roadside | 452672 | 273633 | NO ₂ | Yes - Rugby AQMA | 13.0 | 3.0 | No | 2.5 |
| S24 | Dun Cow Dunchurch Square | Kerbside | 448496 | 271244 | NO ₂ | Yes - Rugby AQMA | 0.0 | 0.5 | No | 2.5 |
| S25 | Crystals, Duchurch | Roadside | 448414 | 271175 | NO ₂ | Yes - Rugby AQMA | 0.0 | 2.0 | No | 2.5 |

| Diffusion Tube ID | Site Name | Site Type | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Pollutants Monitored | In AQMA? Which AQMA? | Distance to Relevant Exposure (m) ⁽¹⁾ | Distance to kerb of nearest road (m) ⁽²⁾ | Tube Co-located with a Continuous Analyser? | Tube Height (m) |
|-------------------|---|---------------------|-------------------------|--------------------------|----------------------|----------------------|--|---|---|-----------------|
| S26 | Lawport Rd Flats Former Simms Scrapyard | Roadside | 448999 | 275505 | NO ₂ | Yes - Rugby AQMA | 0.0 | 12.0 | No | 2.5 |
| S27 | Leamington Rd Ryton lamp post | Roadside | 449435 | 275543 | NO ₂ | No | 7.0 | 2.5 | No | 2.5 |
| S28 | Parkfield Rd No: 256 | Roadside | 449011 | 276329 | NO ₂ | Yes - Rugby AQMA | 0.0 | 2.0 | No | 2.5 |
| S29 | Avon Valley School | Urban Background | 449575 | 276540 | NO ₂ | Yes - Rugby AQMA | 0.0 | 35.0 | No | 2.5 |
| S30 | Murray Rd bus stop near Train station | Kerbside | 451107 | 275838 | NO ₂ | Yes - Rugby AQMA | 0.0 | 0.5 | No | 2.5 |
| S31 | Wood Street opp Myson house | Roadside | 450848 | 275849 | NO ₂ | Yes - Rugby AQMA | 0.0 | 3.0 | No | 2.5 |
| S32 | Railway Terrace Station Bar | Roadside | 450750 | 275547 | NO ₂ | Yes - Rugby AQMA | 0.0 | 3.0 | No | 2.5 |
| S33 | Albert Street Alma Lodge Hotel | Roadside | 450510 | 275355 | NO ₂ | Yes - Rugby AQMA | 0.0 | 3.0 | No | 2.5 |

| Diffusion Tube ID | Site Name | Site Type | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Pollutants Monitored | In AQMA? Which AQMA? | Distance to Relevant Exposure (m) ⁽¹⁾ | Distance to kerb of nearest road (m) ⁽²⁾ | Tube Co-located with a Continuous Analyser? | Tube Height (m) |
|-------------------|---|-----------|-------------------------|--------------------------|----------------------|----------------------|--|---|---|-----------------|
| S34 | Regent Street Lampost Near Oxfam | Roadside | 450405 | 275329 | NO ₂ | Yes - Rugby AQMA | 0.0 | 3.0 | No | 2.5 |
| S35 | Church Street Town Fryer | Roadside | 450444 | 275236 | NO ₂ | Yes - Rugby AQMA | 0.0 | 3.0 | No | 2.5 |
| S36 | Whitehall Road junction with Clifton roundabout | Roadside | 450870 | 275043 | NO ₂ | Yes - Rugby AQMA | 12.0 | 3.0 | No | 2.5 |
| S37 | Lower Hillmorton Rd | Roadside | 450897 | 275059 | NO ₂ | Yes - Rugby AQMA | 5.0 | 2.0 | No | 2.5 |
| S38 | Clifton Rd before Railway line | Kerbside | 451868 | 275501 | NO ₂ | Yes - Rugby AQMA | 9.0 | 0.5 | No | 2.5 |
| S39 | Clifton Rd Roundabout Murry Rd | Roadside | 450852 | 275116 | NO ₂ | Yes - Rugby AQMA | 0.0 | 5.0 | No | 2.5 |
| S40 | Drury Lan Bugby Tapp | Roadside | 450181 | 275029 | NO ₂ | Yes - Rugby AQMA | 0.0 | 5.0 | No | 2.5 |

| Diffusion Tube ID | Site Name | Site Type | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Pollutants Monitored | In AQMA? Which AQMA? | Distance to Relevant Exposure (m) ⁽¹⁾ | Distance to kerb of nearest road (m) ⁽²⁾ | Tube Co-located with a Continuous Analyser? | Tube Height (m) |
|-------------------|---|-----------|-------------------------|--------------------------|----------------------|----------------------|--|---|---|-----------------|
| S41 | Bilton Rd Big Yellow House | Roadside | 450010 | 274998 | NO ₂ | Yes - Rugby AQMA | 0.0 | 15.0 | No | 2.5 |
| S42 | Bilton Rd near Crow Pie Pub | Roadside | 448855 | 274352 | NO ₂ | Yes - Rugby AQMA | 10.0 | 5.0 | No | 2.5 |
| S43 | Dunchurch Gyratory Residential | Roadside | 450162 | 274898 | NO ₂ | Yes - Rugby AQMA | 4.0 | 3.0 | No | 2.5 |
| S44 | Ashlawn Rd/Barby Lane | Roadside | 453394 | 273633 | NO ₂ | Yes - Rugby AQMA | 15.0 | 2.0 | No | 2.5 |
| S45 | Bretford Electricity Pole near 3 Avon Cottage | Roadside | 442963 | 277071 | NO ₂ | Yes - Rugby AQMA | 11.0 | 3.0 | No | 2.5 |
| S46 | Oxford Rd Ryton Belvedere | Kerbside | 437555 | 274561 | NO ₂ | No | 30.0 | 1.0 | No | 2.5 |
| S47 | Regent Place | Kerbside | 450445 | 275495 | NO ₂ | Yes - Rugby AQMA | 5.0 | 0.5 | No | 2.5 |
| S48 | North Street o/s Natwest | Roadside | 450304 | 275314 | NO ₂ | Yes - Rugby AQMA | 0.0 | 2.0 | No | 2.5 |

| Diffusion Tube ID | Site Name | Site Type | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Pollutants Monitored | In AQMA? Which AQMA? | Distance to Relevant Exposure (m) ⁽¹⁾ | Distance to kerb of nearest road (m) ⁽²⁾ | Tube Co-located with a Continuous Analyser? | Tube Height (m) |
|-------------------|--|-----------|-------------------------|--------------------------|----------------------|----------------------|--|---|---|-----------------|
| S49 | Lesley Souter House Whitehall rd Hillmorton Rd | Roadside | 450864 | 274896 | NO ₂ | Yes - Rugby AQMA | 13.0 | 3.0 | No | 2.5 |
| S50 | Tesco Express Bilton bus stop | Roadside | 448169 | 273625 | NO ₂ | Yes - Rugby AQMA | 18.0 | 3.0 | No | 2.5 |
| S51 | Brays Close Brinklow | Roadside | 443433 | 279208 | NO ₂ | No | 6.0 | 3.0 | No | 2.5 |
| S52 | Green Man Dunchurch | Roadside | 448537 | 271195 | NO ₂ | Yes - Rugby AQMA | 1.0 | 3.0 | No | 2.5 |
| S53 | Coventry Road, West Dunchurch | Roadside | 448361 | 271334 | NO ₂ | Yes - Rugby AQMA | 0.0 | 1.5 | No | 2.5 |
| S54 | Rugby School Lampost 6 | Roadside | 450269 | 274998 | NO ₂ | Yes - Rugby AQMA | 0.0 | 1.5 | No | 2.5 |
| S55 | Main St Stretton | Roadside | 445004 | 281330 | NO ₂ | No | 5.0 | 2.0 | No | 2.5 |

Notes:

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

(2) N/A if not applicable.

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

| Diffusion Tube ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) ⁽¹⁾ | Valid Data Capture 2020 (%) ⁽²⁾ | 2016 | 2017 | 2018 | 2019 | 2020 |
|-------------------|-------------------------|--------------------------|------------------|---|--|-------------|------|-------------|-------------|------|
| S1 | 449000 | 277178 | Kerbside | 100.0 | 100.0 | 18.8 | 17.8 | 17.6 | 16.2 | 13.5 |
| S2 | 440416 | 284401 | Roadside | 100.0 | 100.0 | 47.1 | 37.6 | 46.1 | 45.5 | 33.5 |
| S3 | 447316 | 276162 | Urban Background | 100.0 | 100.0 | 15.5 | 12.2 | 14.2 | 13.1 | 9.5 |
| S4 | 441131 | 275648 | Urban Background | 92.3 | 92.3 | 14.0 | 12.3 | 12.1 | 10.4 | 8.2 |
| S5 | 438642 | 274418 | Kerbside | 100.0 | 100.0 | 28.5 | 25.0 | 24.0 | 23.5 | 16.4 |
| S6 | 449671 | 274795 | Urban Background | 100.0 | 100.0 | 16.3 | 14.1 | 14.9 | 13.6 | 10.4 |
| S7 | 448863 | 272786 | Urban Background | 100.0 | 100.0 | 13.2 | 10.4 | 11.6 | 11.7 | 8.6 |
| S8 | 450138 | 275557 | Kerbside | 92.3 | 92.3 | 33.6 | 29.3 | 30.0 | 28.0 | 26.9 |
| S9 | 451187 | 275334 | Roadside | 100.0 | 100.0 | 23.3 | 15.9 | 15.8 | 16.3 | 11.8 |
| S10 | 450069 | 275040 | Roadside | 90.4 | 90.4 | 41.0 | 34.8 | 30.8 | 35.7 | 25.7 |
| S11 | 449787 | 275224 | Roadside | 100.0 | 100.0 | 24.3 | 21.8 | 21.8 | 22.6 | 16.2 |
| S12 | 451445 | 277245 | Urban Background | 92.3 | 92.3 | 25.8 | 21.3 | 19.6 | 20.9 | 14.3 |

| Diffusion Tube ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) ⁽¹⁾ | Valid Data Capture 2020 (%) ⁽²⁾ | 2016 | 2017 | 2018 | 2019 | 2020 |
|-------------------|-------------------------|--------------------------|------------------|---|--|-------------|-------------|-------------|------|------|
| S13 | 450088 | 276229 | Roadside | 100.0 | 100.0 | 39.5 | 36.5 | 34.8 | 33.5 | 26.7 |
| S14 | 439450 | 277523 | Urban Background | 100.0 | 100.0 | 18.2 | 14.7 | 15.1 | 16.8 | 10.9 |
| S15 | 449168 | 275411 | Kerbside | 90.4 | 90.4 | 28.3 | 25.6 | 26.9 | 25.1 | 22.1 |
| S16 | 436867 | 275275 | Roadside | 100.0 | 100.0 | 22.8 | 18.2 | 19.6 | 18.8 | 13.5 |
| S17, S18, S19 | 431271 | 266404 | Roadside | 100.0 | 100.0 | 20.8 | 17.0 | 18.4 | 17.4 | 12.7 |
| S20 | 450137 | 275849 | Roadside | 100.0 | 100.0 | 32.4 | 26.7 | 27.8 | 26.0 | 19.5 |
| S21 | 451698 | 273273 | Roadside | 100.0 | 100.0 | 24.2 | 22.2 | 22.5 | 22.2 | 15.5 |
| S22 | 452403 | 273567 | Roadside | 92.3 | 92.3 | 24.4 | 20.8 | 21.3 | 20.7 | 15.1 |
| S23 | 452672 | 273633 | Roadside | 100.0 | 100.0 | 25.1 | 21.7 | 21.0 | 21.8 | 14.4 |
| S24 | 448496 | 271244 | Kerbside | 100.0 | 100.0 | 47.1 | 40.7 | 43.3 | 38.5 | 27.3 |
| S25 | 448414 | 271175 | Roadside | 100.0 | 100.0 | 34.5 | 28.0 | 29.3 | 25.4 | 19.0 |
| S26 | 448999 | 275505 | Roadside | 100.0 | 100.0 | 22.4 | 18.3 | 19.1 | 18.7 | 14.5 |
| S27 | 449435 | 275543 | Roadside | 92.3 | 92.3 | 27.5 | 21.3 | 18.2 | 21.2 | 14.4 |

| 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 |
|-------------------|-------------------------|--------------------------|------------------|---|--|------|------|------|------|------|
| S28 | 449011 | 276329 | Roadside | 100.0 | 100.0 | 19.7 | 16.1 | 17.2 | 16.7 | 11.7 |
| S29 | 449575 | 276540 | Urban Background | 75.0 | 75.0 | 21.7 | 18.7 | 19.8 | 21.0 | 16.3 |
| S30 | 451107 | 275838 | Kerbside | 100.0 | 100.0 | 36.4 | 32.3 | 34.5 | 33.0 | 20.8 |
| S31 | 450848 | 275849 | Roadside | 100.0 | 100.0 | 29.7 | 26.1 | 27.3 | 24.7 | 21.3 |
| S32 | 450750 | 275547 | Roadside | 90.4 | 90.4 | 30.4 | 28.2 | 29.3 | 27.4 | 21.1 |
| S33 | 450510 | 275355 | Roadside | 100.0 | 100.0 | 25.4 | 21.6 | 22.4 | 22.2 | 15.7 |
| S34 | 450405 | 275329 | Roadside | 80.8 | 80.8 | 27.8 | 25.5 | 24.8 | 23.1 | 15.2 |
| S35 | 450444 | 275236 | Roadside | 92.3 | 92.3 | 32.3 | 28.4 | 31.7 | 31.0 | 19.9 |
| S36 | 450870 | 275043 | Roadside | 100.0 | 100.0 | 35.3 | 29.5 | 28.9 | 29.8 | 24.2 |
| S37 | 450897 | 275059 | Roadside | 75.0 | 75.0 | 30.1 | 24.1 | 23.9 | 25.2 | 20.7 |
| S38 | 451868 | 275501 | Kerbside | 100.0 | 100.0 | 29.9 | 25.7 | 26.5 | 25.1 | 17.1 |
| S39 | 450852 | 275116 | Roadside | 90.4 | 90.4 | 30.0 | 25.9 | 27.9 | 26.2 | 19.6 |
| S40 | 450181 | 275029 | Roadside | 82.7 | 82.7 | 34.7 | 30.5 | 26.5 | 28.3 | 22.1 |

| 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 |
|-------------------|-------------------------|--------------------------|-----------|---|--|------|-------------|------|------|------|
| S41 | 450010 | 274998 | Roadside | 100.0 | 100.0 | 27.4 | 23.0 | 25.7 | 24.8 | 17.8 |
| S42 | 448855 | 274352 | Roadside | 100.0 | 100.0 | 24.2 | 20.7 | 22.8 | 21.2 | 15.5 |
| S43 | 450162 | 274898 | Roadside | 100.0 | 100.0 | 31.1 | 25.2 | 25.9 | 26.3 | 19.1 |
| S44 | 453394 | 273633 | Roadside | 100.0 | 100.0 | 29.8 | 23.8 | 27.4 | 23.6 | 17.5 |
| S45 | 442963 | 277071 | Roadside | 90.4 | 90.4 | 26.7 | 22.5 | 22.5 | 23.8 | 16.3 |
| S46 | 437555 | 274561 | Kerbside | 100.0 | 100.0 | 39.3 | 36.5 | 36.7 | 35.3 | 26.3 |
| S47 | 450445 | 275495 | Kerbside | 100.0 | 100.0 | 35.2 | 30.8 | 32.6 | 29.5 | 20.2 |
| S48 | 450304 | 275314 | Roadside | 92.3 | 92.3 | 37.5 | 34.3 | 31.0 | 34.1 | 23.1 |
| S49 | 450864 | 274896 | Roadside | 100.0 | 100.0 | 36.6 | 43.7 | 34.0 | 30.0 | 20.6 |
| S50 | 448169 | 273625 | Roadside | 90.4 | 90.4 | 25.3 | 21.5 | 22.9 | 21.3 | 16.8 |
| S51 | 443433 | 279208 | Roadside | 100.0 | 100.0 | 32.4 | 28.3 | 29.4 | 28.1 | 19.0 |
| S52 | 448537 | 271195 | Roadside | 100.0 | 100.0 | 24.0 | 20.9 | 20.8 | 20.9 | 14.1 |
| S53 | 448361 | 271334 | Roadside | 100.0 | 100.0 | 24.6 | 20.1 | 21.8 | 21.8 | 13.7 |

| 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 |
|-------------------|-------------------------|--------------------------|-----------|---|--|-------------|-------------|------|-------------|------|
| S54 | 450269 | 274998 | Roadside | 100.0 | 100.0 | 45.5 | 43.3 | 38.7 | 41.6 | 28.5 |
| S55 | 445004 | 281330 | Roadside | 100.0 | 100.0 | 25.3 | 20.6 | 20.8 | 21.4 | 13.5 |

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.

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 NO₂ annual mean AQS objective of 40 $\mu\text{g}/\text{m}^3$ are shown in **bold**.

NO₂ annual means exceeding 60 $\mu\text{g}/\text{m}^3$, indicating a potential exceedance of the NO₂ 1-hour mean AQS 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%).

DRAFT

Figure A.1 – Trends in Urban Background Annual Mean NO₂ Concentrations

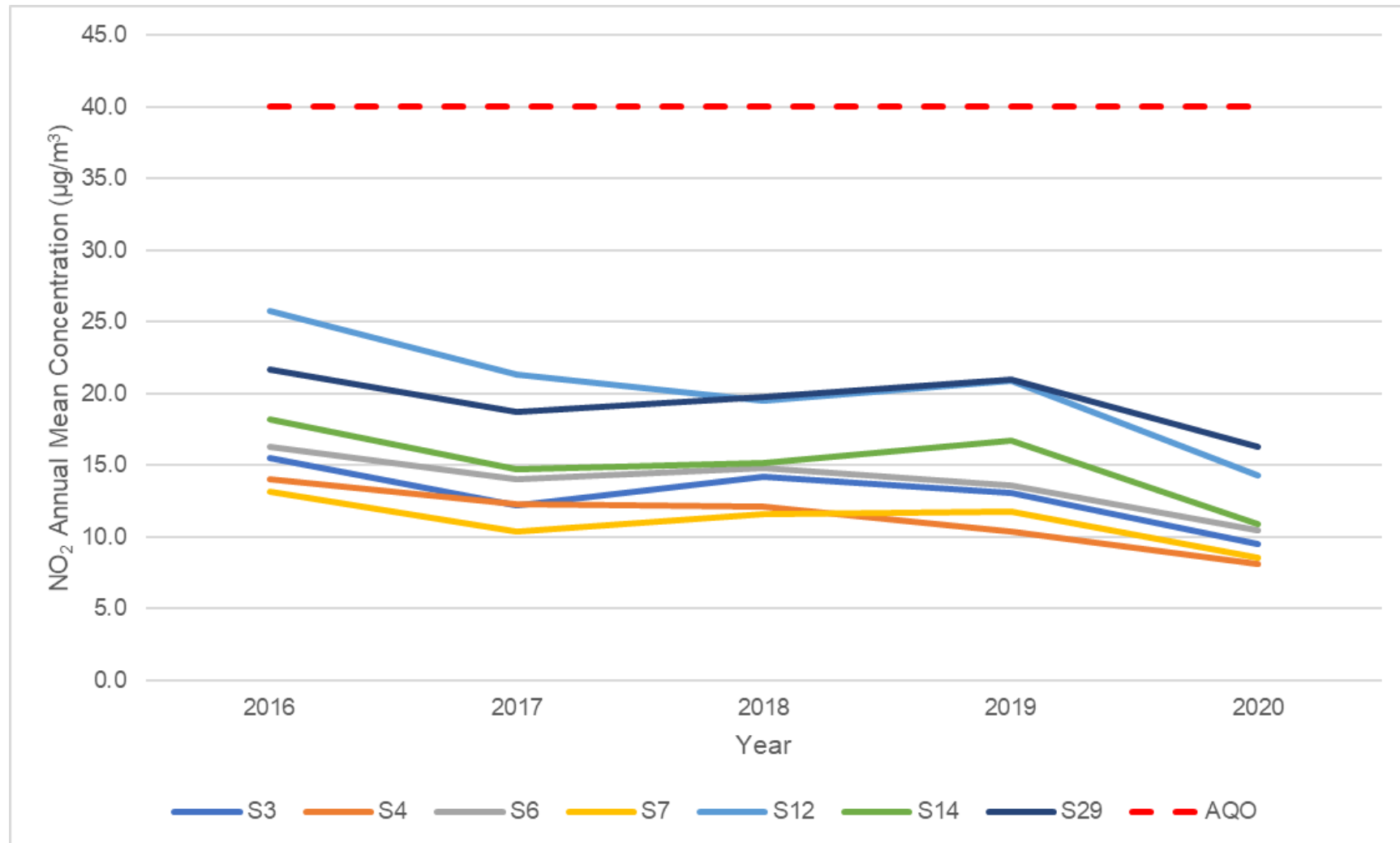


Figure A.2 – Trends in Kerbside Annual Mean NO₂ Concentrations

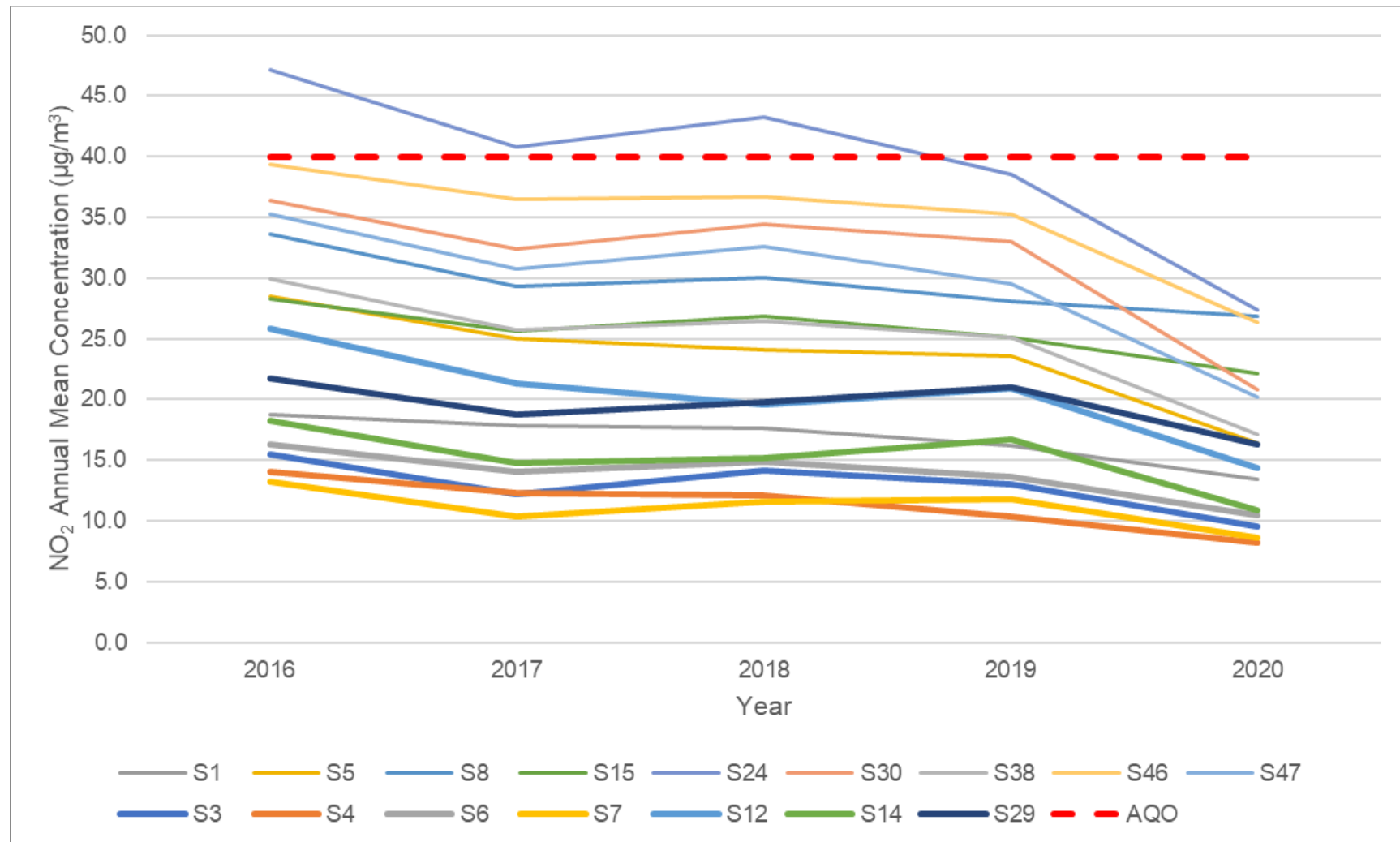


Figure A.3 – Trends Roadside Annual Mean NO₂ Concentrations (a)

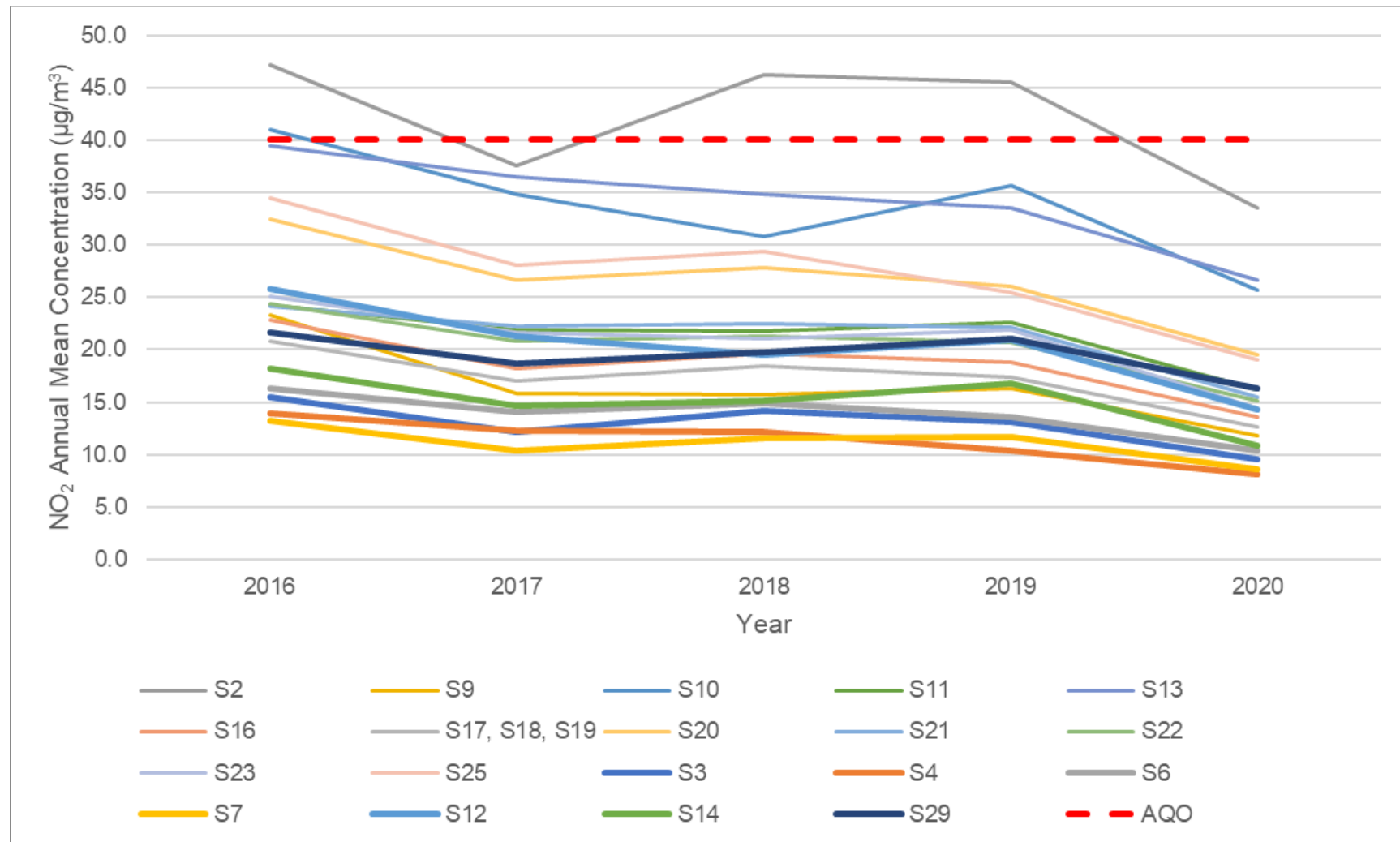


Figure A.4 – Trends in Roadside Annual Mean NO₂ Concentrations (b)

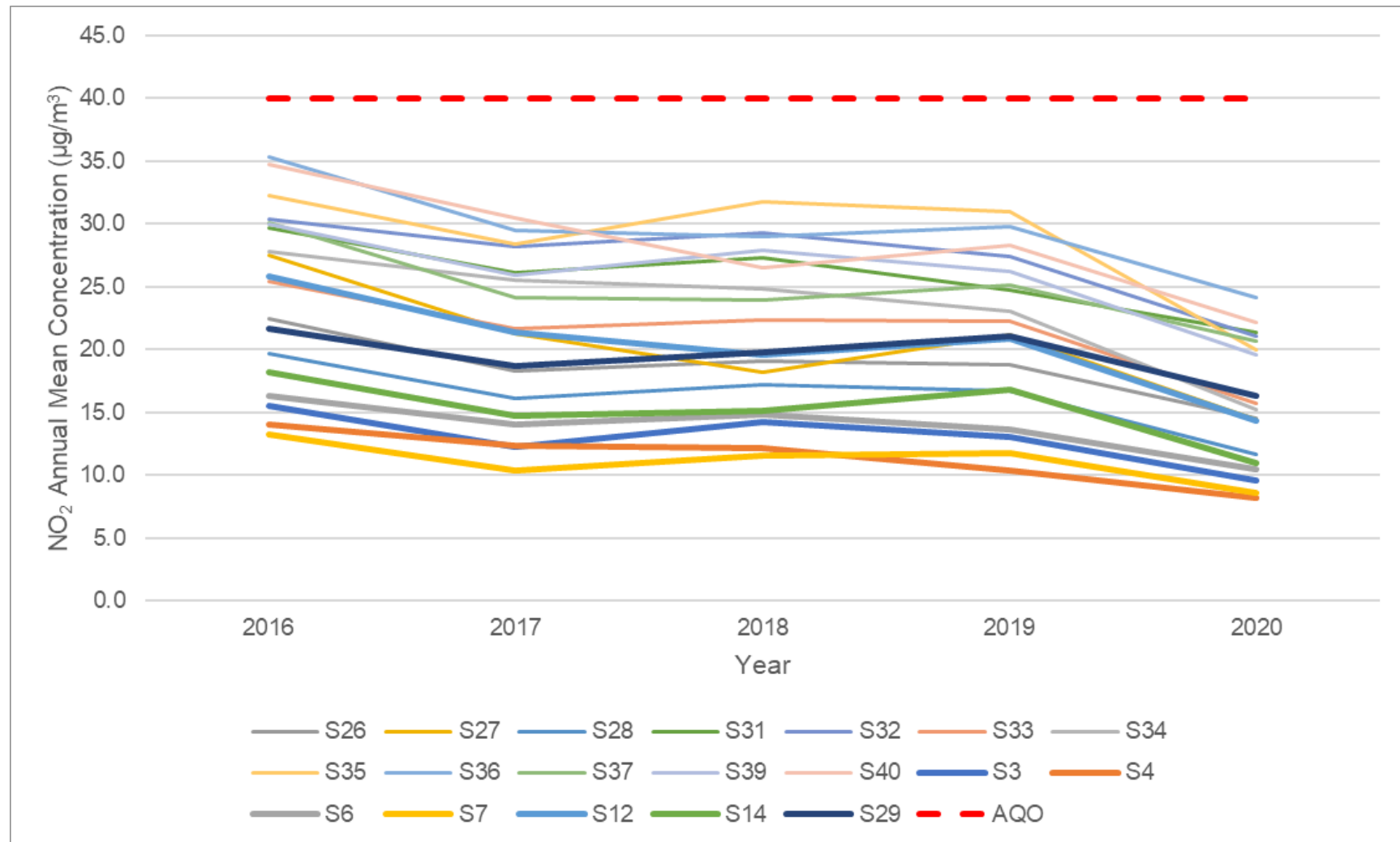
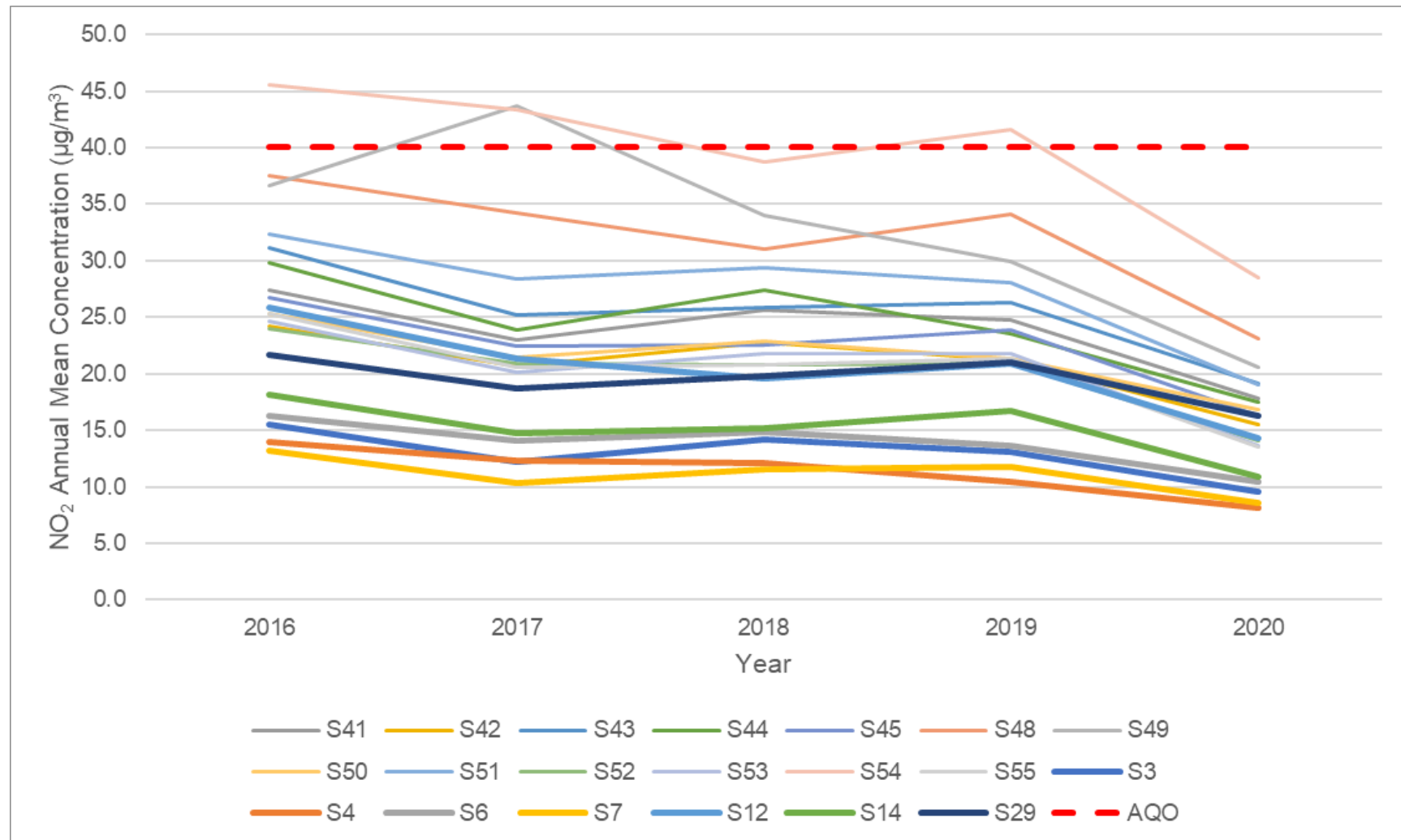


Figure A.5 – Trends in Roadside Annual Mean NO₂ Concentrations (c)



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 |
|-------|-------------------------------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|--------------------------|---|---|--|
| S1 | 449000 | 277178 | 24.8 | 18.7 | 7.7 | 15.9 | 12.8 | 12.3 | 10.3 | 15.7 | 20.1 | 17.2 | 27.4 | 26.8 | 17.5 | 13.5 | - | |
| S2 | 440416 | 284401 | 64.6 | 49.8 | 43.3 | 28.0 | 34.4 | 39.1 | 27.4 | 45.2 | 43.7 | 43.9 | 52.5 | 50.8 | 43.6 | 33.5 | - | |
| S3 | 447316 | 276162 | 17.9 | 14.8 | 13.4 | 11.6 | 8.0 | 8.8 | 6.3 | 9.4 | 11.1 | 12.5 | 16.2 | 18.7 | 12.4 | 9.5 | - | |
| S4 | 441131 | 275648 | 15.5 | 10.1 | 3.7 | 9.2 | 6.9 | 6.8 | - | 11.8 | 9.8 | 10.6 | 15.3 | 17.0 | 10.6 | 8.2 | - | |
| S5 | 438642 | 274418 | 30.2 | 21.2 | 23.8 | 18.3 | 15.3 | 17.0 | 14.1 | 18.3 | 23.3 | 22.0 | 25.6 | 27.1 | 21.4 | 16.4 | - | |
| S6 | 449671 | 274795 | 18.8 | 13.9 | 14.8 | 12.5 | 9.7 | 8.7 | 6.8 | 9.9 | 14.7 | 13.7 | 18.6 | 20.7 | 13.6 | 10.4 | - | |
| S7 | 448863 | 272786 | 17.1 | 11.9 | 11.7 | 8.5 | 6.4 | 6.2 | 5.5 | 7.2 | 9.5 | 10.7 | 20.5 | 18.5 | 11.1 | 8.6 | - | |
| S8 | 450138 | 275557 | 44.8 | 41.7 | 29.9 | 28.3 | 22.6 | - | 18.5 | 30.2 | 29.7 | 64.1 | 35.8 | 38.1 | 34.9 | 26.9 | - | |
| S9 | 451187 | 275334 | 25.4 | 14.1 | 16.2 | 11.4 | 9.8 | 9.9 | 8.3 | 12.0 | 14.6 | 16.0 | 21.3 | 24.3 | 15.3 | 11.8 | - | |
| S10 | 450069 | 275040 | 48.4 | 36.1 | 29.3 | 29.3 | 25.4 | 30.0 | 20.4 | 33.5 | 36.2 | 37.2 | 41.3 | | 33.4 | 25.7 | - | |
| S11 | 449787 | 275224 | 32.8 | 23.5 | 19.1 | 16.8 | 13.4 | 14.6 | 12.8 | 17.0 | 19.1 | 19.0 | 31.3 | 32.7 | 21.0 | 16.2 | - | |
| S12 | 451445 | 277245 | 28.0 | 21.6 | 10.4 | 12.6 | 10.0 | 10.5 | | 18.0 | 17.9 | 17.3 | 32.2 | 26.0 | 18.6 | 14.3 | - | |
| S13 | 450088 | 276229 | 49.9 | 48.2 | 31.4 | 20.3 | 23.2 | 27.8 | 29.5 | 30.6 | 37.8 | 38.4 | 44.6 | 33.8 | 34.6 | 26.7 | - | |
| S14 | 439450 | 277523 | 23.2 | 15.9 | 14.8 | 10.4 | 8.8 | 8.5 | 7.8 | 10.1 | 13.5 | 14.4 | 21.7 | 20.9 | 14.2 | 10.9 | - | |
| S15 | 449168 | 275411 | 53.3 | 40.1 | 33.5 | 19.6 | | 22.8 | 8.9 | 22.8 | 28.0 | 22.1 | 34.9 | 30.1 | 28.7 | 22.1 | - | |
| S16 | 436867 | 275275 | 20.7 | 17.7 | 18.7 | 16.6 | 14.6 | 14.1 | 12.6 | 14.8 | 19.9 | 17.1 | 21.6 | 22.5 | 17.6 | 13.5 | - | |
| S17 | 431271 | 266404 | 28.5 | 19.8 | 17.6 | 12.7 | 9.2 | 10.0 | 8.6 | 13.4 | 15.7 | 16.5 | 25.1 | 24.6 | - | - | - | Triplicate Site with S17, S18 and S19 - Annual data provided for average of triplicate in S19 row only |
| S18 | 431271 | 266404 | 26.5 | 17.5 | 17.4 | 13.1 | 9.1 | 9.6 | 8.7 | 13.7 | 17.1 | 16.1 | 20.8 | 23.1 | - | - | - | Triplicate Site with S17, S18 and S19 - Annual data provided for average of triplicate in S19 row only |
| S19 | 431271 | 266404 | 27.9 | 18.1 | 17.6 | 11.9 | 11.1 | 10.6 | 7.3 | 11.7 | 16.8 | 17.6 | 23.6 | 24.2 | 16.5 | 12.7 | - | Triplicate Site with S17, S18 and S19 - Annual data provided for average of triplicate in S19 row only |
| S20 | 450137 | 275849 | 39.8 | 26.0 | 27.2 | 23.9 | 16.7 | 19.1 | 10.5 | 23.5 | 25.9 | 22.1 | 30.6 | 38.4 | 25.3 | 19.5 | - | |
| S21 | 451698 | 273273 | 32.6 | 26.5 | 17.7 | 13.9 | 12.2 | 14.7 | 11.9 | 17.4 | 21.9 | 21.6 | 23.8 | 26.9 | 20.1 | 15.5 | - | |
| S22 | 452403 | 273567 | 28.8 | | 18.1 | 14.2 | 13.8 | 15.1 | 11.4 | 15.9 | 19.9 | 20.8 | 30.2 | 27.6 | 19.6 | 15.1 | - | |
| S23 | 452672 | 273633 | 25.6 | 20.1 | 19.0 | 16.1 | 12.4 | 13.7 | 11.0 | 14.6 | 20.1 | 17.9 | 26.1 | 27.7 | 18.7 | 14.4 | - | |
| S24 | 448496 | 271244 | 51.4 | 45.7 | 23.5 | 24.8 | 25.1 | 32.5 | 30.4 | 34.5 | 40.7 | 42.4 | 33.4 | 41.8 | 35.5 | 27.3 | - | |

| 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 |
|-------|-------------------------------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|--------------------------|---|---|---------|
| S25 | 448414 | 271175 | 36.9 | 25.6 | 23.8 | 15.1 | 15.0 | 17.6 | 18.1 | 22.3 | 29.1 | 28.0 | 29.4 | 35.2 | 24.7 | 19.0 | - | |
| S26 | 448999 | 275505 | 25.4 | 17.4 | 18.8 | 12.0 | 14.5 | 14.4 | 13.3 | 17.9 | 19.8 | 15.7 | 28.3 | 29.0 | 18.9 | 14.5 | - | |
| S27 | 449435 | 275543 | 31.9 | 21.5 | 15.8 | - | 11.3 | 13.7 | 11.9 | 14.3 | 20.1 | 15.9 | 23.4 | 26.1 | 18.7 | 14.4 | - | |
| S28 | 449011 | 276329 | 21.9 | 18.1 | 11.8 | 13.9 | 9.4 | 10.5 | 13.7 | 12.9 | 13.2 | 15.1 | 21.2 | 20.1 | 15.2 | 11.7 | - | |
| S29 | 449575 | 276540 | 35.4 | 31.0 | - | - | - | 1.0 | 8.3 | 17.4 | 18.1 | 17.6 | 30.5 | 31.3 | 21.2 | 16.3 | - | |
| S30 | 451107 | 275838 | 40.8 | 26.2 | 26.1 | 27.2 | 24.0 | 27.8 | 17.1 | 32.1 | 32.0 | 30.5 | 1.4 | 38.9 | 27.0 | 20.8 | - | |
| S31 | 450848 | 275849 | 71.4 | 25.9 | 21.2 | 22.8 | 18.6 | 18.4 | 12.9 | 22.6 | 21.9 | 25.5 | 32.9 | 38.0 | 27.7 | 21.3 | - | |
| S32 | 450750 | 275547 | 40.4 | 28.3 | 26.9 | 19.7 | 19.9 | 19.2 | 17.4 | 24.1 | 30.2 | - | 37.2 | 37.8 | 27.4 | 21.1 | - | |
| S33 | 450510 | 275355 | 33.9 | 23.2 | 19.8 | 14.9 | 11.4 | 11.6 | 12.4 | 17.6 | 20.9 | 22.0 | 27.5 | 30.1 | 20.4 | 15.7 | - | |
| S34 | 450405 | 275329 | 32.2 | 21.2 | 21.3 | 13.8 | 13.2 | 12.5 | 14.1 | 17.4 | 20.4 | - | 31.2 | - | 19.7 | 15.2 | - | |
| S35 | 450444 | 275236 | 45.2 | - | 10.9 | 20.1 | 18.9 | 18.2 | 19.1 | 25.0 | 30.3 | 30.3 | 34.6 | 32.2 | 25.9 | 19.9 | - | |
| S36 | 450870 | 275043 | 40.5 | 37.0 | 27.2 | 23.7 | 20.9 | 27.6 | 21.2 | 27.5 | 33.7 | 35.8 | 39.4 | 42.1 | 31.4 | 24.2 | - | |
| S37 | 450897 | 275059 | 38.3 | - | 18.2 | - | 15.5 | 0.6 | 32.7 | - | 29.0 | 33.2 | 34.7 | 39.3 | 26.8 | 20.7 | - | |
| S38 | 451868 | 275501 | 35.1 | 23.8 | 21.4 | 19.4 | 16.9 | 15.2 | 16.5 | 19.5 | 23.6 | 23.1 | 25.7 | 27.0 | 22.3 | 17.1 | - | |
| S39 | 450852 | 275116 | 36.6 | 29.1 | 25.1 | 18.5 | 16.1 | 17.9 | 16.8 | - | 27.1 | 26.9 | 33.4 | 32.2 | 25.4 | 19.6 | - | |
| S40 | 450181 | 275029 | 41.0 | 28.6 | 25.4 | - | 20.0 | 21.0 | 20.6 | - | 29.5 | 29.8 | 36.4 | 35.3 | 28.8 | 22.1 | - | |
| S41 | 450010 | 274998 | 28.9 | 22.5 | 23.8 | 19.7 | 17.9 | 19.5 | 13.7 | 21.1 | 27.6 | 24.0 | 30.5 | 28.5 | 23.1 | 17.8 | - | |
| S42 | 448855 | 274352 | 26.8 | 19.2 | 21.9 | 18.1 | 15.6 | 15.7 | 11.5 | 18.2 | 21.7 | 22.1 | 24.8 | 25.8 | 20.1 | 15.5 | - | |
| S43 | 450162 | 274898 | 30.2 | 22.9 | 23.2 | 19.4 | 18.9 | 21.9 | 15.5 | 23.2 | 30.2 | 27.4 | 40.8 | 23.9 | 24.8 | 19.1 | - | |
| S44 | 453394 | 273633 | 28.9 | 24.1 | 22.3 | 20.8 | 19.4 | 18.5 | 15.8 | 22.8 | 25.1 | 21.2 | 25.3 | 28.5 | 22.7 | 17.5 | - | |
| S45 | 442963 | 277071 | 40.0 | 25.4 | 20.7 | 13.2 | 12.6 | 16.9 | 14.2 | 18.4 | 21.8 | 21.7 | 27.9 | - | 21.2 | 16.3 | - | |
| S46 | 437555 | 274561 | 45.0 | 30.0 | 32.7 | 28.7 | 28.8 | 32.5 | 23.7 | 34.9 | 38.8 | 34.9 | 38.1 | 41.9 | 34.2 | 26.3 | - | |
| S47 | 450445 | 275495 | 37.2 | 24.6 | 25.5 | 19.6 | 20.8 | 22.5 | 16.4 | 28.6 | 29.9 | 26.5 | 33.2 | 30.4 | 26.3 | 20.2 | - | |
| S48 | 450304 | 275314 | 52.1 | 33.0 | 28.1 | - | 18.5 | 19.0 | 19.7 | 25.0 | 30.4 | 32.5 | 37.5 | 33.6 | 29.9 | 23.1 | - | |
| S49 | 450864 | 274896 | 43.7 | 34.7 | 20.9 | 11.4 | 19.9 | 22.1 | 19.3 | 24.7 | 30.6 | 29.0 | 31.3 | 32.8 | 26.7 | 20.6 | - | |
| S50 | 448169 | 273625 | 28.4 | 23.8 | 20.3 | 17.0 | 14.8 | 14.8 | 15.3 | 19.3 | 24.3 | - | 32.2 | 30.5 | 21.9 | 16.8 | - | |
| S51 | 443433 | 279208 | 33.8 | 31.3 | 21.0 | 18.0 | 16.1 | 19.4 | 16.7 | 21.2 | 29.6 | 27.1 | 34.0 | 27.5 | 24.6 | 19.0 | - | |
| S52 | 448537 | 271195 | 28.2 | 20.3 | 17.2 | 12.7 | 12.7 | 13.3 | 11.5 | 14.7 | 20.1 | 20.8 | 23.8 | 24.3 | 18.3 | 14.1 | - | |
| S53 | 448361 | 271334 | 23.6 | 19.3 | 13.4 | 14.5 | 12.5 | 15.0 | 9.5 | 15.0 | 20.1 | 21.2 | 25.7 | 23.4 | 17.8 | 13.7 | - | |
| S54 | 450269 | 274998 | 62.3 | 40.6 | 22.9 | 24.6 | 26.4 | 33.6 | 28.0 | 35.7 | 40.8 | 38.4 | 47.4 | 44.0 | 37.1 | 28.5 | - | |
| S55 | 445004 | 281330 | 28.3 | 17.8 | 20.4 | 16.7 | 15.4 | 14.4 | 11.8 | 15.1 | 14.3 | 19.7 | 26.1 | 10.0 | 17.5 | 13.5 | - | |

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 >25% 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.
- Rugby Borough 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 AQS objective of 40 µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60 µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean AQS objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

DRAFT

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

New or Changed Sources Identified Within Rugby Borough Council During 2020

RBC has not identified any new sources relating to air quality within the reporting year of 2020.

Additional Air Quality Works Undertaken by Rugby Borough Council During 2020

RBC has not completed any additional works within the reporting year of 2020.

QA/QC of Diffusion Tube Monitoring

RBC's NO₂ diffusion tubes are supplied and analysed by SOCOTEC Didcot using the 50% TEA in Acetone method. This method conforms to the guidelines set out in Defra's 'Diffusion Tubes for Ambient NO₂ Monitoring: Practical Guidance' document.

SOCOTEC Didcot participates in the AIR NO₂ PT scheme¹⁵. This scheme forms an integral part of the UK NO₂ Network's QA/QC and is a useful tool in assessing the analytical performance of those laboratories supplying diffusion tubes to Local Authorities for use in the context of Local Air Quality Management (LAQM). In the most recent AIR NO₂ PT rounds AR040, 36, 34, 33 and 31 SOCOTEC Didcot achieved 100.0% satisfactory scores. In prior AIR NO₂ PT rounds AR0030 SOCOTEC Didcot achieved a 87.5% satisfactory score.

Diffusion Tube Annualisation

All diffusion tube monitoring locations recorded data capture of 75% or greater and above 25%. Therefore it was not required to annualise any monitoring data.

¹⁵ LGC (2019) Summary of Laboratory Performance in AIR NO₂ Proficiency Testing Scheme (April 2017 – February 2019) Available at: <https://laqm.defra.gov.uk/assets/laqmno2performancedatauptofebruary2019v1.pdf>

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 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.

A national bias adjustment factor was obtained from the national Diffusion Tube Bias Adjustment Factors Spreadsheet for March 2021. Based on the analytical laboratory (SOCOTEC Didcot) and tube preparation method (50%TEA/Acetone) a national bias adjustment factor of 0.77 was derived for 2020.

A local bias adjustment factor was calculated from the triplicate co-location of diffusion tubes (S17, S18 and S19) alongside the AURN monitoring station at Leamington Spa Rugby Road. The local bias adjustment factor was calculated as 0.71. The factor was calculated as per LAQM.TG16 guidance, using the Defra Diffusion Tube Data Processing Tool. Details of this calculation can be found in Table C.2.

RBC have applied a national bias adjustment factor of 0.77 to the 2020 monitoring data. A summary of bias adjustment factors used by RBC over the past five years is presented in Table C.1. The national bias adjustment factor was selected and applied to the 2020 monitoring data as a conservative approach; the national bias adjustment factor was found to be higher than the local factor.

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 | Local | - | 0.81 |
| 2018 | Local | - | 0.83 |
| 2017 | Local | - | 0.78 |
| 2016 | Local | - | 0.84 |

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.

No diffusion tube NO₂ monitoring locations within the borough required distance correction for 2020.

DRAFT

Table C.2 – Local Bias Adjustment Calculation

| | Local Bias Adjustment Input 1 |
|--|-------------------------------|
| Periods used to calculate bias | 12 |
| Bias Factor A | 0.71 (0.68 - 0.75) |
| Bias Factor B | 40% (33% - 47%) |
| Diffusion Tube Mean ($\mu\text{g}/\text{m}^3$) | 16.5 |
| Mean CV (Precision) | 6.0% |
| Automatic Mean ($\mu\text{g}/\text{m}^3$) | 11.8 |
| Data Capture | 100% |
| Adjusted Tube Mean ($\mu\text{g}/\text{m}^3$) | 12 (11 - 12) |

Notes:

A single local bias adjustment factor has been used to bias adjust the 2020 diffusion tube results.

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

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

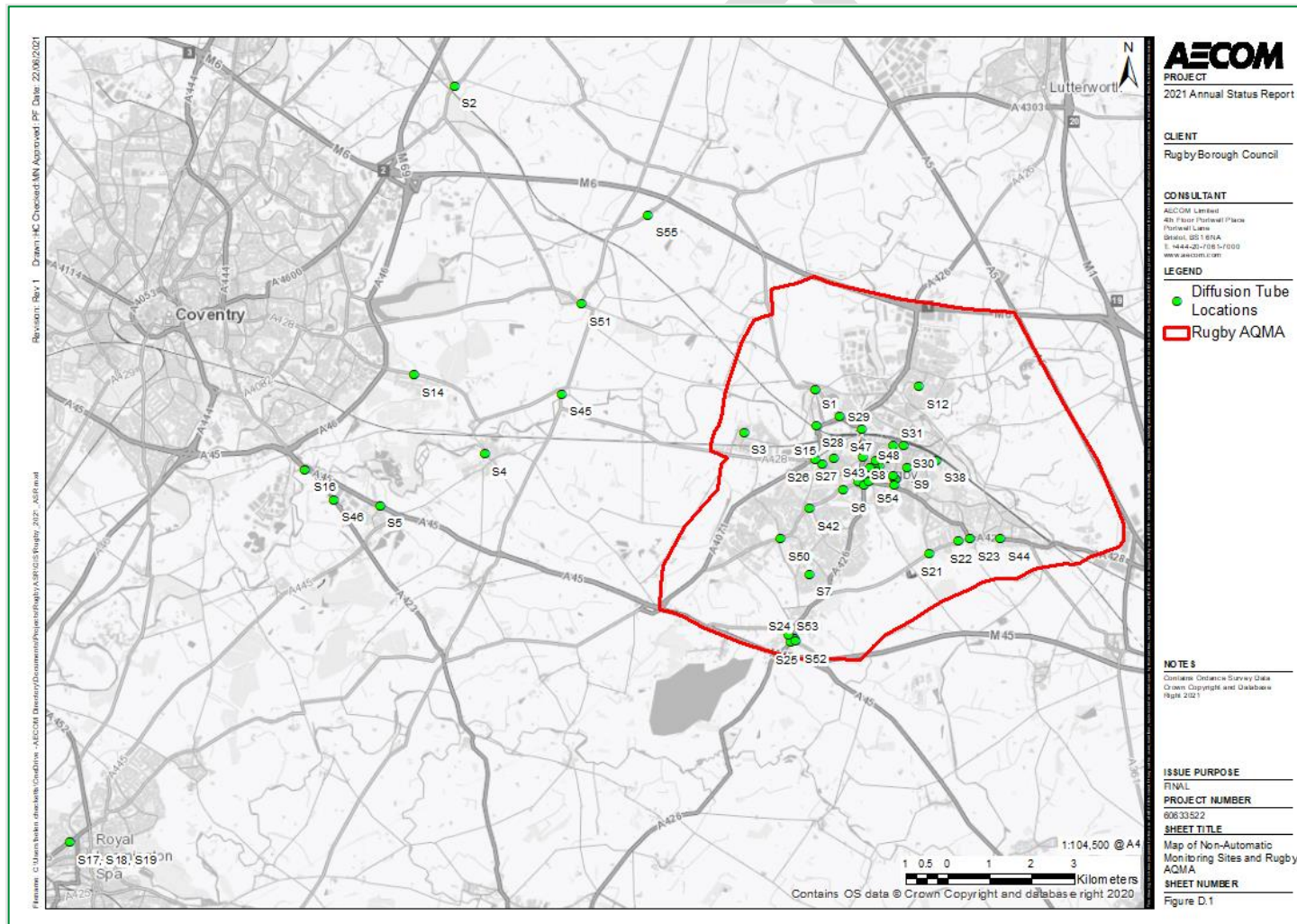


Figure D.2 – Map of Non-Automatic Monitoring Sites within Rugby AQMA

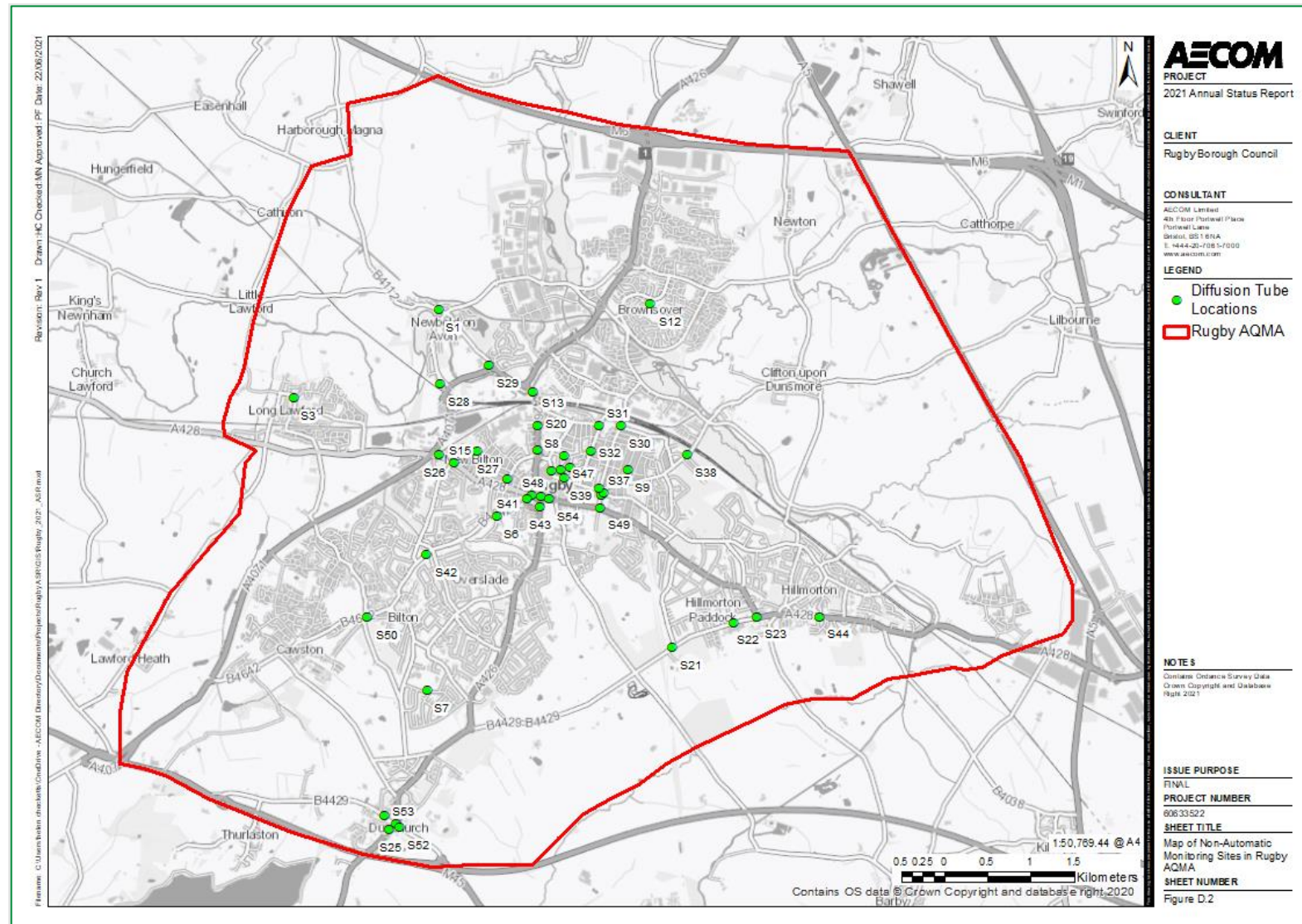


Figure D.3 – Map of Non-Automatic Monitoring Sites in Central Rugby

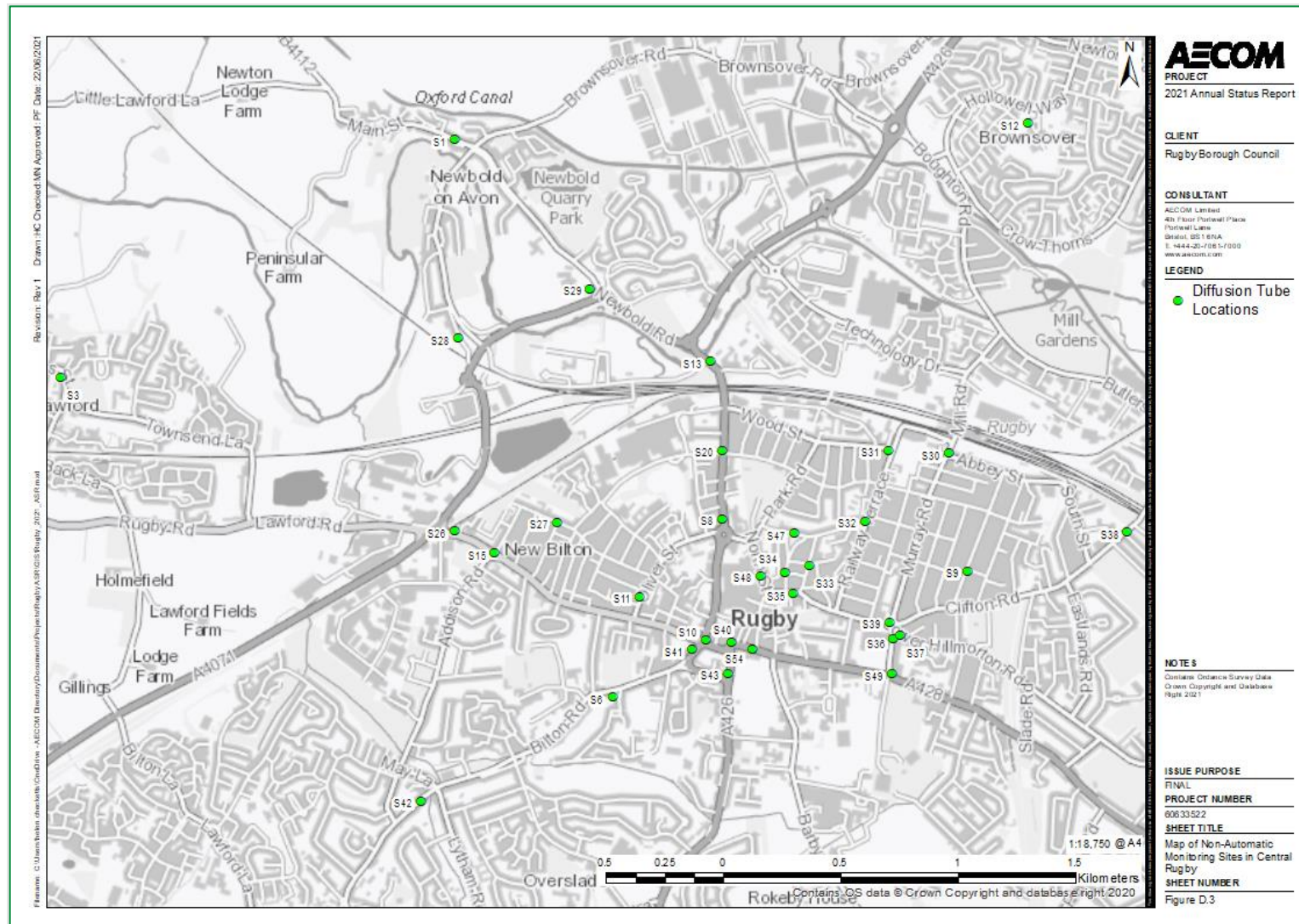
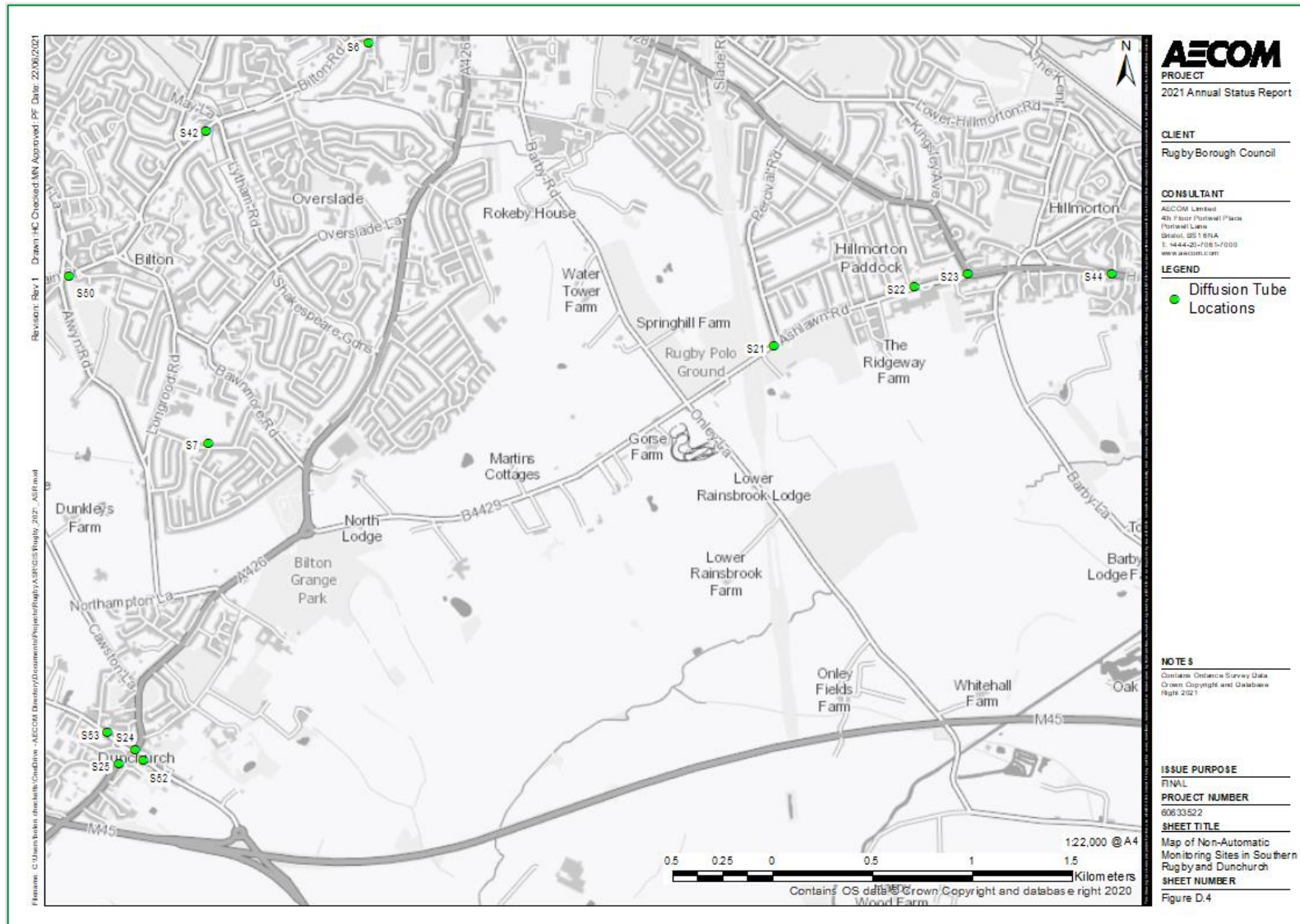


Figure D.4 – Map of Non-Automatic Monitoring Sites in Southern Rugby and Dunchurch



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England¹⁶

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

¹⁶ 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 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 AQS objective for 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; DfT data¹⁷ 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. The Air Quality Expert Group (AQEG)¹⁸ 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 represents an absolute reduction of between 10 to 20 µg/m³ if expressed relative to annual mean averages. During

¹⁷ Prime Minister's Office, COVID-19 briefing on the 31st of May 2020

¹⁸ Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020

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 µg/m³ 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 Rugby Borough Council

During 2020, there were no exceedances of the annual mean NO₂ AQS objective, compared to two exceedances in 2019. The highest recorded annual mean NO₂ concentration was 33.5 µg/m³ at S2, not located within the Rugby AQMA. The second highest annual mean NO₂ concentration occurred within the AQMA at S54, measuring 28.5 µg/m³. Across all monitoring location in RBC there has been a reduction in annual mean NO₂ concentrations between 2019 to 2020, showing a continuation of a decreasing trend since 2016. There has been a percentage reduction in annual mean concentration relative to 2019 ranging 4% to 37%, with an average reduction across all sites of 27%.

Opportunities Presented by COVID-19 upon LAQM within Rugby Borough Council

No LAQM related opportunities have arisen as a consequence of COVID-19 within Rugby Borough Council.

Challenges and Constraints Imposed by COVID-19 upon LAQM within Rugby Borough Council

Challenges and constraints relating to LAQM have arisen during 2020 as a consequence of COVID-19, primarily with the development and implementation of AQAP measures. These challenges are outlined below, with their impacts assessed in line with guidance presented within the LAQM Impact Matrix provided within Table F 1:

1. RBC has developed an Air Quality and Planning Supplementary Planning Document. Due to the impacts of COVID this has not been approved by Rugby Borough Councils Cabinet and is now due to be approved in June 2021. **Medium Impact.**
2. Behaviour Change Intervention Project – a project is planned across Coventry and Warwickshire which has been developed by Coventry and Warwickshire Public Health and the Air Quality Alliance to develop a behaviour change intervention to reduce exposure to air pollution and increase levels of physical activity. The aim of this work is to understand the barriers and opportunities people face in walking, cycling or travelling more sustainably (i.e. public transport) to their place of work. This understanding will be used to develop, implement and evaluate a behaviour change intervention that promotes active/sustainable travel while reducing exposure and contribution to air pollution. This work will also explore the role personal air pollution monitors can play in both educating people on the impacts of air pollution and in changing their travel behaviour. It will pilot the use of personal air pollution monitors across a study group and include a series of quantitative questionnaires to identify if an intervention can be developed that can be replicated in multiple settings (such as schools, other work locations, etc.) to increase active travel and reduce exposure to air pollution. Due to the Coronavirus pandemic, Warwickshire Public Health and RBC resources have been diverted to concentrate on working to contain the pandemic. Work is due to resume of these projects once resources can be rediverted. **Large Impact.**
3. RBC was investigating the options of joining the Coventry and Warwickshire car share scheme so that Council workers can have better access to shared journeys to reduce the number of vehicle trips in and out of the town centre. This will be promoted to staff internally through the internet communication platforms. The Car Share scheme will also be promoted to the public with a campaign using social media and website links. Due to the Coronavirus pandemic car sharing has been discouraged and therefore this work has been put on hold until action can be taken when the pandemic is under control. **Large Impact.**

The impacts as presented above are aligned with the criteria as defined in Table F 1, with professional judgement considered as part of their application.

Table F 1 – Impact Matrix

| Category | Impact Rating: None | Impact Rating: Small | Impact Rating: Medium | Impact Rating: Large |
|--|--|--|---|--|
| 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 |

| Category | Impact Rating: None | Impact Rating: Small | Impact Rating: Medium | Impact Rating: Large |
|-----------------------------|---------------------|---|--|---|
| 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 |

DRAFT

Appendix G: Summary of Planning Applications

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

1. Coton Park East – An allocation in the Local Plan for around 800 dwellings and 7.5 ha of employment land;
2. Long Lawford for around 150 dwellings off the Coventry Road. A pending application in for 143 (revised from 149) dwellings ref R17/1089;
3. Gala & Cemex House, Evreux Way – An Outline application for 6255 square metres of retail and an additional 785 square metres of A1/A2/A3/A4/A5 has been approved but not yet implemented. In addition, a further planning application is being considered under reference R17/0971 for the erection of a two storey drive through restaurant and associated works for 580 square metres of floorspace;
4. Land to the north of Ashlawn Road – allowed on appeal decision for development of up to 860 dwellings and associated school. Planning Appeal Reference: APP/E3715/W/16/3147448;
5. Urban Expansion South West of Rugby – an allocation in the Local Plan for around 5,000 residential dwellings with associated infrastructure comprising of link road, health/community facility, and employment uses, including a local centre, together with primary and secondary schools. This site also covers the development proposal for Ashlawn Road;
6. Former Cattle Market, Rugby – 360 Dwellings, approved 15/09/2020 R19/0804;
7. R19/1496 – 117 Newbold Road, Rugby -122 Dwellings, approved 20/08/2020;
8. R19/1528 – Butler's Leap, Clifton Road, Rugby – 78 bed care home, approved 14/08/2020;
9. R18/1466 – Former Herbert Gray College, Little Church St, Rugby – 78 extra care apartments and 52 bed care home, resolved to grant (legal agreement pending); and
10. R19/1164 - Oakfield Recreation Ground, Bilton Road, Rugby – 62 extra care apartments, resolved to grant (legal agreement pending).

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

1. Rugby Radio Station (Sustainable Urban Extension) – Urban extension to Rugby providing up to 6,200 dwellings, up to 130,000 m² of space for various land uses, including mixed use district centre, construction works are underway on all 3 Phases

now with the Secondary School due to open in Sept 2021. David Lloyd Fitness Centre, inc courts and swimming pools, approved 01/09/2020;

2. Rugby Gateway (Eden Park) – Outline application for up to 1,300 residential units and employment zone. Phase I and the employment zone has been completed. Phase II (230 dwellings), and Phase 4 (134 dwellings) is virtually complete. Phase 3 for 146 dwellings has just received permission;
3. Leicester Road/Technology Drive – permission granted for 620 dwellings. The first three phases comprised of 87 dwellings for phase 1, 40 apartments for phase 2, and 75 dwellings for phase 3 and have been completed. On the south side of the development site, three further sites were granted planning permission for Leicester Road West for 87 dwellings, Butterfield Gardens for 101 dwellings (both of which were completed) and Land South of Technology Drive was granted planning permission for 230 dwellings which represents the final phase and is under construction; and
4. Cawston Extension – Outline planning permission granted for up to 600 homes under reference R11/0114. However, the site has been divided into four sections with four different developers. Each of the four sections have been substantially completed and partly occupied. The northern most section has been constructed by William Davis for 184 dwellings under reference R16/1721. The southern site has been constructed by Linden Homes for a total of 246 dwellings (from combined planning permissions of R16/1780 and R17/1885). To the east of these two sites, Redrow Homes constructed 113 dwellings (from planning permission R15/0540), whilst the furthest site to the east has been constructed by Triosquare and comprises 10 dwellings granted under combined references of R12/1947 and R16/2295 (it should be noted that these last two permissions were not part of the original outline under R11/0114). In total, these four sections comprise 553 dwellings, substantially completed, and partly occupied.

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 |
| AQS | Air Quality Strategy |
| ASR | Annual Status Report |
| CPE | Civil Parking Enforcement |
| Defra | Department for Environment, Food and Rural Affairs |
| DfT | Department for Transport |
| DMRB | Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England |
| EU | European Union |
| FDMS | Filter Dynamics Measurement System |
| LAQM | Local Air Quality Management |
| MRN | Major Road Network |
| NO ₂ | Nitrogen Dioxide |
| NO _x | Nitrogen Oxides |
| PM | Airborne particulate matter |
| 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 |
| RBC | Rugby Borough Council |

| Abbreviation | Description |
|-----------------|-----------------------------|
| SO ₂ | Sulphur Dioxide |
| TFWM | Transport for West Midlands |
| WCC | Warwickshire County Council |

DRAFT

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.
- Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017
- Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
- Defra. Air quality appraisal: damage cost guidance, July 2020
- Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018
- Defra. Clean Air Strategy, 2019
- DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018
- RBC. Draft Air Quality and Planning Supplementary Planning Document, February 2020.
- RBC. Local Plan 2011-2031, June 2019.
- WCC. Local Transport Plan (LTP3). April 2011.
- WCC. Rail Strategy 2019-2034. February 2020
- Rugby Borough Council Air Pollution website: https://www.rugby.gov.uk/info/20021/pollution/217/air_pollution
- Defra LAQM website: <http://laqm.defra.gov.uk/>
- RBC. 2010 Air Quality Progress Report and Action Plan Progress Report for Rugby Borough Council, May 2010.
- RBC. 2010 Air Quality Progress Report and Action Plan Progress Report for Rugby Borough Council, May 2010.
- Coventry and Warwickshire. Coventry and Warwickshire Health Protection Strategy 2017-2021. July 2017.
- LGC (2019) Summary of Laboratory Performance in AIR NO2 Proficiency Testing Scheme (April 2017 – February 2019) Available at: <https://laqm.defra.gov.uk/assets/laqmno2performancedatauptofebruary2019v1.pdf>

- Prime Minister's Office, COVID-19 briefing on the 31st of May 2020
- Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020

DRAFT