2022 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Date: June, 2022

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	2022 ASR
Date	June 2022

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 ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

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

Monitoring data for 2021 showed a slight increase in annual mean NO_2 concentrations. Concentrations in 2021 increased at 43 monitoring locations compared to 2020. There were no exceedances of the annual mean NO_2 AQS objective in 2021, the highest annual mean concentration recorded was 33.7 µg/m^3. The increased NO_2 concentrations in 2021 are likely to be in part due to the increase in road traffic levels post COVID-19. However,

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[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 2021

[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

there is still overall a downward trend in NO_2 concentrations in RBC over the past five years.

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 Strategy[5] sets out the case for action, with goals to reduce exposure to harmful pollutants. The Road to Zero[6] sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Key actions to target sources of pollution within the area over the past reporting year include the development of an Air Quality and Planning Supplementary Planning Document (SPD) to provide guidance to planners of what developments require an Air Quality Assessment and what mitigation is suitable to minimise the negative impacts on air quality. A Safe and Active Workplace scheme is also currently in pilot with the aim of increasing the total number of journeys made actively and sustainably.

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 2021, there were no exceedances of the annual mean NO_2 AQS objective. The highest recorded annual mean NO_2 concentration was 33.7 µg/m^3 at S2 (not within the AQMA). The highest measured annual mean NO_2 concentration within the Rugby AQMA

[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

was 31.8 µg/m^3 at S54. The Council will continue to monitor closely before considering any changes to AQMAs in future.

RBC's main priorities for the coming year are:

1. A Local Cycling and Walking Infrastructure Plan will be completed during 2021/22 and will include an updated cycling development network plan. Warwickshire County Council is currently finalising its Local Cycling and Walking Infrastructure Plan which will set out a future programme of prioritised improvements to facilitate more walking and cycling for everyday journeys. Public consultations for Rugby will commence in June 2022.
2. Warwickshire County Council (WCC) has recently secured capital funding to expand its traffic monitoring and surveying capabilities and support evidence-based decision making in the County's approach to tackling climate impacts and air quality management. This will allow WCC to monitor the effectiveness of schemes and initiatives in tackling air quality issues and identify the impact of development proposals on air quality.
3. 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.
4. 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. The safer travel team currently works in 3 main areas.
5. RBC is aiming to compete a new and updated AQAP by the end of 2022.

Local Engagement and How to get Involved

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

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

Further information can be found on the Council's website[7], and Defra's Local Air Quality Management (LAQM) website[8].

Local Responsibilities and Commitment

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

Henry Biddington (Environmental Health)

This ASR has been approved by:

David Burrows (Chief Officer Regulation and Safety)

This ASR has been signed off by a Director of Public Health.

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

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

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

Rugby Borough Council,

Environment and Public Realm, Commercial Regulation Team,

Town Hall, Evreux Way,

Rugby

CV12 2RR

Telephone: (01788) 533 607, Email: henry.biddington@rugby.gov.uk

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1 Local Air Quality Management

This report provides an overview of air quality in Rugby Borough Council (RBC) during 2021. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by RBC to improve air quality and any progress that has been made.

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 12 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMAs declared by RBC can be found in Table 2-1. The table presents a description of the AQMA that is currently designated within RBC. Appendix D: Map(s) of Monitoring Locations and AQMAs provides a map of the AQMA and also the air quality monitoring locations in relation to the AQMA. The air quality objectives pertinent to the current AQMA designation is the nitrogen dioxide (NO_2) annual mean.

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 National Highways?	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	31.8 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.**

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

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

1. The Council have presented a very detailed and insightful ASR. Appendix A provides an in-depth discussion on the current trends, status and future plan for each AQMA. The level of detail and consideration the Council have demonstrated with respects to their AQMA is commended and it is encouraged that the Council continue this in future ASRs.
2. Monitoring results are clearly presented and the context of the effect of Covid-19 on results is discussed though prior to this there is a general downward trend within the city. It would be helpful to provide a trend chart specific to the AQMA. *Figures A.6 and A.7 have been provided to illustrate annual mean NO_2 concentration trends specific to the AQMA.*
3. The highest recorded annual mean concentration was at S2 monitoring 33.5µg/m³ outside of the AQMA. The Council is encouraged to continue monitoring at this location and, if necessary, declare a new AQMA or amend the existing AQMA. *The Council is continuing to monitor at this location, an annual mean concentration value of 33.7 µg/m³ was recorded for S2 for 2021. The Council has decided that no changes are required to the AQMA at present but are considering adding further monitoring sites around this location.*
4. While the box below Table B.1 has been checked for "All erroneous data has been removed from the NO2 diffusion tube dataset presented in Table B.1.", monitoring at S29 and S37 in June and S30 in November appear to be unrealistically low. While it is unlikely that the inclusion of this data within the calculations would result in changes to the conclusions of the ASR or any exceedances, the LA is encouraged to review next year's data for any similar erroneous data before submission. *The council has conducted a review of this year's data. All erroneous data was removed prior to any calculations. The following raw data points were removed from data analysis: S4- September (≤0.6 µg/m³), S9- October (0.5 µg/m³), S12- February (1.1 µg/m³), S20- December (1.0 µg/m³).*

5. Appropriate QA/QC has been applied to the results; the inclusion of the output from the Local Bias calculator is welcomed though a statement acknowledging that the calculation is based on an AURN site outside of the LA control should be included. *A comment has been added in the QA/QC section to acknowledge that the AURN site is managed by DEFRA independent of Rugby Borough Council.*
6. The current AQAP was last published in 2010 and is now well overdue for renewal as part of the 5-year reporting process. It is acknowledged that this is marked as a priority for the council in the next reporting year. *The Council will progress with the AQAP update now that the ASR has been completed, with the aim of publishing within the next reporting year.*

RBC has taken forward a number of direct measures during the current reporting year of 2021 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2-2. 22 measures are included within Table 2-2, with the type of measure and the progress RBC have made during the reporting year of 2021 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2-2.

More detail on these measures can be found in the Action Plan for Rugby Borough Council[9], Health Protection Strategy 2017-2021[10], RBC's Local Plan 2011 – 2031**Error! Bookmark not defined.** and Air Quality and Planning Supplementary Planning Document[11]. Key completed measures are:

1. Rugby Borough Council has developed Air Quality and Planning Supplementary Planning Document[11]. This will provide guidance to planners of what developments require Air Quality Assessment and what mitigation is suitable to minimise the negative impacts on air quality and implement policy HS5:1 of the Local Plan. The SPD was formally approved in June 2021.
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

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

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

[11] RBC. Air Quality and Planning Supplementary Planning Document, July 2021.

implement the air quality aims of the Health Protection Strategy 2017-2021[10]. 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:

1. 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 Plan**Error! Bookmark not defined.**. The current Local Transport Plan (LTP) 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 was 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, LTP4 is currently being drafted.
2. 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. WCC is working on the delivery of a £12 million programme which will provide more than 18km of new or improved cycling infrastructure, with a further 11km of cycling routes with an estimated value of £8.4 million being delivered as part of wider transport infrastructure schemes which have secured funding. WCC is currently finalising its Local Cycling and Walking Infrastructure Plan which will set out a future programme of prioritised improvements to facilitate more walking and cycling for everyday journeys. Public consultations for Rugby will commence in June 2022.

3. 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.
4. 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.

5. As part of the Rail Strategy 2019-2034[Error! Bookmark not defined.], 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.
6. 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. The safer travel team currently works in 3 main areas. These are:
    a) Safe and Active Schools (road safety education and active travel). The Safe and Active Schools programme continues to be delivered in 81 primary schools located throughout Warwickshire. Pupils in Years 2 and 5 will receive road safety education, either in the classroom or digitally. The Year 2 session focuses on scooter safety and the Year 5 session focuses on distractions. 18 Primary Schools in Rugby are participating in the Safe and Active School programme. The Safe and Active Travel Award has been designed to run in conjunction with the road safety education already in place within 80 of our Warwickshire schools. This means that children are given the skills they need to be safe on their active journeys. The Aims of the Award are:
        - To decrease the number of car journeys being made to and from school;
        - To increase walking, cycling and scooting to and from school; and
        - To educate on the benefits of active travel for our health and the environment.
    b) The Safe and Active Travel team also run campaigns for example clean air day where drivers are asked to switch their car engines off whilst waiting outside the school or better still, parents and carers who need to drive to school are encouraged to park a 10-minute walk away.

c) The Safe and Active Workplace is currently being piloted and there are plans to replicate this programme with other workplaces across Warwickshire. The programme aims to:

- Increase the number of journeys made actively and sustainably;
- Decrease the number of single occupancy journeys being made; and
- Educate employees and employers of the health, well-being, financial and environmental benefits of active sustainable travel.

7. RBC is aiming to compete a new updated AQAP by the end of 2022.

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.

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, if concentrations return back 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 2022 / 2023.

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	NO	Funded	> £10 million	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	NO	Funded	> £10 million	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		WCC	WCC	NO	Not Funded	£1 million - £10 million	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	NO	Funded	£50k - £100k	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	NO	Funded	£50k - £100k	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.	
F	Variable Message Signing	Traffic Management	UTC, Congestion management, traffic reduction	2009	Completed in 2009	WCC	WCC	NO	Funded	£500k - £1 million	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	NO	Funded	£500k - £1 million	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 NOx emissions reductions.

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
H	Improve Bus Emissions	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport		Ongoing	RBC/WCC	RBC/WCC	NO	Not Funded	£1 million - £10 million	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 NOx and PM10.
I	Cycling	Promoting Travel Alternatives	Promotion of cycling		Ongoing	WCC	WCC	NO	Funded	£1 million - £10 million	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.	
J	Walking	Promoting Travel Alternatives	Promotion of walking		Ongoing	WCC	WCC	NO	Funded	£10k - 50k	Implementation	N/A	Increase in walking (footfall) as a result of individual scheme implementation	The LTP Walking Strategy sets out a series of improvements for pedestrians, including new or upgraded pedestrian crossings, new/widened footways, improved street lighting, provision of new dropped kerbs, and footway resurfacing/ reconstruction.	
K	Workplace Travel Plans	Promoting Travel Alternatives	Workplace Travel Planning		N/A	WCC	WCC	NO	Funded	£50k - £100k	Implementation	N/A	Number of Travel Plans agreed with existing employers and as part of new development	Workplace Travel Plans are secured through a S106 agreement as part of new development.	
L	School Travel Plans and Safer Routes to School	Promoting Travel Alternatives	School Travel Plans		N/A	WCC	WCC	NO	Not Funded	£10k - 50k	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	NO	Funded	£50k - £100k	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	NO	Funded	£50k - £100k	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.	

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
O	Energy efficiency improvements to Rugby housing & the reduction of fuel poverty.	Policy Guidance and Development Control	Low Emissions Strategy		N/A	RBC	RBC	NO	Funded	£50k - £100k	Implementation	N/A	HECA report published March 2017, and will be updated at two yearly intervals	Across the borough we have provided the following services: • 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. Council tenants have benefitted from these improvements and services: • Electric to gas conversions for 173 properties; • New windows and doors to 2000 properties with windows and doors; • 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.	DECC statistics show that CO2 emissions by domestic use (Units kt CO2) 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 CO2 emissions in the housing sector to 172.6kt CO2of 2009 (215.7kt CO2) level. We aim to reduce CO2 emissions in the housing sector to 172.6kt CO2of 2009 (215.7kt CO2) levels by 2020. This will be equivalent to a 20% reduction.s by 2020. This will be equivalent to a 20% reduction.
P	Control Of Industrial Emissions	Environmental Permits	Measures to reduce pollution through IPPC Permits going beyond BAT		N/A	RBC	RBC	NO	Funded	£10k - 50k	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	NO	Not Funded	< £10k	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	NO	Not Funded	< £10k	Implementation	N/A	Reduction in complaints	Low priority. Low number of complaints.	Section 79 of the EPA 1990 actively implemented where problems are identified.

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
S	Planning Development and Planning Applications	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance		Adoption June 2019	RBC	RBC	NO	Funded	£10k - 50k	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: • 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, according to the following hierarchy: • On-site measures; then • Off-site measures; then • Financial contributions.	Adopted July 2021
U	Promotion of Practical Guidance for use of open fires and wood burning stoves in domestic settings	Public Information	Via Internet	2020		RBC	RBC	NO	Funded	£10k - 50k	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		RBC/WCC	RBC/WCC	NO	Funded	£10k - 50k	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 though 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		RBC	RBC	NO	Funded	£10k - 50k	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.

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

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

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%).

Measure U in the AQAP directly addresses $PM_{2.5}$:, as it 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 2021 by RBC and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2017 and 2021 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

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

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

3.1.2 Non-Automatic Monitoring Sites

RBC undertook non-automatic (i.e. passive) monitoring of NO_2 at 53 sites during 2021, 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 are included in Appendix C.

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO_2)

Table A.2 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the AQS objective of 40 µg/m^3. 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 2021 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Overall, between 2020 to 2021 there has been a slight increase in annual mean NO_2 concentrations across RBC. 43 of the 53 monitoring locations across RBC have seen an increase in annual mean NO_2 concentrations compared to 2020. However, all of the monitoring locations recorded significantly lower values compared to 2019. This highlights the effectiveness of the air quality measures implemented by RBC. Post Covid 19 restrictions, road traffic levels were higher in the borough in 2021 compared to 2020 which would explain the slight increase in annual mean NO_2 concentrations at the majority of monitoring locations.

During 2021, there were no exceedances of the annual mean NO_2 AQS objective. The lowest recorded annual mean NO_2 concentration was 8.9 µg/m^3 at S4 (Wolston School). This is a slight increase from 2020 (8.2 µg/m^3). The highest recorded annual mean NO_2 concentration was 33.7 µg/m^3 at S2 (3 Church Street). This is also a slight increase from 2020 (33.5 µg/m^3). The monitoring location S2, located on the junction of Church Road and Bulkington Road in Shilton, north of Coventry, has exceeded the AQS objective twice between 2017 and 2021, and with the exception of 2017 has recorded the highest annual mean concentrations in the borough. It is a positive sign of the progress of air quality measures, that the concentration has remained relatively steady. The Council will continue to closely monitor this site for changes in NO_2 concentration in future reporting years despite the fact that the site is not currently located within the AQMA.

There were no monitoring locations which saw an annual mean greater than 60 µg/m^3. This indicates it is unlikely that the 1-hour mean AQS objective for NO_2 was exceeded at any monitoring sites.

S54 was the other site that exceeded the annual mean NO_2 AQS objective most recently in 2019. S54 is located at the roadside of Warwick Street gyratory system near the town centre

and is within the existing AQMA. NO_2 concentrations here have slightly increased in 2021 compared to 2020 with an annual mean concentration of 31.8 µg/m^3. However, concentrations are still significantly below previously recorded values from the period 2017-2019 and more than 10% below the AQS objective. The longer term improvements at the site 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.

Other monitoring sites which have shown notable improvements are S8 (opposite Benn Hall) and S45 (Avon Cottages). Both sites are within the AQMA and continue to remain significantly below the AQS objective in 2021.

3.2.2 Particulate Matter (PM_{10})

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

3.2.3 Particulate Matter ($PM_{2.5}$)

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	Newbold Opp Shop Lampost	Kerbside	449000	277178	NO_2	YES - Rugby AQMA	0.0	0.5	No	2.5
S2	3 Church St Shilton	Roadside	440416	284401	NO_2	NO	0.0	1.5	No	2.5
S3	69 School St Lawford	Urban Background	447316	276162	NO_2	YES - Rugby AQMA	0.0	15.0	No	2.5
S4	Wolston School	Urban Background	441131	275648	NO_2	NO	0.0	90.0	No	2.5
S5	High St Ryton A45 by subway	Kerbside	438642	274418	NO_2	NO	25.0	0.5	No	2.5
S6	2 Westfield Rd Drainpipe House	Urban Background	449671	274795	NO_2	YES - Rugby AQMA	0.0	10.0	No	2.5
S7	68 Cymbiline Way House	Urban Background	448863	272786	NO_2	YES - Rugby AQMA	0.0	10.0	No	2.5
S8	Newbold Rd opp Benn Hall	Kerbside	450138	275557	NO_2	YES - Rugby AQMA	10.0	1.0	No	2.5
S9	Argyle St Key Shop	Roadside	451187	275334	NO_2	YES - Rugby AQMA	0.0	5.0	No	2.5
S10	Webb Ellis Pub Corporation St	Roadside	450069	275040	NO_2	YES - Rugby AQMA	0.0	5.0	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
S11	15 Oliver St drainpipe house	Roadside	449787	275224	NO_2	YES - Rugby AQMA	0.0	5.0	No	2.5
S12	Boughton Leigh School	Urban Background	451445	277245	NO_2	YES - Rugby AQMA	0.0	56.0	No	2.5
S13	Avon Mill Lampost	Roadside	450088	276229	NO_2	YES - Rugby AQMA	15.0	3.0	No	2.5
S14	Binley Woods Village Hall	Urban Background	439450	277523	NO_2	NO	0.0	20.0	No	2.5
S15	Lawford Rd / Jubile St	Kerbside	449168	275411	NO_2	NO	0.0	0.5	No	2.5
S16	A45 Citrus Hotel	Roadside	436867	275275	NO_2	NO	0.0	19.0	No	2.5
S17, S18, S19	Stamford Gardens L/SPA	Roadside	431271	266404	NO_2	NO	N/A	6.0	Yes	2.5
S20	Essex St / Newbold Rd	Roadside	450137	275849	NO_2	YES - Rugby AQMA	25.0	3.0	No	2.5
S21	Perciral Rd / Ashlawn Rd	Roadside	451698	273273	NO_2	YES - Rugby AQMA	15.0	2.0	No	2.5
S22	Fisher Av / Ashlawn Rd	Roadside	452403	273567	NO_2	YES - Rugby AQMA	18.0	5.0	No	2.5
S23	Paddox Pub	Roadside	452672	273633	NO_2	YES - Rugby AQMA	13.0	3.0	No	2.5
S24	Dun Cow Dunchurch	Kerbside	448496	271244	NO_2	YES - Rugby AQMA	0.0	0.5	No	2.5
S25	Crystals Duchurch	Roadside	448414	271175	NO_2	YES - Rugby AQMA	0.0	2.0	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
S26	Lawport Rd Flats	Roadside	448999	275505	NO_2	YES - Rugby AQMA	0.0	12.0	No	2.5
S27	Leam Rd Ryton lampost	Roadside	449435	275543	NO_2	NO	7.0	2.5	No	2.5
S28	256 Parkfield Rd	Roadside	449011	276329	NO_2	YES - Rugby AQMA	0.0	2.0	No	2.5
S29	Avon Valley School	Urban Background	449575	276540	NO_2	YES - Rugby AQMA	0.0	35.0	No	2.5
S30	Murray Rd bus stop	Kerbside	451107	275838	NO_2	YES - Rugby AQMA	0.0	0.5	No	2.5
S31	Wood Street opp Myson house	Roadside	450848	275849	NO_2	YES - Rugby AQMA	0.0	3.0	No	2.5
S32	Station Barr Railway Terr	Roadside	450750	275547	NO_2	YES - Rugby AQMA	0.0	3.0	No	2.5
S33	Alma Lodge Albert St	Roadside	450510	275355	NO_2	YES - Rugby AQMA	0.0	3.0	No	2.5
S34	Oxfam Regent St	Roadside	450405	275329	NO_2	YES - Rugby AQMA	0.0	3.0	No	2.5
S35	Papa Johns Church St	Roadside	450444	275236	NO_2	YES - Rugby AQMA	0.0	3.0	No	2.5
S36	Whitehall Rd Daisyleins	Roadside	450870	275043	NO_2	YES - Rugby AQMA	12.0	3.0	No	2.5
S37	Lower Hillmorton RTMP (DOCS)	Roadside	450897	275059	NO_2	YES - Rugby AQMA	5.0	2.0	No	2.5
S38	Clifton Rd Townsend Rd	Kerbside	451868	275501	NO_2	YES - Rugby AQMA	9.0	0.5	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
S39	Clifton Rd Murry Rd	Roadside	450852	275116	NO_2	YES - Rugby AQMA	0.0	5.0	No	2.5
S40	Drury Lan Bugby Tap	Roadside	450181	275029	NO_2	YES - Rugby AQMA	0.0	5.0	No	2.5
S41	Bilton Rd Yellow House	Roadside	450010	274998	NO_2	YES - Rugby AQMA	0.0	15.0	No	2.5
S42	Bilton Rd Crow Pie	Roadside	448855	274352	NO_2	YES - Rugby AQMA	10.0	5.0	No	2.5
S43	Dunchurch Gyratory	Roadside	450162	274898	NO_2	YES - Rugby AQMA	4.0	3.0	No	2.5
S44	Ashlawn Rd Barby Lane	Roadside	453394	273633	NO_2	YES - Rugby AQMA	15.0	2.0	No	2.5
S45	Bretford 3 Avon Cottages	Roadside	442963	277071	NO_2	YES - Rugby AQMA	11.0	3.0	No	2.5
S46	Oxford Rd Belvedere	Kerbside	437555	274561	NO_2	NO	30.0	1.0	No	2.5
S47	Regent Place Quakers	Kerbside	450445	275495	NO_2	YES - Rugby AQMA	5.0	0.5	No	2.5
S48	North St Natwest	Roadside	450304	275314	NO_2	YES - Rugby AQMA	0.0	2.0	No	2.5
S49	Lesley Souter Whitehall Rd	Roadside	450864	274896	NO_2	YES - Rugby AQMA	13.0	3.0	No	2.5
S50	Tesco Express Bilton	Roadside	448169	273625	NO_2	YES - Rugby AQMA	18.0	3.0	No	2.5
S51	Brays Clos	Roadside	443433	279208	NO_2	NO	6.0	3.0	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
S52	Green Man Dunchurch	Roadside	448537	271195	NO_2	YES - Rugby AQMA	1.0	3.0	No	2.5
S53	Coventry Rd Dunchurch	Roadside	448361	271334	NO_2	YES - Rugby AQMA	0.0	1.5	No	2.5
S54	Rugby School Lampost No 6	Roadside	450269	274998	NO_2	YES - Rugby AQMA	0.0	1.5	No	2.5
S55	Main St Stretton	Roadside	445004	281330	NO_2	NO	5.0	2.0	No	2.5

Notes:

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

(2) N/A if not applicable.

Table A.2 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^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 2021 (%) (2)	2017	2018	2019	2020	2021
S1	449000	277178	Kerbside	92.3	92.3	17.8	17.6	16.2	13.5	15.6
S2	440416	284401	Roadside	100.0	100.0	37.6	**46.1**	**45.5**	33.5	33.7
S3	447316	276162	Urban Background	100.0	100.0	12.2	14.2	13.1	9.5	9.3
S4	441131	275648	Urban Background	84.6	84.6	12.3	12.1	10.4	8.2	8.9
S5	438642	274418	Kerbside	100.0	100.0	25.0	24.0	23.5	16.4	17.7
S6	449671	274795	Urban Background	100.0	100.0	14.1	14.9	13.6	10.4	11.5
S7	448863	272786	Urban Background	100.0	100.0	10.4	11.6	11.7	8.6	9.0
S8	450138	275557	Kerbside	100.0	100.0	29.3	30.0	28.0	26.9	24.3
S9	451187	275334	Roadside	100.0	100.0	15.9	15.8	16.3	11.8	12.3
S10	450069	275040	Roadside	100.0	100.0	34.8	30.8	35.7	25.7	26.4
S11	449787	275224	Roadside	100.0	100.0	21.8	21.8	22.6	16.2	17.4
S12	451445	277245	Urban Background	100.0	100.0	21.3	19.6	20.9	14.3	13.3
S13	450088	276229	Roadside	100.0	100.0	36.5	34.8	33.5	26.7	26.5

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 2021 (%) [2]	2017	2018	2019	2020	2021
S14	439450	277523	Urban Background	92.3	92.3	14.7	15.1	16.8	10.9	10.7
S15	449168	275411	Kerbside	82.7	82.7	25.6	26.9	25.1	22.1	20.7
S16	436867	275275	Roadside	100.0	100.0	18.2	19.6	18.8	13.5	14.6
S17, S18, S19	431271	266404	Roadside	100.0	100.0	17.0	18.4	17.4	12.7	13.2
S20	450137	275849	Roadside	90.4	90.4	26.7	27.8	26.0	19.5	20.2
S21	451698	273273	Roadside	100.0	100.0	22.2	22.5	22.2	15.5	15.8
S22	452403	273567	Roadside	100.0	100.0	20.8	21.3	20.7	15.1	16.1
S23	452672	273633	Roadside	100.0	100.0	21.7	21.0	21.8	14.4	17.1
S24	448496	271244	Kerbside	73.1	73.1	**40.7**	**43.3**	38.5	27.3	28.3
S25	448414	271175	Roadside	90.4	90.4	28.0	29.3	25.4	19.0	20.7
S26	448999	275505	Roadside	100.0	100.0	18.3	19.1	18.7	14.5	14.9
S27	449435	275543	Roadside	92.3	92.3	21.3	18.2	21.2	14.4	14.9
S28	449011	276329	Roadside	100.0	100.0	16.1	17.2	16.7	11.7	11.1
S29	449575	276540	Urban Background	84.6	84.6	18.7	19.8	21.0	16.3	18.4

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 2021 (%) [2]	2017	2018	2019	2020	2021
S30	451107	275838	Kerbside	100.0	100.0	32.3	34.5	33.0	20.8	25.9
S31	450848	275849	Roadside	100.0	100.0	26.1	27.3	24.7	21.3	20.8
S32	450750	275547	Roadside	90.4	90.4	28.2	29.3	27.4	21.1	21.2
S33	450510	275355	Roadside	92.3	92.3	21.6	22.4	22.2	15.7	16.6
S34	450405	275329	Roadside	100.0	100.0	25.5	24.8	23.1	15.2	17.1
S35	450444	275236	Roadside	100.0	100.0	28.4	31.7	31.0	19.9	22.0
S36	450870	275043	Roadside	100.0	100.0	29.5	28.9	29.8	24.2	26.8
S37	450897	275059	Roadside	82.7	82.7	24.1	23.9	25.2	20.7	22.7
S38	451868	275501	Kerbside	100.0	100.0	25.7	26.5	25.1	17.1	19.5
S39	450852	275116	Roadside	90.4	90.4	25.9	27.9	26.2	19.6	21.0
S40	450181	275029	Roadside	100.0	100.0	30.5	26.5	28.3	22.1	23.9
S41	450010	274998	Roadside	92.3	92.3	23.0	25.7	24.8	17.8	20.4
S42	448855	274352	Roadside	92.3	92.3	20.7	22.8	21.2	15.5	17.6
S43	450162	274898	Roadside	100.0	100.0	25.2	25.9	26.3	19.1	20.0

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 2021 (%) [2]	2017	2018	2019	2020	2021
S44	453394	273633	Roadside	100.0	100.0	23.8	27.4	23.6	17.5	19.8
S45	442963	277071	Roadside	76.9	76.9	22.5	22.5	23.8	16.3	13.5
S46	437555	274561	Kerbside	90.4	90.4	36.5	36.7	35.3	26.3	29.9
S47	450445	275495	Kerbside	100.0	100.0	30.8	32.6	29.5	20.2	22.6
S48	450304	275314	Roadside	100.0	100.0	34.3	31.0	34.1	23.1	22.3
S49	450864	274896	Roadside	100.0	100.0	**43.7**	34.0	30.0	20.6	23.2
S50	448169	273625	Roadside	100.0	100.0	21.5	22.9	21.3	16.8	18.6
S51	443433	279208	Roadside	100.0	100.0	28.3	29.4	28.1	19.0	20.6
S52	448537	271195	Roadside	100.0	100.0	20.9	20.8	20.9	14.1	15.6
S53	448361	271334	Roadside	90.4	90.4	20.1	21.8	21.8	13.7	15.0
S54	450269	274998	Roadside	100.0	100.0	**43.3**	38.7	**41.6**	28.5	31.8
S55	445004	281330	Roadside	92.3	92.3	20.6	20.8	21.4	13.5	14.4

☒ **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 µg/m^3.

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Figure A.1 – Trends in Urban Background Annual Mean NO_2 Concentrations

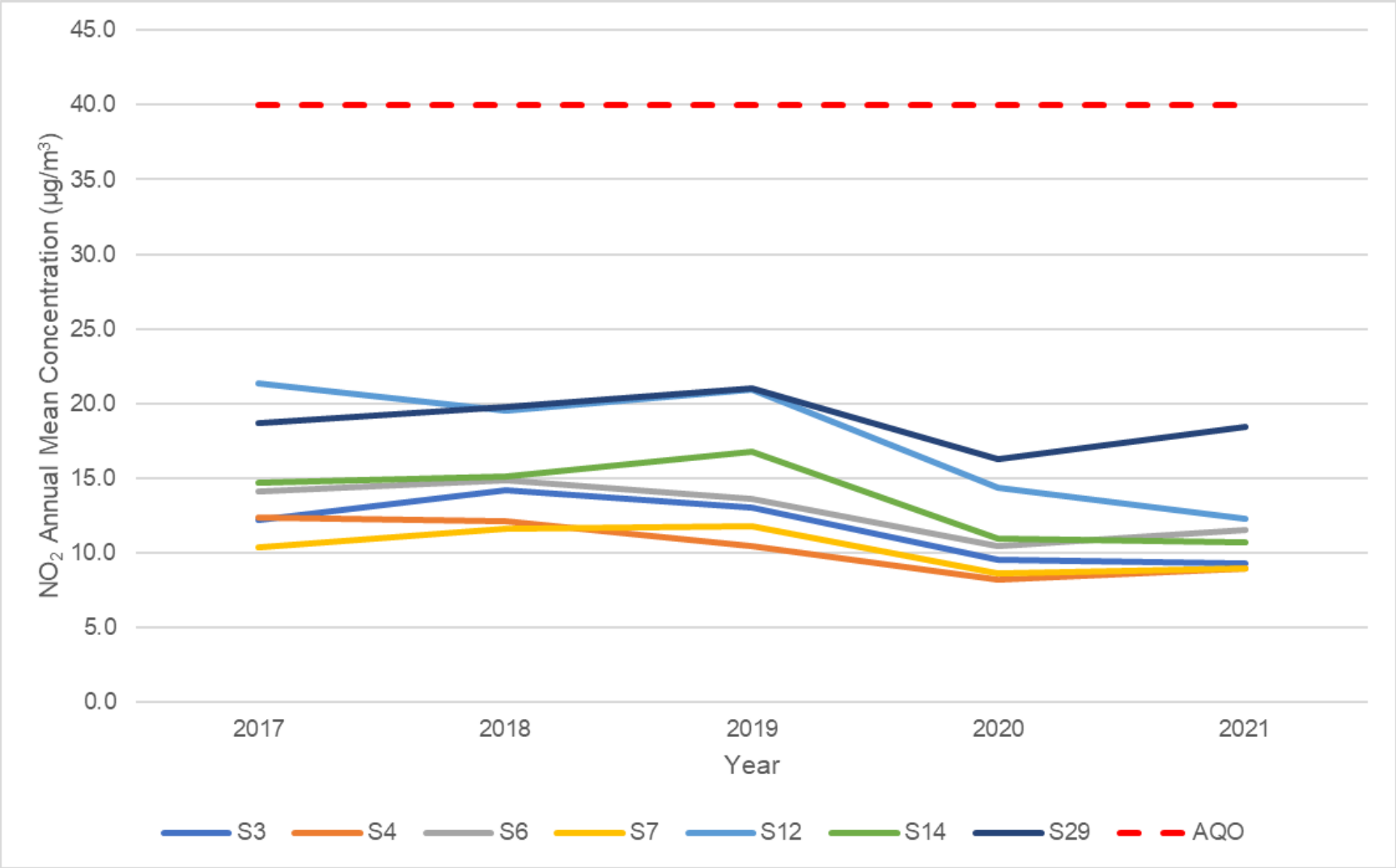


Figure A.2 – Trends in Kerbside Annual Mean NO_2 Concentrations

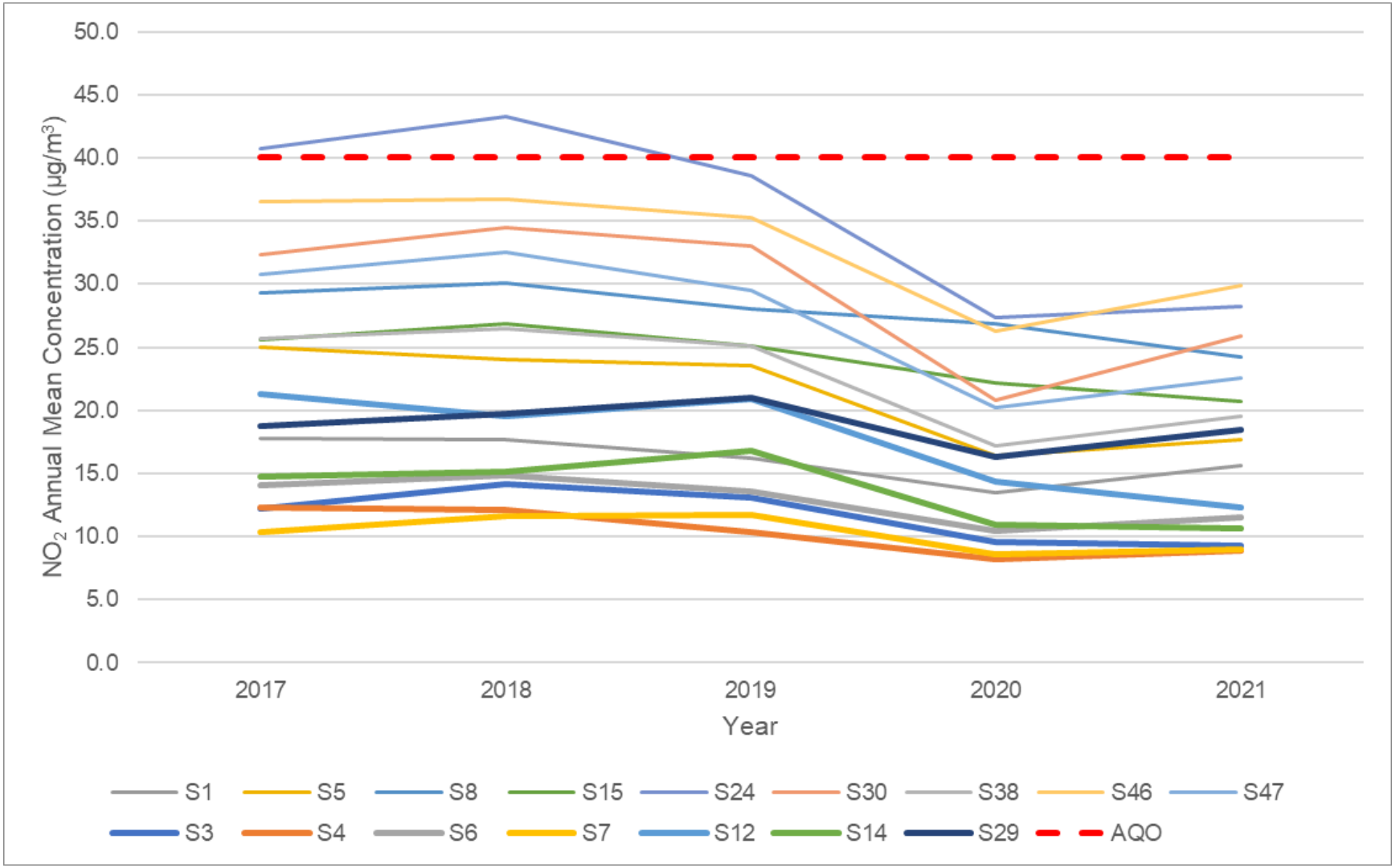


Figure A.3 – Trends Roadside Annual Mean NO_2 Concentrations (a)

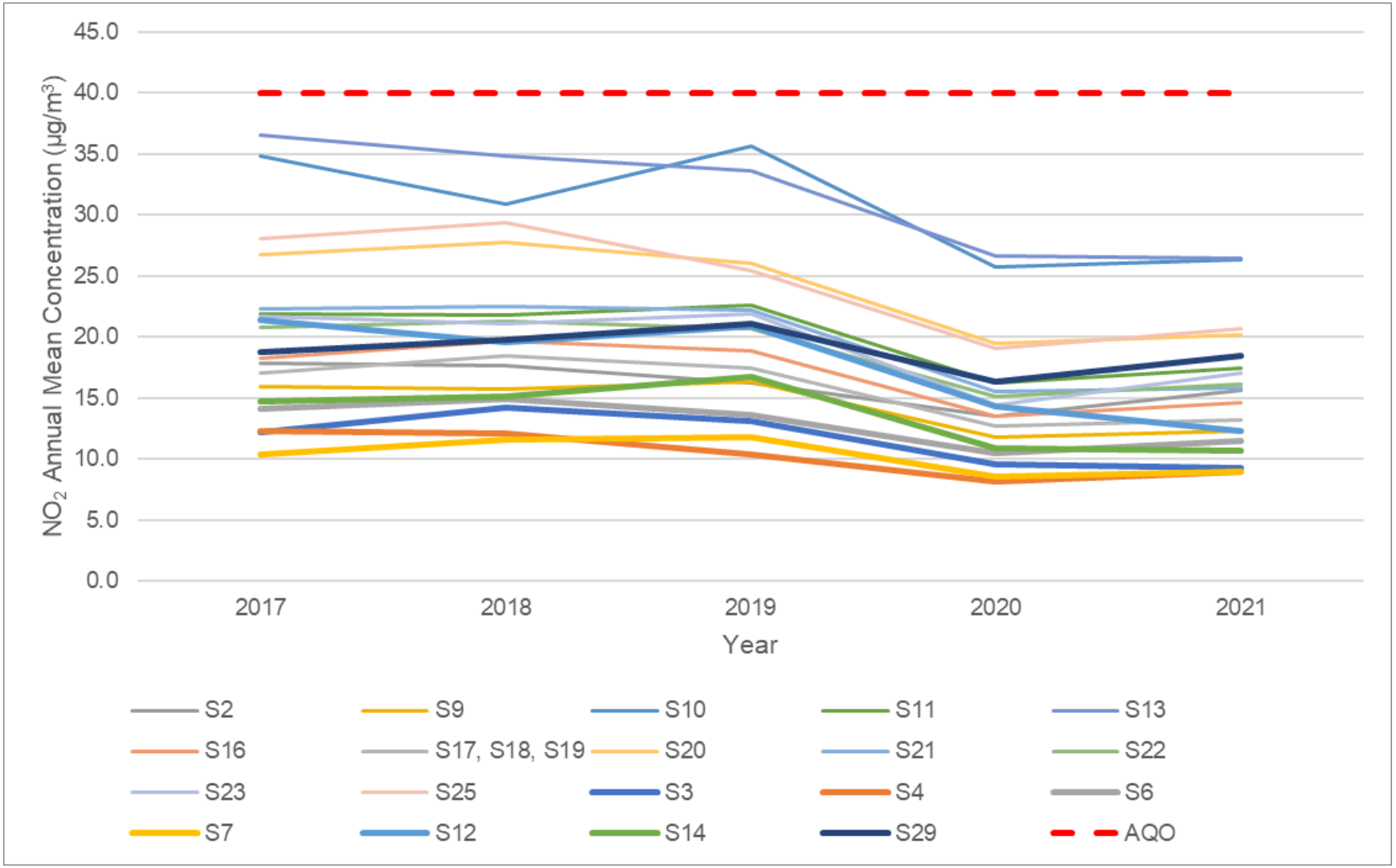


Figure A.4 – Trends in Roadside Annual Mean NO_2 Concentrations (b)

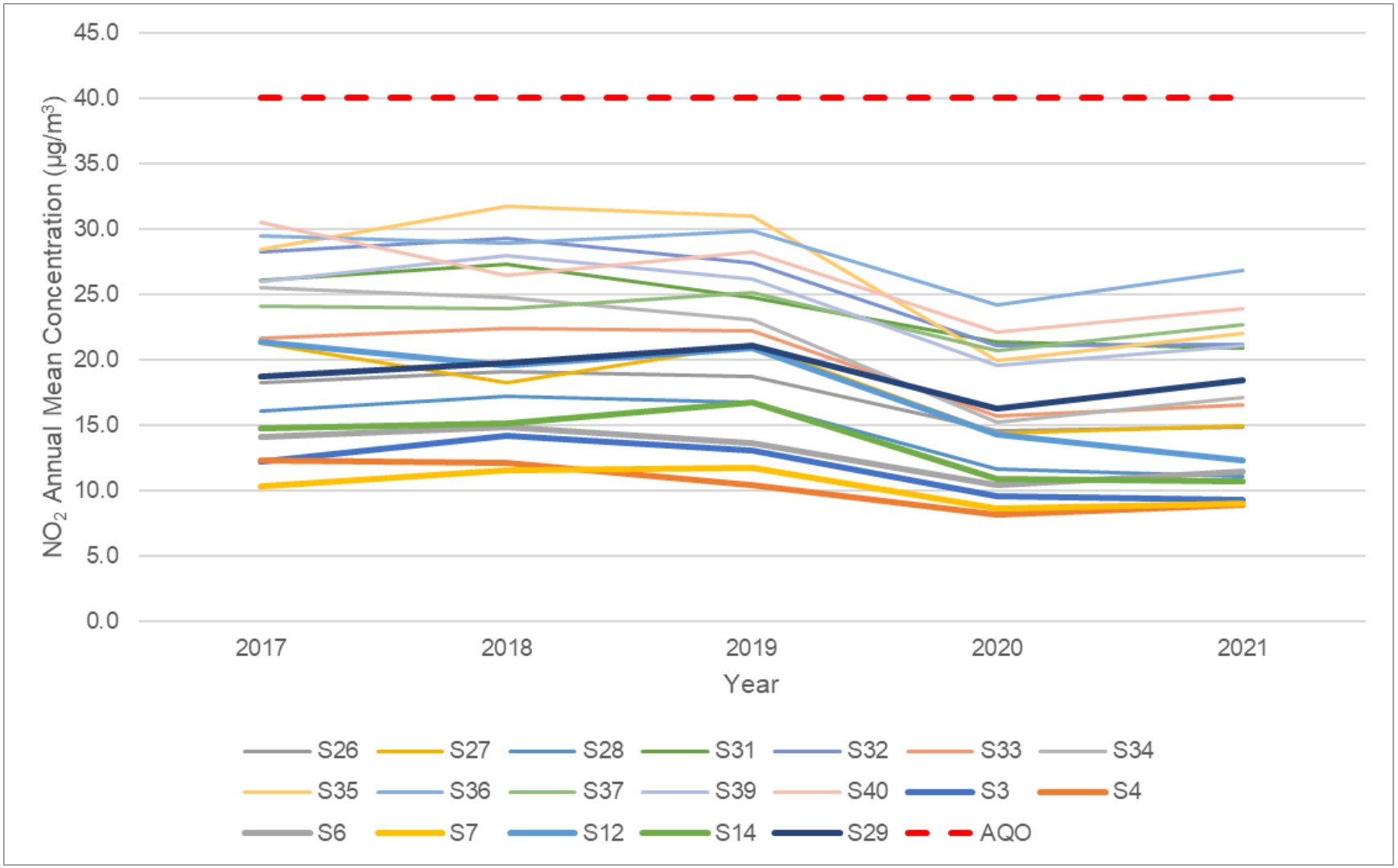


Figure A.5 – Trends in Roadside Annual Mean NO_2 Concentrations (c)

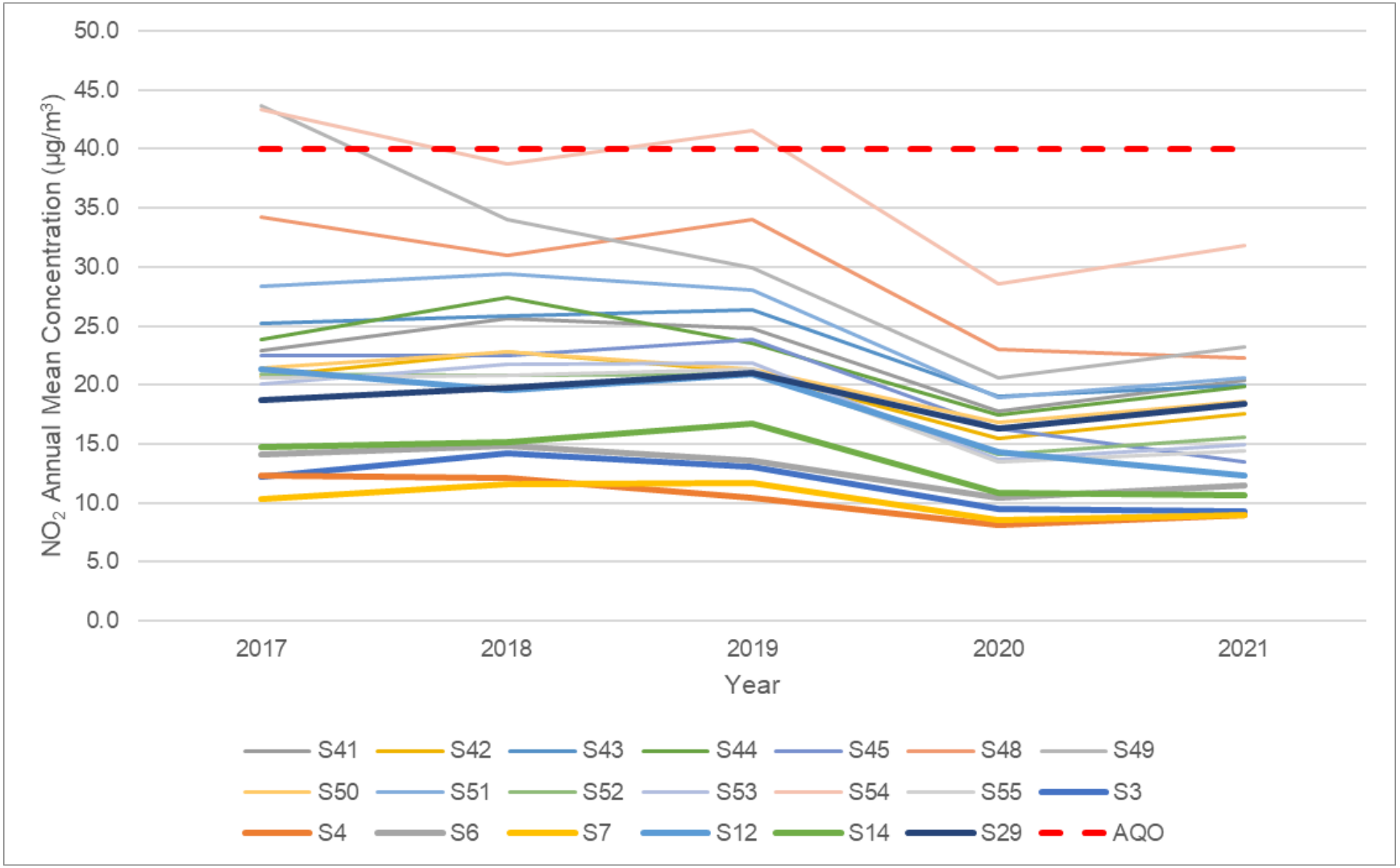


Figure A.6 – Trends in AQMA monitoring sites Annual Mean NO_2 Concentrations (a)

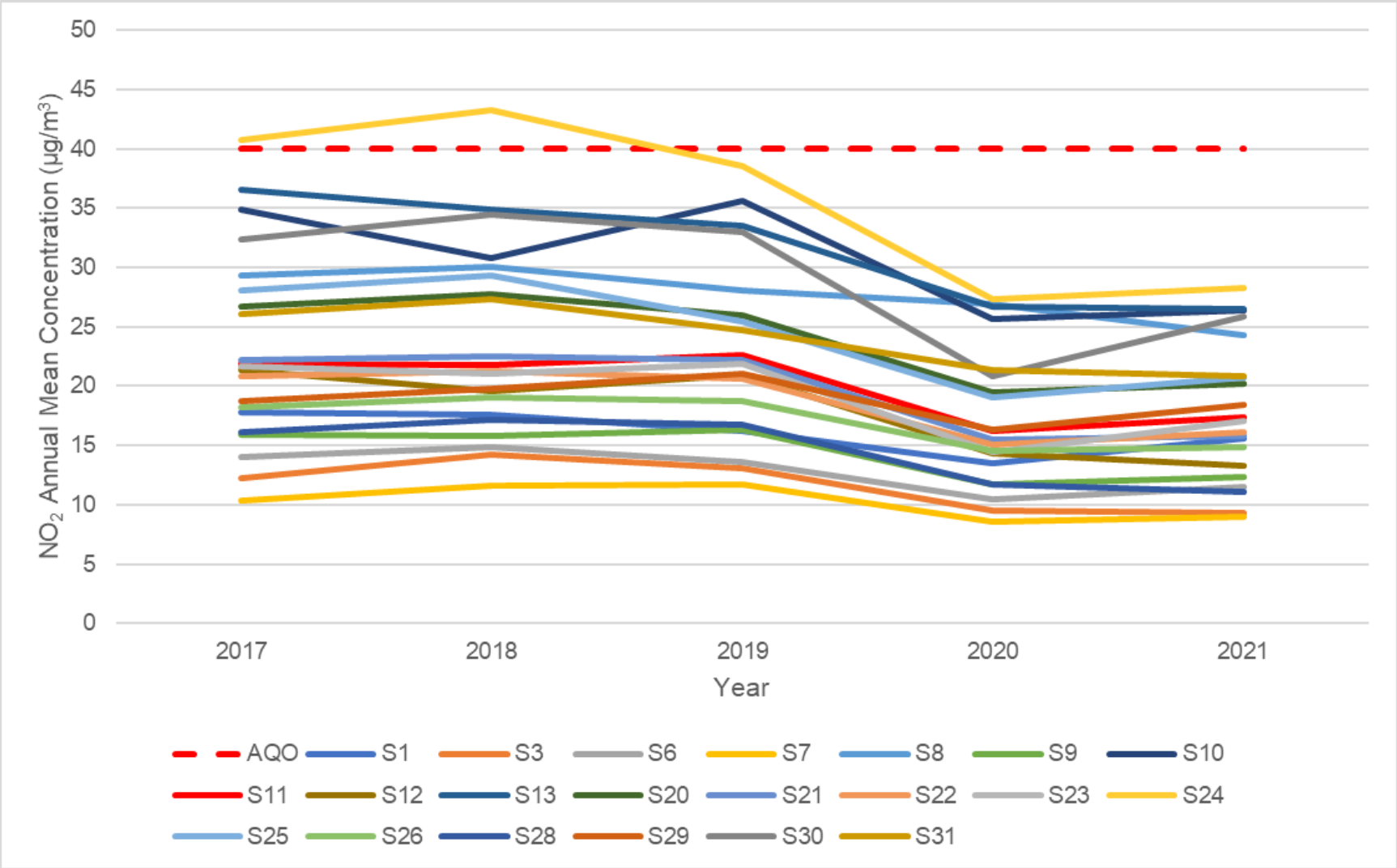
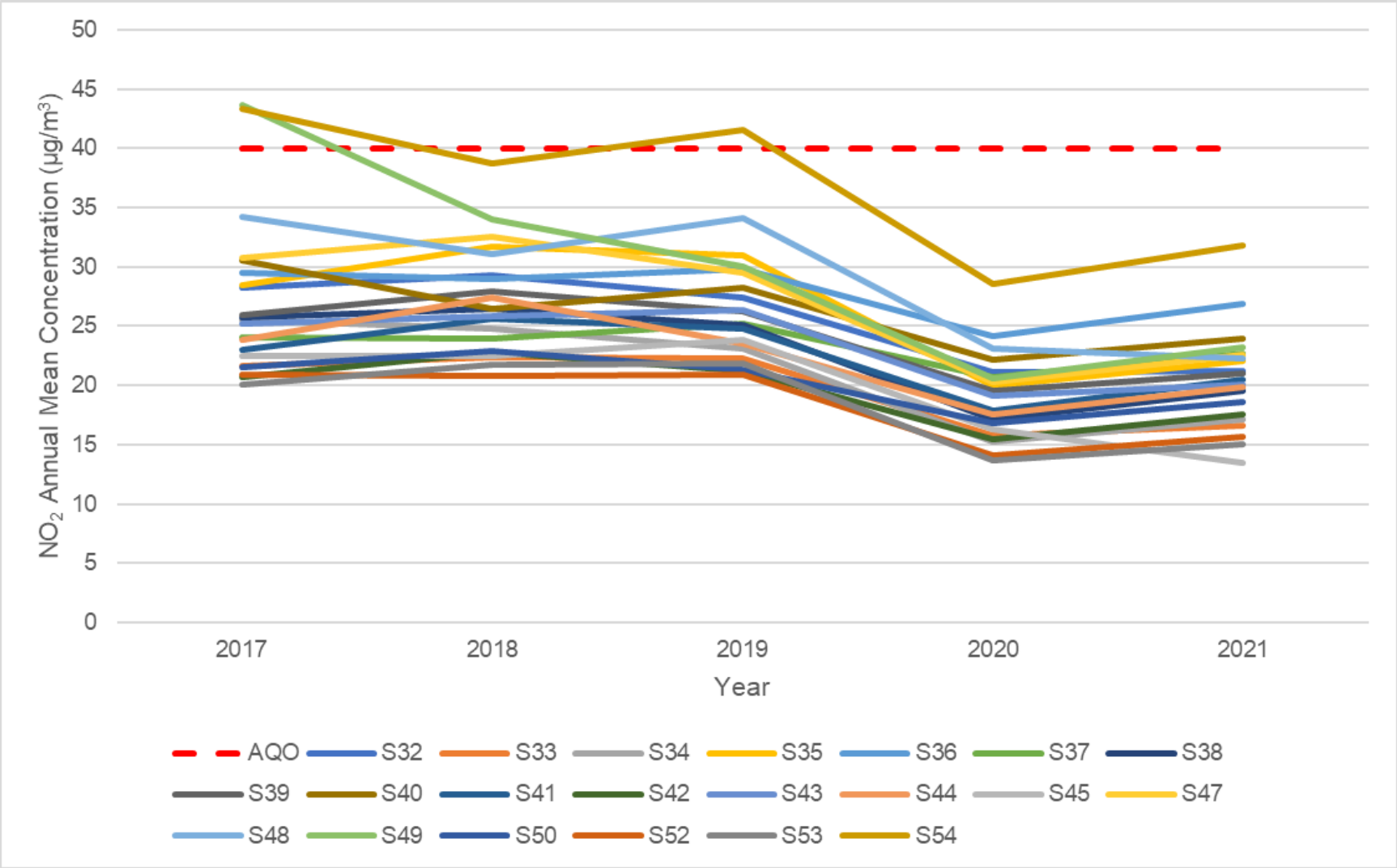


Figure A.7 – Trends in AQMA monitoring sites Annual Mean NO_2 Concentrations (b)



Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B.1 – NO_2 2021 Diffusion Tube Results (µg/m^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: Bias Adjusted (0.78)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
S1	449000	277178	29.5	24.3	-	18.8	15.7	15.5	15.6	12.9	21.2	20.7	24.0	21.7	20.0	15.6	-	
S2	440416	284401	56.9	42.6	42.8	41.5	42.0	39.1	39.1	38.2	51.9	40.3	39.8	44.4	43.2	33.7	-	
S3	447316	276162	21.0	15.4	12.8	12.1	8.5	7.1	8.5	6.7	12.0	8.4	16.5	13.8	11.9	9.3	-	
S4	441131	275648	20.0	12.2	12.1	10.5	7.1	6.1	6.2	-	-	8.9	17.0	14.4	11.5	8.9	-	
S5	438642	274418	28.9	23.7	26.0	26.4	9.5	20.9	20.5	15.2	23.9	17.8	32.4	26.8	22.7	17.7	-	
S6	449671	274795	22.5	17.2	21.0	15.1	6.8	12.3	11.8	8.1	13.8	12.3	19.4	16.6	14.7	11.5	-	
S7	448863	272786	19.7	14.6	12.1	11.0	7.8	8.1	7.4	6.3	10.4	9.0	17.2	14.3	11.5	9.0	-	
S8	450138	275557	40.5	33.6	35.8	19.9	23.8	28.6	26.8	26.9	38.9	25.7	39.3	33.5	31.1	24.3	-	
S9	451187	275334	25.6	17.0	16.4	13.8	12.1	11.2	11.9	9.7	15.7	-	20.5	20.0	15.8	12.3	-	
S10	450069	275040	41.6	30.9	36.0	23.5	32.0	29.9	29.4	27.1	45.6	35.4	39.5	34.7	33.8	26.4	-	
S11	449787	275224	28.3	25.2	24.9	21.7	18.1	18.1	15.7	16.4	20.9	21.4	30.2	26.7	22.3	17.4	-	
S12	451445	277245	29.1	-	19.2	11.1	11.8	10.6	11.0	11.4	16.9	16.4	27.9	22.6	17.1	13.3	-	
S13	450088	276229	45.0	27.9	38.1	28.0	33.6	29.1	2.8	32.3	42.8	40.8	50.6	36.0	33.9	26.5	-	
S14	439450	277523	20.7	14.9	14.9	13.6	10.3	9.6	11.1	9.1	12.6	14.7	-	19.1	13.7	10.7	-	
S15	449168	275411	35.6	26.9	31.4	24.9	24.9	20.8	24.6	19.2	28.9	28.1	-	-	26.5	20.7	-	
S16	436867	275275	24.1	19.9	20.5	22.6	10.9	16.5	17.2	12.9	20.7	13.5	23.8	22.0	18.7	14.6	-	
S17	431271	266404	25.8	20.6	18.5	17.4	12.3	12.2	11.1	9.3	18.6	15.5	19.1	20.6	-	-	-	Triplicate Site with S17, S18 and S19 - Annual data provided for S19 only
S18	431271	266404	26.7	17.6	19.0	16.6	11.6	12.7	11.7	10.7	19.9	15.6	20.0	20.9	-	-	-	Triplicate Site with S17, S18 and S19 - Annual data provided for S19 only

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Bias Adjusted (0.78)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
S19	431271	266404	26.6	20.8	18.6	16.1	12.7	11.3	11.9	8.9	18.6	16.1	22.3	21.6	16.9	13.2	-	Triplicate Site with S17, S18 and S19 - Annual data provided for S19 only
S20	450137	275849	32.8	32.9	29.2	27.2	21.3	20.5	23.3	16.9	27.0	-	27.8	-	25.9	20.2	-	
S21	451698	273273	16.6	18.4	21.6	16.5	18.1	19.1	17.8	15.0	24.2	23.1	26.7	25.7	20.2	15.8	-	
S22	452403	273567	28.5	22.7	20.8	18.8	16.0	16.0	18.5	15.3	22.7	19.0	25.6	23.8	20.6	16.1	-	
S23	452672	273633	28.1	22.8	21.0	23.4	19.0	18.7	18.9	14.7	20.9	19.7	29.0	26.2	21.9	17.1	-	
S24	448496	271244	47.0	32.3	44.8	41.1	16.2	37.2	36.0	33.0	38.4	-	-	-	36.2	28.3	-	
S25	448414	271175	31.3	23.7	29.8	25.8	21.7	24.1	20.7	23.0	24.8	29.9	36.8	-	26.5	20.7	-	
S26	448999	275505	30.2	23.7	19.6	18.4	16.1	14.7	14.1	13.5	19.7	13.1	24.9	20.5	19.0	14.9	-	
S27	449435	275543	28.3	15.3	22.0	19.7	16.9	15.2	14.0	-	18.1	15.3	28.4	17.3	19.1	14.9	-	
S28	449011	276329	22.8	13.9	15.1	15.0	11.8	11.0	11.6	8.9	15.3	11.6	17.3	15.7	14.2	11.1	-	
S29	449575	276540	-	-	20.2	15.5	16.2	15.5	17.0	57.6	25.3	21.1	21.9	26.0	23.6	18.4	-	
S30	451107	275838	40.2	38.0	32.0	33.5	21.6	34.4	30.8	24.1	41.7	33.0	35.6	33.6	33.2	25.9	-	
S31	450848	275849	35.1	28.4	30.0	23.8	23.4	21.8	21.3	22.3	28.4	25.0	32.4	28.8	26.7	20.8	-	
S32	450750	275547	37.7	25.9	32.3	3.4	22.6	24.2	-	22.5	31.7	28.6	39.4	30.8	27.2	21.2	-	
S33	450510	275355	29.3	22.4	21.1	19.3	20.5	15.8	16.6	15.8	-	19.8	28.2	24.7	21.2	16.6	-	
S34	450405	275329	29.0	20.9	22.6	19.8	17.8	12.2	19.8	16.9	23.6	22.5	31.6	27.1	22.0	17.1	-	
S35	450444	275236	35.7	29.9	28.9	22.0	16.0	22.6	27.7	25.2	35.8	34.6	38.5	21.8	28.2	22.0	-	
S36	450870	275043	44.7	37.1	37.1	31.6	32.8	27.6	30.1	25.9	37.8	35.0	39.2	33.8	34.4	26.8	-	
S37	450897	275059	38.4	25.6	33.0	-	-	24.8	24.6	22.7	29.5	27.8	31.7	32.7	29.1	22.7	-	
S38	451868	275501	32.5	22.1	27.6	25.5	19.6	22.4	21.2	26.6	25.3	20.9	32.1	24.9	25.1	19.5	-	
S39	450852	275116	35.4	21.7	29.8	23.8	24.1	21.2	22.7	18.2	30.5	-	36.3	33.0	27.0	21.0	-	

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: Bias Adjusted (0.78)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
S40	450181	275029	39.7	25.8	32.8	35.1	27.3	24.3	26.2	24.0	33.0	25.5	41.9	32.7	30.7	23.9	-	
S41	450010	274998	31.0	24.9	28.3	31.1	23.3	22.9	24.8	20.1	-	23.8	32.5	25.6	26.2	20.4	-	
S42	448855	274352	31.0	25.9	23.4	21.9	18.9	-	19.3	16.5	22.1	19.5	24.1	25.1	22.5	17.6	-	
S43	450162	274898	29.2	26.3	26.5	28.8	23.9	25.3	27.4	19.5	29.3	24.1	21.4	26.3	25.7	20.0	-	
S44	453394	273633	32.3	24.3	25.9	30.0	21.3	22.4	23.9	20.2	26.1	20.1	29.5	29.3	25.4	19.8	-	
S45	442963	277071	-	22.9	-	17.8	-	9.2	14.6	15.9	4.3	22.0	23.8	24.9	17.3	13.5	-	
S46	437555	274561	46.4	36.0	39.7	41.7	32.7	35.3	36.6	29.1	43.8	-	41.5	38.7	38.3	29.9	-	
S47	450445	275495	33.5	25.9	27.4	30.2	27.7	25.6	26.9	21.5	34.0	29.3	34.8	30.8	29.0	22.6	-	
S48	450304	275314	41.9	29.4	30.9	17.9	27.2	24.3	25.3	24.8	32.3	28.0	27.9	33.0	28.6	22.3	-	
S49	450864	274896	42.1	24.1	32.7	29.2	24.8	25.0	27.8	27.1	32.7	23.7	35.0	33.2	29.8	23.2	-	
S50	448169	273625	37.3	20.3	29.4	25.3	20.7	19.0	20.5	16.7	23.6	21.3	28.0	24.1	23.9	18.6	-	
S51	443433	279208	32.7	23.5	27.1	24.6	21.1	21.8	23.2	21.1	31.3	26.7	33.3	30.1	26.4	20.6	-	
S52	448537	271195	25.6	20.4	20.4	18.4	16.2	16.5	16.6	13.2	21.5	21.2	29.1	21.2	20.0	15.6	-	
S53	448361	271334	25.2	22.3	19.8	20.5	14.7	17.4	-	14.1	21.0	17.2	20.2	19.2	19.2	15.0	-	
S54	450269	274998	53.0	29.9	42.9	31.5	37.3	36.2	41.1	31.1	50.1	45.3	46.6	44.1	40.8	31.8	-	
S55	445004	281330	31.6	20.2	19.5	17.5	15.3	11.6	16.0	13.2	19.6	17.4	-	21.6	18.5	14.4	-	

☒ **All erroneous data has been removed from the NO_2 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 2021 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Rugby Borough Council During 2021

RBC has not identified any new sources relating to air quality within the reporting year of 2021.

Additional Air Quality Works Undertaken by Rugby Borough Council During 2021

RBC has not completed any additional works within the reporting year of 2021.

QA/QC of Diffusion Tube Monitoring

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

SOCOTEC Didcot participates in the AIR NO_2 PT scheme[12]. This scheme forms an integral part of the UK NO_2 Network's QA/QC and is a useful tool in assessing the analytical performance of those laboratories supplying diffusion tubes to Local Authorities for use in the context of Local Air Quality Management (LAQM). In AIR NO_2 PT rounds AR036, AR040 and AR042 SOCOTEC Didcot achieved 100% satisfactory scores. In AIR PT rounds AR037 and AR039 SOCOTEC Didcot Services reported no results as the rounds were cancelled due to the pandemic.

[12] LGC (2019) Summary of Laboratory Performance in AIR NO_2 Proficiency Testing Scheme (January 2019 – March 2021) Available at: https://laqm.defra.gov.uk/documents/LAQM%20NO2%20Performance%20data_Up%20to%20March%202021_v2.pdf

Diffusion Tube Annualisation

All diffusion tube monitoring locations within RBC recorded data capture of 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2022 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/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

A national bias adjustment factor was obtained from the national Diffusion Tube Bias Adjustment Factors Spreadsheet for March 2022. Based on the analytical laboratory (SOCOTEC Didcot) and tube preparation method (50%TEA/Acetone) a national bias adjustment factor of 0.78 was derived for 2021.

A local bias adjustment factor was also calculated from the triplicate co-location of diffusion tubes (S17, S18 and S19) alongside the AURN monitoring station at Leamington Spa Rugby Road. The AURN monitoring station is managed by DEFRA and is outside of the control of Rugby Borough Council. The local bias adjustment factor was calculated as 0.72. 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 0.78 to the 2021 monitoring data, primarily as the national factor was higher than the locally calculated factor. Results presented can therefore be considered as more conservative. A summary of bias adjustment factors used by RBC over the past five years is presented in **Error! Not a valid bookmark self-reference.**. The national bias adjustment factor was selected and applied to the 2021 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

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	National	03/22	0.78
2020	National	03/21	0.77
2019	Local	-	0.81
2018	Local	-	0.83
2017	Local	-	0.78

NO_2 Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

No diffusion tube NO_2 monitoring locations within RBC required distance correction during 2021 given the low concentrations monitored.

Table C.2 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1
Periods used to calculate bias	12
Bias Factor A	0.72 (0.69 - 0.76)
Bias Factor B	38% (32% - 45%)
Diffusion Tube Mean (µg/m^3)	16.9
Mean CV (Precision)	4.7%
Automatic Mean (µg/m^3)	12.2
Data Capture	100%
Adjusted Tube Mean (µg/m^3)	12 (12 - 13)

Notes:

A single local bias adjustment factor has been used to bias adjust the 2021 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

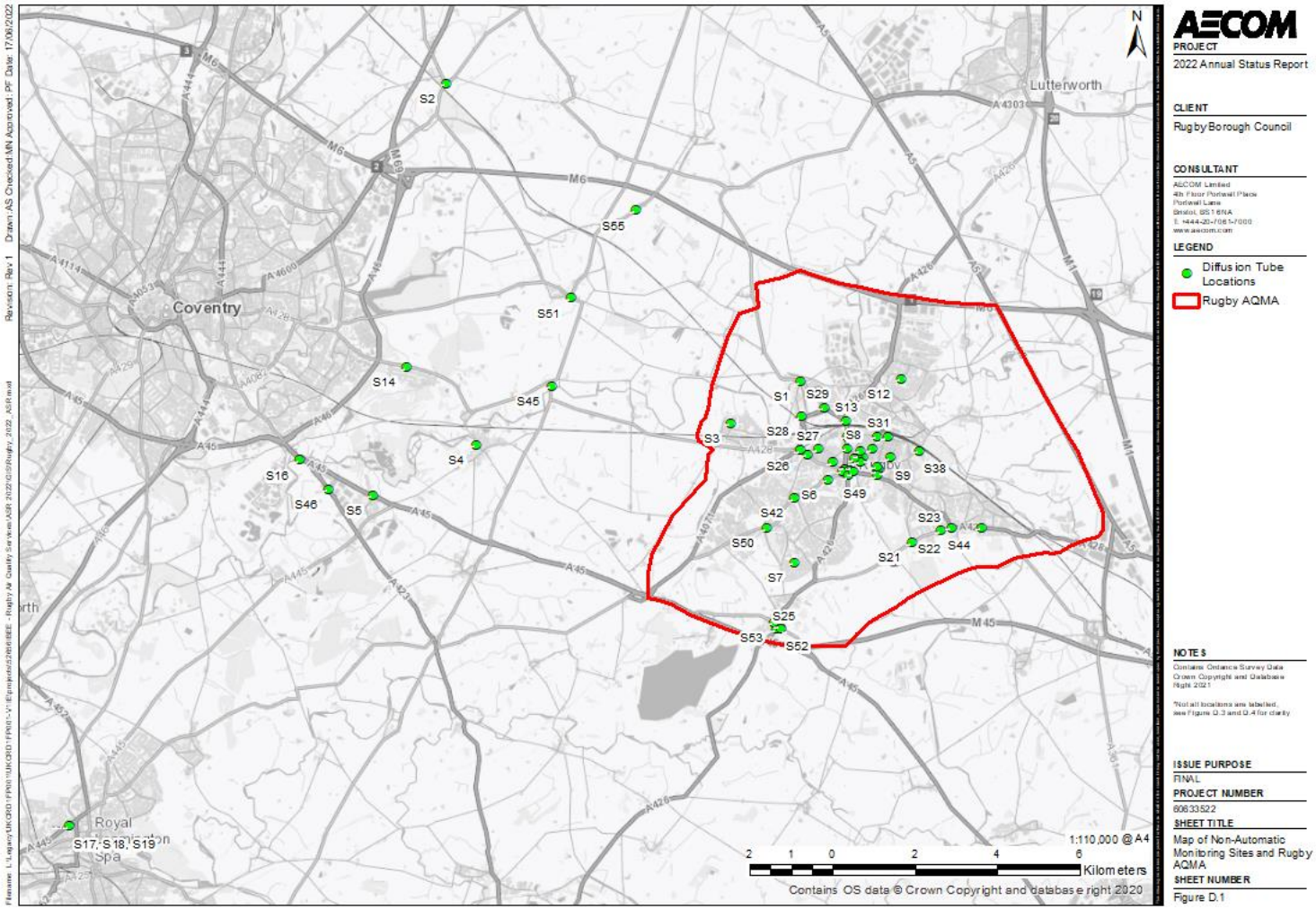


Figure D.2 – Map of Non-Automatic Monitoring Sites within Rugby AQMA

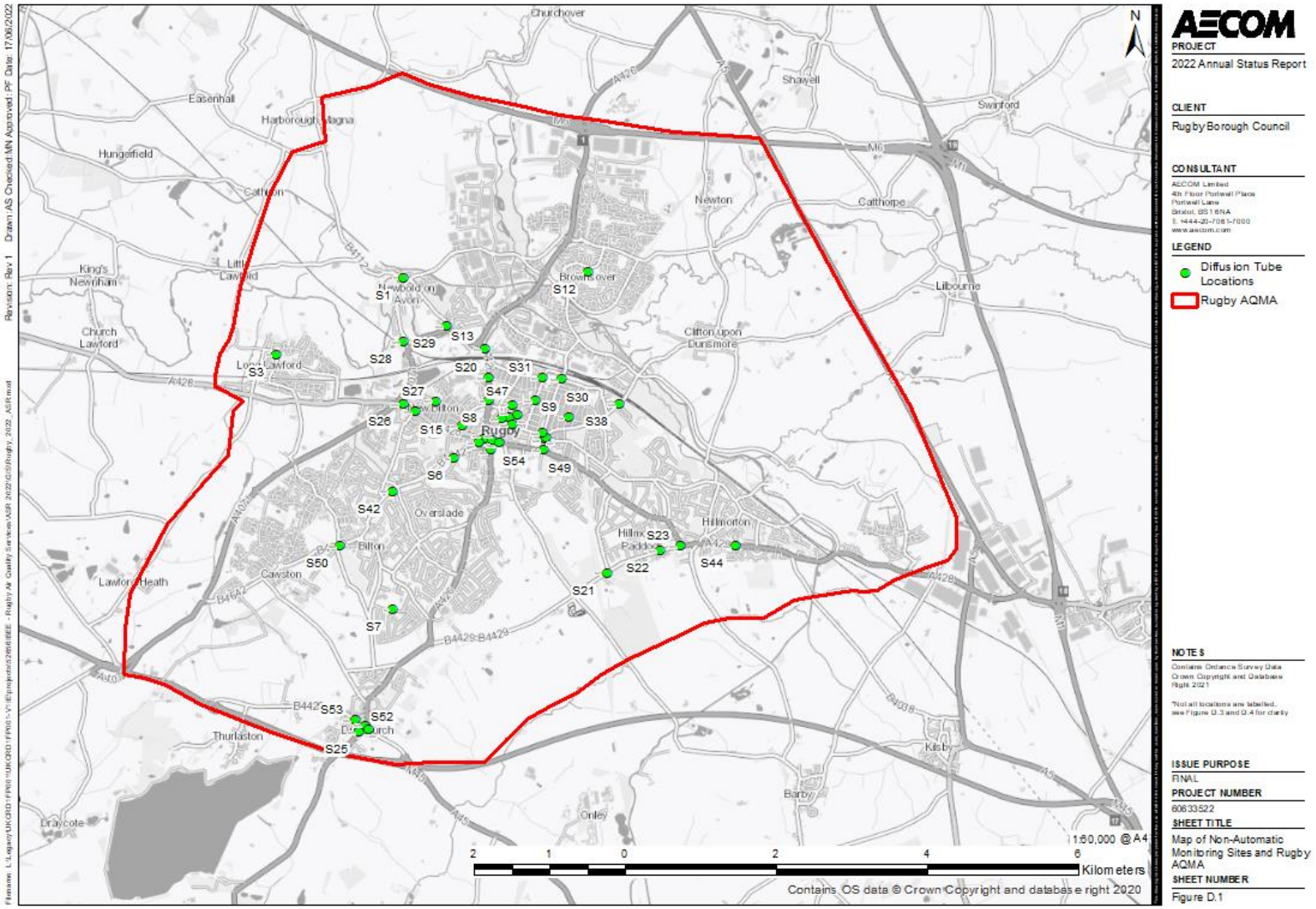


Figure D.3 – Map of Non-Automatic Monitoring Sites in Central Rugby

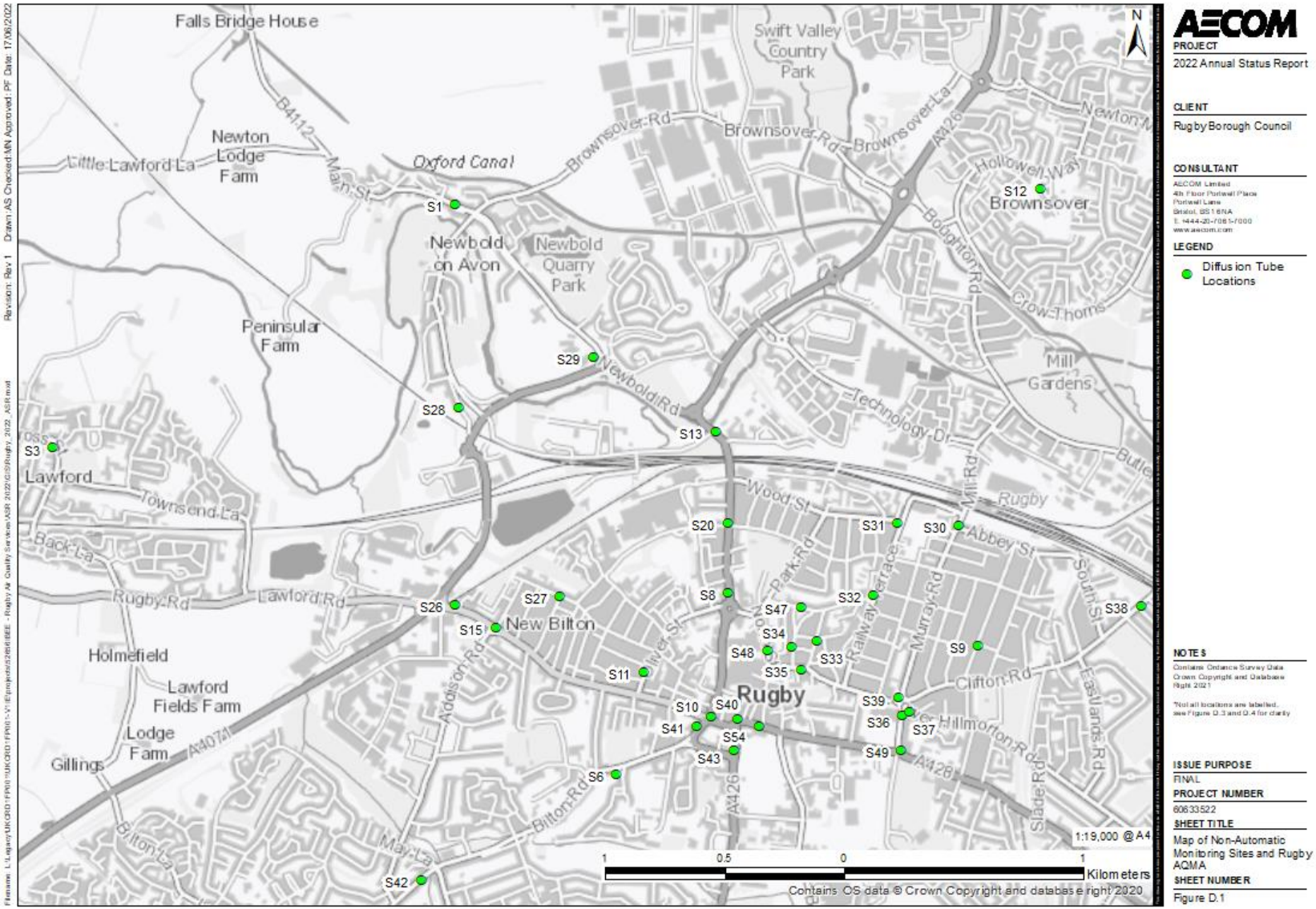
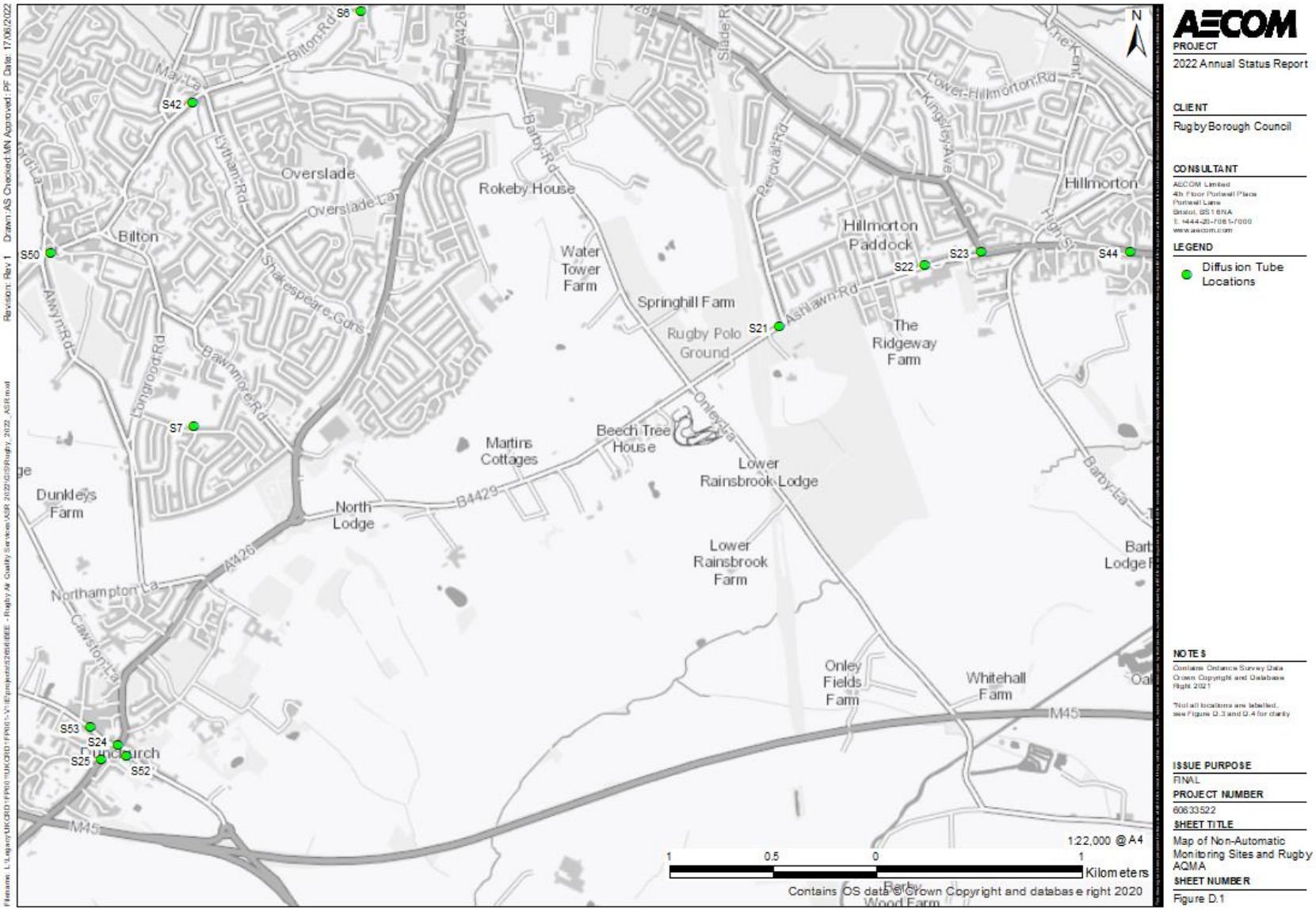


Figure D.4 – Map of Non-Automatic Monitoring Sites in Southern Rugby and Dunchurch



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[13]

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO_2)	200µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO_2)	40µg/m^3	Annual mean
Particulate Matter (PM_{10})	50µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM_{10})	40µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO_2)	125µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO_2)	266µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

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

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 143 dwellings off the Coventry Road. Granted on appeal September 2021.

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

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

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. As part of this allocation, Miller Homes, Coventry Road, Cawston c150 dwellings approved and occupied. L&Q, Coventry Road, Cawston 210 dwellings and primary school, resolved to grant permission. Initial ground works commenced on the employment element adjacent to M45/A45 junction – allocation will provide up to 35 hectares of employment land. This Rugby South West site also covers the development proposal for Ashlawn Road.

6. Former Cattle Market, Rugby – 360 Dwellings, approved 15/09/2020 R19/0804, first occupations due imminently.

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, construction well underway.

9. R18/1466 – Former Herbert Gray College, Little Church St, Rugby – 78 extra care apartments and 52 bed care home, approved November 2021.

10. R19/1164 - Oakfield Recreation Ground, Bilton Road, Rugby – 62 extra care apartments, construction well underway.

11. R21/0664 - 1400 sqm of employment approved off Parkfield Road, Rugby

12. R19/0777 – Former Avon Mill Pub, Newbold Road, Rugby – Coffee Shop and drive thru unit & R21/0962 Tyre Fitting unit – latter currently under construction, next to Coffee Shop and drive thru unit.

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

1. Rugby Radio Station (SUE) – Urban extension to Rugby providing up to 6,200 dwellings, up to 130,000 m^2 of space for various land uses, including mixed use district centre, construction works are underway on all 3 Phases. The Secondary School opened in September 2021. David Lloyd Fitness Centre, inc courts and swimming pools, approved 01/09/2020, pending application for 7810 sqm of employment.

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 and the primary school have received planning permission and work is due to start imminently.

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

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 mainly 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
AURN	Automatic Urban and Rural Network
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 National Highways
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_{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
SO_2	Sulphur Dioxide
TFWM	Transport for West Midlands
WCC	Warwickshire County Council

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