



2021 Air Quality Annual Status Report (ASR)

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

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Information

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Executive Summary: Air Quality in Our Area

Rushcliffe Borough Council has two existing Air Quality Management Areas (AQMAs) for the exceedance of the nitrogen dioxide (NO₂) annual mean Air Quality Objective (AQO). The AQMAs are associated with road traffic emissions along major traffic routes in and out of the City of Nottingham.

The 2020 monitoring data indicates there were no exceedances of the annual mean Air Quality Objective of 40µg m⁻³ within either of the two AQMAs (AQMA No 1 Trent Bridge and AQMA No 1/2011 Stragglethorpe Road).

It should be noted the COVID-19 pandemic started in March 2020 and for periods of time throughout the year the country was in national or regional lockdowns which had an impact on the day-to-day activities of the population. For example, during the first national lockdown announced at the end of March 2020 the population was directed by Government to stay at home. This direction had a subsequent impact on road traffic levels and the air quality monitoring data associated with roadside emissions.

This report contains a full data set of air quality monitoring undertaken in 2020 and trends for the last 5 years.

Table 2.2 in this report outlines the actions the Council (and its partners) has and will be taking in order to achieve continued compliance with the Air Quality Standards (AQS).

Air Quality in Rushcliffe 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}.

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

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.

Road traffic is the main source of air pollution within the Borough and nitrogen dioxide (NO₂) is the primary pollutant of concern. Nitrogen dioxide is a brown gas with the chemical formula NO₂. It is chemically related to nitric oxide and together NO and NO₂ are known as NO_x. NO_x is released into the atmosphere when fuels are burned, for example petrol or diesel in a car engine, or natural gas in a domestic central heating boiler. NO₂ can affect our health and evidence indicates high levels can inflame the airways of our lungs, and over the long term can affect how well our lungs work. The concentration of NO₂ is measured as micrograms per cubic metre of air (µg m⁻³) and to protect health the Government has set air quality standards. The hourly objective which is the concentration of NO₂ in the air averaged over a period of one hour, aims to ensure we are not exposed to high concentrations for short periods of time. The annual objective which is the concentration of NO₂ in the air averaged over a period of one year, aims to protect us over the longer term. Further details on the air quality standards can be found in Appendix E: Summary of Air Quality Objectives in England.

Road traffic is the largest source of NO_x emissions in the UK. NO_x emissions from burning fossil fuels are mainly as NO. However, some sources including diesel vehicles (particularly when moving slowly) can emit a lot of NO_x as NO₂ and these primary emissions of NO₂ can lead to high concentrations at the roadside. NO₂ is also formed in the atmosphere when there is a chemical reaction between NO and ozone, and this is known as secondary NO₂.

Rushcliffe Borough Council currently undertakes air quality monitoring for NO₂ at 29 monitoring sites across the Borough. Twenty-seven of these locations are passive sites, monitoring NO₂ using diffusion tubes which take samples over a one-month period (approximately) and are useful for assessing the annual objective of 40µg m⁻³. Diffusion tubes provide an inexpensive way of monitoring air quality at multiple sites and provide general indicators of concentrations and trends of pollutants over a period of time.

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

Rushcliffe Borough Council also have two continuous analysers (automatic) where air is continuously pumped into the analyser and the level of NO₂ recorded. These provide more accurate data on NO₂ concentrations however they are a more expensive way of monitoring air quality.

Rushcliffe Borough Council currently have two active Air Quality Management Areas (AQMA) for NO₂. An AQMA is an area where air pollutant concentrations exceed or are likely to exceed the relevant air quality objectives. AQMA are declared for specific pollutants and objectives and within Rushcliffe both were declared for NO₂ and exceedance of the annual mean concentration objective of 40µg m⁻³. The location of the AQMA can be seen at [Defra UK Air website](#). Monitoring is undertaken in both AQMA using both diffusion tubes (non-automatic or passive) and a continuous analyser (automatic).

Within AQMA No 1 Trent Bridge the highest NO₂ annual mean concentration recorded in 2020 across all locations was 28µg m⁻³ at the diffusion tube location TBI. The continuous monitoring data for 2020 presented a NO₂ annual mean concentration of 27µg m⁻³. Therefore, the NO₂ annual mean concentrations were all below the air quality objective and were all lower than for the same location in the previous five years (where this data is available). There were also no exceedances of the NO₂ hourly limit of 200µg m⁻³ and therefore no exceedance of the 1-hour mean air quality objective.

In AQMA No 1/2011 Stragglethorpe Road a maximum NO₂ annual mean concentration of 31µg m⁻³ was recorded by the continuous monitor. This is below the air quality objective and significantly lower than the NO₂ annual mean concentration for 2019 of 41µg m⁻³ recorded at the same location. There were no exceedances of the NO₂ hourly limit of 200µg m⁻³ and therefore no exceedance of the 1-hour mean air quality objective.

In general, over the last five years monitoring data shows a decline in the NO₂ concentrations across the Borough. The data collated across the network in 2020 indicates a significant decrease of between 17% and 35% in the NO₂ annual mean concentrations in comparison to 2019 data. The scale of the decline is much larger than seen year on year for the past four years and most likely a result of the impact of the COVID-19 pandemic lockdowns on road traffic.

Rushcliffe Borough Council are progressing with the update to the existing Air Quality Action Plans (AQAP). The revised AQAP has been out to consultation with our transport partners (Nottinghamshire County Council and Highways England) with a view to undertaking public consultation in July 2021. Although the revised AQAP will consolidate

the two existing AQAPs there will be measures specific to each of the AQMAs. The existing AQAPs can be found on our air quality webpage [Rushcliffe - Air Quality](#).

The Environmental Health Service continues to work with colleagues in the Planning Service to ensure air quality issues are considered as part of the policy and forward planning process, as well as during the development control process. Policy 41 of the Local Plan Part 2: Land and Planning Policies which was adopted in October 2019 explicitly addresses air quality and development proposals that have the potential to adversely impact on air quality or are sensitive to poor air quality. Details of the Local Plan can be found on our webpages [RBC Local Plan](#). During the development process both construction and operational impacts are considered and where appropriate conditions imposed, or the application is amended to reflect any concerns identified.

During 2020 there were a number of applications relating to proposed residential and commercial developments within or in the vicinity of the AQMAs where air quality assessments were required. These include

- Discharge of air quality related planning condition associated with the redevelopment of a former car sales garage to retirement living apartments at a site on Loughborough Road within AQMA No 1 Trent Bridge; and
- Development of a site along Wilford Lane (in the vicinity of AQMA No 1 Trent Bridge) for retail purposes, including a food store;

There were also a number of planning applications for large scale housing developments at various locations across the Borough, including

- Outline permission for the first phase of a 2,250 dwelling development with school and associated retail/commercial element at Tollerton;
- Outline permissions for two sites of 210 and 100 dwellings at sites in Cotgrave,
- Works are also progressing on previously permitted developments in Ruddington, Edwalton, Keyworth, Radcliffe on Trent, Newton and Clifton.

A requirement for electric vehicle (EV) charging points to be installed on all residential and commercial developments (where possible) is included as part of any planning approval.

Road traffic emissions are the primary source of NO₂ within the AQMAs. The road network within AQMA No 1 Trent Bridge is managed by Nottinghamshire County Council and the A52, the road associated with AQMA No 1/2011 Stragglethorpe Road is managed by Highways England. As part of the government's road investment strategy several junctions along the A52, including the Stragglethorpe Road junction were identified for improvement

to reduce congestion and provide capacity for more traffic from local developments. During 2020 Highways England determined the most appropriate solution to help reduce queuing and delays at the Stragglethorpe Road junction is to implement a U-turn ban. A notice of intention to make an order to stop the U-turn movement was made in November 2020.

At a strategic level the Rushcliffe Borough Council Corporate Strategy (2019-2023) includes 'The Environment' as one of the four priorities. In March 2020 the Council made a commitment to work towards being carbon neutral for its own operations by 2030. Our Carbon Management Plan 2020 sets out the measures to be implemented across key areas, including property assets, fleet, and policy & regulation. The implementation of some of these proposed changes will have a co-benefit of improving air quality across the Borough eg measures to accelerate the shift to low carbon transport across the Council fleet, promotion of active travel and the promotion of carbon reduction policies and guidance to developers.

To encourage an increased use of low emission travel options in 2020 the Council, working together with Nottingham City Council, secured investment via the Transforming Cities Fund to increase the provision of electric vehicle charging points (EVCP) in the D2N2 area with work progressing to bring sites at Cotgrave, Keyworth and Radcliffe on Trent on-line by early 2021.

The Environmental Health service also works with other local authorities in the area through the Nottinghamshire Pollution Working Group (NPWG) and the East Midlands Air Quality Network (EMAQN) which comprises local authorities and Public Health England (PHE). We will continue to promote air quality issues in emerging work via the NPWG and EMAQN. In addition, work is undertaken with other organisations to promote greener transport measures and better air quality in the Nottinghamshire area.

- In 2019 the Air Quality Strategy for Nottingham and Nottinghamshire 2020-2030⁵ was launched with an overall strategic vision for all of Nottinghamshire residents and visitors to have clean air that allows them to lead healthy and fulfilling lives. The strategy was prepared via a collaborative effort between Nottinghamshire County Council, Nottingham City Council and the Nottinghamshire Borough/District Authorities, including Rushcliffe Borough Council. The Strategy can be accessed via our webpage [Air quality - Rushcliffe Borough Council](#).

⁵ Air Quality Strategy for Nottingham and Nottinghamshire 2020-2030 (2020)

This vision aligns with the ambition in the National Clean Air Strategy⁶ to protect the nation's health and the government's plans for reducing vehicle emissions. It also recognises that implementation of the strategy will have local system-wide co-benefits such as increased physical activity through active travel, reduced congestion, connecting people in their communities through better design of place, improvements in environmental quality and climate change mitigation.

The Air Quality Strategy for Nottingham and Nottinghamshire 2020-2030 recognises the importance of the Local Air Quality Action Plans, developed for the AQMAs across the City and County, as a key component in the delivery of the strategy in terms of reducing health risk and impacts in the most polluted areas.

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 Strategy⁷ sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero⁸ 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.

As traffic is the main cause of the air pollution within the Borough the core actions continue to be the integration of measures within the Local Transport Plan (LTP) which is implemented by Nottinghamshire County Council Transport Planners and Highways England. In addition, Rushcliffe Borough Council will continue to review planning applications for potential adverse impacts on air quality and continue to promote air quality issues through our membership of NPWG and EMAQN.

⁶ Defra, Clean Air Strategy (2019)

⁷ Defra. Clean Air Strategy, 2019

⁸ DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

As AQMA No 1 Trent Bridge is designated around two major traffic routes in and out of the city actions by Nottingham City Council in their action plan will have some impact on traffic related pollution levels in Rushcliffe. The City Council continue to work towards ultra-low and zero emission vehicles, including public transport which will be beneficial on AQMA No 1 Trent Bridge.

As part of the development of the revised AQAP existing air quality measures will be refined to better reflect the current strategy and policy of Rushcliffe Borough Council and its partners.

As air quality and particularly the impacts of poor air quality on health are highlighted in the mainstream media, we anticipate enquiries and complaints around activities impacting on local air quality such as bonfires and domestic burning will increase. We will consider the use of focussed campaigns to raise awareness of issues among our residents, including anti-idling and the impact of domestic burning.

Conclusions and Priorities

The air quality monitoring data for 2020 shows there were no exceedances of the NO₂ annual mean concentration air quality objective at any of the monitoring locations across the Borough. Data indicates a decrease of between 17 to 35% in the annual mean concentrations of NO₂ when compared with 2019 data for the same locations. Although this follows the general downward trend observed over the past four years the scale of the decline is likely to be heavily influenced by the impact of the COVID-19 pandemic lockdowns on roadside emissions.

In AQMA No 1 Trent Bridge the decrease in the NO₂ annual mean concentration ranged from 17 to 29% and in AQMA No 1/2011 Stragglethorpe Road the decrease ranged from 24 to 35% when compared with 2019 data.

Over the past five years the NO₂ annual mean concentration in AQMA No 1 Trent Bridge has been in the region of 36-37µg m⁻³ ie below the air quality objective of 40µg m⁻³. In 2020 there was a sharp decline to 27µg m⁻³ at the location of the continuous monitor which is deemed to be representative of a worst-case scenario in terms of exposure. If the consistent downward trend continues and concentrations remain in the region of 10% below the air quality objective we will seek to revoke the AQMA within the next 1-2 years.

In AQMA No 1/2011 the NO₂ annual mean concentration has been hovering around the air quality objective of 40µg m⁻³ for the past five years when it has ranged between 38µg m⁻³

in 2017 and $41\mu\text{g m}^{-3}$ in 2019. In 2020 there was a decline in the NO_2 annual mean concentration to $31\mu\text{g m}^{-3}$. As the long-term impact (if any) of the COVID-19 pandemic on traffic levels and associated roadside emissions remains to be seen we will continue to monitor in the AQMA and review its status annually.

We are currently updating the AQAP and a draft for consultation has been issued to our main partners (Nottinghamshire County Council and Highways England). It is the intention to go out to public consultation in July/August 2021. This revised AQAP seeks to consolidate the existing two AQAPs.

Local Engagement and How to Get Involved

Rushcliffe Borough Council provides residents with information on reducing their impact on the environment and air quality via links from its website [Transport - Rushcliffe Borough Council](#) where there is signposting to cycling and walking initiatives and information on public transport and greener car travel, including car sharing. There is also information available on cycling and walking initiatives via the Nottinghamshire County Council webpage [NCC - cycling and walking](#).

Any new planning proposals where consideration of potential air quality impacts may be required are available for consultation through the planning process. The public can view and provide comments on submitted air quality assessments.

Likewise, under the environmental permitting regime changes to existing or new permitted processes are subject to public consultation and we will ensure public engagement is well as statutory consultee engagement.

To get involved in improving air quality within the Borough the public can contact the Environmental Health Service – details are available at the front of this report.

The Local Transport Plan (LTP) is implemented by County Council Local Transport Planners who can be contacted via the [Nottinghamshire County Council](#) website or Local Transport Plan Manager, Transport Planning and Development, Nottinghamshire County Council, County Hall, West Bridgford Nottingham NG2 7QP; Tel: 0300 500 8080.

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1 Local Air Quality Management

This report provides an overview of air quality in Rushcliffe Borough Council during 2020. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

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

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

A summary of AQMAs declared by Rushcliffe Borough Council can be found in Table 2.1. The table presents a description of the two AQMAs that are currently designated within Rushcliffe Borough Council. Appendix D: Maps of Monitoring Locations and AQMAs provides maps of both AQMAs and also the air quality monitoring locations in relation to the AQMAs. The air quality objectives pertinent to the current AQMA designations are as follows:

- NO₂ 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 Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
AQMA No 1 Trent Bridge	01/09/2005	NO ₂ Annual Mean	An area including Lady Bay Bridge/Radcliffe Road/Trent Bridge/Loughborough Road junctions in West Bridgford.	NO	47µg m ⁻³	27µg m ⁻³	Air Quality Action Plan for Rushcliffe updated 2010	AQAP 2010
AQMA No1 2011 Stragglethorpe Rd	01/10/2011	NO ₂ Annual Mean	Land adjacent to A52 at Stragglethorpe Lane Junction	YES	50.5µg m ⁻³	31µg m ⁻³	Stragglethorpe Road AQAP 2013	AQAP 2013

Rushcliffe Borough Council confirm the information on UK-Air regarding their AQMAs is up to date.

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

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

Defra's appraisal of last year's ASR concluded the 2020 report was thorough and contained the required content. Specific comments made by Defra have been addressed as follows:

- Report indicated diffusion tube monitoring was undertaken at thirty-six sites whereas thirty-six diffusion tubes were monitored across thirty-two sites (two sites were triplicates). Although the comment is noted it is not relevant to this year's report as the triplicate tubes were no longer deemed necessary and have been removed;
- Inclusion of screen captures showing the calculations for all sites where distance correction has been undertaken rather than an example of one site as provided in the report; and either leave cell blank or populate with '-' in the final column in Table B.1 so that it is clear for which sites distance correction has been undertaken. Although the comment is noted it is not relevant for this year's report as distance correction was not required;
- Requirement to indicate clearly in Table A.3 where a concentration is an average of the triplicate tubes. Although the comment is noted it is not relevant to this year's report as the triplicate tubes are no longer in use;
- In Table A.3 the average of triplicate tubes A52/HHF1/2/3 was corrected prior to publication from $37\mu\text{g m}^{-3}$ to $37.4\mu\text{g m}^{-3}$;
- Rushcliffe Borough Council continue to review and update the diffusion tube monitoring network, reallocating resources from those sites where robust data indicates continued compliance with the annual mean objective for NO_2 to potential hotspot sites and/or sites requested by members of the public.

Rushcliffe Borough Council and its partners have 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. Forty-two measures are included within Table 2.2, with the type of measure and the progress Rushcliffe Borough Council have made during the reporting year of 2020 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2. A colour coded approach has been

adopted in Table 2.2 with those measures highlighted in green considered to be most effective and those highlighted in red to have been completed and/or less effective. Table 2.2 has been populated with available data on funding. It should be noted the existing AQAPs are currently being updated and revised to better reflect current policies and strategies. As part of this process the action measures will be refined to include new or revised measures identified by Rushcliffe Borough Council and its partners for the improvement of air quality and out-of-date measures will be removed. It is anticipated these revised measures will be available for inclusion in next year's ASR, following publication of the revised AQAP.

More detail on these measures can be found in their respective Action Plans and also within the third Local Transport Plan that consists of the Local Transport Plan Strategy and Implementation Plan.

Key completed measures are:

- Publication of the Air Quality Strategy for Nottingham and Nottinghamshire 2020-2030⁹ which sets out an overall strategic vision for all of Nottinghamshire residents and visitors to have clean air that allows them to lead healthy and fulfilling lives;
- Adoption of the Rushcliffe Borough Council Carbon Management Plan which sets out how the Council is working towards its direct operations becoming carbon neutral by 2030. The implementation of some of the measures will have a co-benefit of improving air quality across the Borough eg measures to accelerate the shift to low carbon transport across the Council fleet and demonstrate the Council's commitment by 'leading by example';
- Adoption of the Nottinghamshire County Council Corporate Environmental Policy and Strategy which outlines the key principles, scope and approach to improving the Council's environmental performance and delivery of its proposed key strategic ambitions;
- Funding secured and sites identified across the Rushcliffe Borough Council estate for the provision of electric vehicle charging points with an aim to bring the first of these on-line in 2021;
- Improvements in the provision of a publicly accessible vehicle charging infrastructure network across the D2N2 area (Derby, Derbyshire, Nottingham and

⁹ Air Quality Strategy for Nottingham and Nottinghamshire 2020-2030

Nottinghamshire) as part of the Go Ultra Low programme led by Nottingham City Council;

- Highways England have undertaken studies and public consultation on the proposed U-turn ban at the Stragglethorpe Road Junction (AQMA No 1/2011) with a view to starting works in 2021;
- Highways England ongoing review of the Stragglethorpe Road Junction to ensure traffic flows well and stops by HGVs are minimised;
- Travel planning with residents at new developments secured by planning condition where possible;
- Workplace travel planning offered by Nottingham City Council as part of their status as a Go Ultra Low City is likely to reduce congestion with AQMA No 1 Trent Bridge which runs along a key access route into the city;
- Rushcliffe Borough Council has widened access to its staff cycle purchase scheme as a way of promoting smarter travel choices; and
- Imposition of planning conditions requiring the provision of electric vehicle charging points in new residential and commercial development (where possible).

Rushcliffe Borough Council expects the following measures to be completed over the course of the next reporting year:

- Adoption of a revised consolidated Air Quality Action Plan which will include measures specific to each of the AQMAs. In recent months we have consulted and taken on board comments and suggestions provided by our key transport partners (Nottinghamshire County Council and Highways England). We anticipate the draft AQAP will go out to public consultation in July/August 2021;
- The implementation of works to improve traffic flow and reduce congestion at the Stragglethorpe Road junction on the A52 which is the location of AQMA No1/2011. Highways England anticipate these works which form part of their A52 Nottingham Junctions project will begin in 2021;
- An increase in the provision of electric vehicle charging points across the Rushcliffe Borough Council estate with sites in Cotgrave, Keyworth and Radcliffe on Trent due to be brought on-line in 2021;
- Nottinghamshire County Council are currently undertaking a review of on-street and rural electric vehicle charging infrastructure to identify potential on-street options and inform future County Council EV infrastructure strategy, policy and delivery in the county;

- Increased bus fleet low emission vehicles running through AQMA No 1 Trent Bridge. All local buses operating into Nottingham City Centre and through the AQMA will meet Euro VI standards by September 2021. Significant investment has also been secured by bus operators to upgrade facilities to enable the running of gas fleets. For example the bus operator NCT have invested £4.7m of funding from the Office of Low Emission Vehicles (OLEV) (now known as the Office for Zero Emission Vehicles) to operate gas buses along two routes through the AQMA; and operator Trent Barton have invested £2m in twelve new Euro VI buses operating on three routes through the AQMA;
- Feasibility studies for walking and cycling infrastructure improvements in and around both AQMAs with a potential new Trent walking/cycling bridge (AQMA No 1 Trent Bridge) and along the A52 corridor (AQMA No 1/2011 Stragglethorpe Road); and
- Development of a Rushcliffe Borough Council cycling strategy to identify the Council priorities and help residents make smarter travel choices. This strategy will complement and support the County Council cycling strategy with Rushcliffe BC working in collaboration with County to develop the cycling infrastructure.

The priorities for Rushcliffe Borough Council and its partners for the coming year are predominantly through measures to make best use of the transport networks and through smarter travel measures that will encourage people to travel more sustainably. These include

- Targeted capacity improvements to reduce congestion (such as traffic light and junction improvements) to make best use of the existing highway infrastructure;
- Parking enforcement on County Council roads to ensure traffic can continue to keep moving;
- Walking and cycling improvements (eg footway improvements and new crossings) to encourage people to make short journeys on foot or by bike. Potential funded improvements planned for Gamston and potential new Trent walking/cycling bridge;
- Provision of public transport services (bus and rail) and infrastructure improvements to make public transport a more accessible and attractive option to existing and potential users (eg bus stop improvements, bus priority measures to make journeys more reliable, real time information);
- Effective transport management such as managing disruption caused by street works, incidents and other activities; and management of freight goods;

- Smarter choice measures such as travel planning to make people more aware of their travel choices and promotion of alternatives to single occupancy car journeys when possible;
- Introduction of a wider network of electric vehicle charging points to encourage the take-up of alternative fuel vehicles; and
- Continue to ensure air quality impacts are considered through the planning process for developments in and around the AQMAs and where necessary secure planning obligations to minimise any adverse impacts of individual developments.

The principal challenges and barriers to implementation that Rushcliffe Borough Council and its partners anticipate facing are:

- The COVID-19 pandemic may have an ongoing impact on the travel choices of the population. The need to minimise contact to reduce transmission of the virus resulted in guidance from government not to use public transport or car share (except where necessary) which may have a longer term impact on people's travel choices even when COVID-19 restrictions are lifted. This would appear to be supported by traffic statistics which show a return to pre-pandemic levels although significant numbers of people continue to work from home. It is not yet possible to determine the longer-term impact of COVID-19 on lifestyle as restrictions remain in place;
- The location of AQMA No 1 Trent Bridge, on the approaches to Trent Bridge and Lady Bay bridges and the site constraints make it difficult to remedy the problems with small scale infrastructure improvements and therefore smarter travel choice measures (such as travel planning, and marketing and promotion of alternatives to the car) are more likely to provide improvements. Measures that facilitate and encourage walking, cycling and public transport use will therefore continue to be priority actions in the foreseeable future; and
- Funding constraints may have an impact on project delivery and/or feasibility studies for infrastructure improvements.

Progress on the following measures has been slower than expected due to:

- The COVID-19 lockdowns imposed a change on the population day-to-day activities which has led to an increase in customer complaints to the Environmental Health Service. This increased workload limited our ability to progress with the revision of the AQAPs. However, in recent months work has progressed well and the draft will be issued for public consultation in the coming weeks.

Rushcliffe Borough Council anticipates that the measures stated above and in Table 2.2 will achieve continued compliance in AQMA No 1 Trent Bridge and AQMA No 1/2011 Stragglethorpe Road.

Table 2.2 – Progress on Measures to Improve Air Quality

Green indicates measures considered to most effective; **Orange** indicates partially effective and **Red** measures which have been completed or considered to be less effective.

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Traffic control and management - traffic control centre that monitors traffic movement and provides real time traffic control over many traffic signal installations	Traffic Management	UTC, Congestion management, traffic reduction	Ongoing		Nottinghamshire County Council (NCC)/Via EM Ltd/Nottingham City Council (NCiC)	NCC and NCiC revenue funding	NO	Funded		Implementation	Reduced vehicle emissions	Restrain average journey times in the morning peak to a 1% increase per year	Implementation on-going	Potential barrier: Lack of future revenue funding
2	Contingency planning, and effective event and incident management	Traffic Management	UTC, Congestion management, traffic reduction	Ongoing		NCC/Via EM/NCiC/Highways England (HE)	NCC, NCiC, HE revenue funding	NO	Funded		Implementation	Reduced vehicle emissions	Restrain average journey times in the morning peak to a 1% increase per year	Implementation on-going	
3	Co-ordination of streetworks	Traffic Management	UTC, Congestion management, traffic reduction	Ongoing		NCC/Via EM/NCiC	NCC and NCiC revenue funding	NO	Funded		Implementation	Reduced vehicle emissions	Restrain average journey times in the morning peak to a 1% increase per year	Implementation on-going	
4	Traffic signal upgrades	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2012/13		NCC/Via EM	Integrated transport block funding	NO	Funded		Completed	Reduced vehicle emissions	Restrain average journey times in the morning peak to a 1% increase per year	SCOOT/MOVA installed at signals within AQMA. A60/Bridgford Rd signals upgraded	
5	Traffic signal re-phasing	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	Ongoing		NCC/Via EM	Integrated transport block funding	NO	Funded		Implementation	Reduced vehicle emissions	Restrain average journey times in the morning peak to a 1% increase per year	Signals within AQMA rephased. 24hr monitor installed in 2016/17 will be used to further inform signal modifications.	Potential barrier: Lack of future funding
6	Real time travel information	Public Information	Other			NCC/Via EM Ltd	NCC revenue funding	NO	Funded		Implementation	Reduced vehicle emissions	Restrain average journey times in the morning peak to a 1% increase per year	Information conveyed by all forms of media (press, radio, website, social media etc.).	Potential barrier: Lack of future revenue funding
7	Parking strategy delivery • On-street parking management and control • Nottingham city workplace parking levy (WPL)	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway	2012		NCC	NCC revenue funding	NO	Funded		Implementation		Manage parking to improve journey time reliability	NCiC introduced WPL within the city in 2012 and have used funding to make passenger transport improvements in the city	

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
8	Park and ride site to the east of Nottingham	Alternatives to private vehicle use	Bus based Park & Ride			NCC	no funding source secured	NO	Not Funded		Aborted		Not known, scheme progress dependent on determining a business case for any proposal, feasibility findings and securing necessary funding	Consultants commissioned to look at potential improvements along A52 including most suitable general locations for a park & ride site	Scheme dependent on business case for any proposals, identifying appropriate site and securing funding
9	East Midlands Parkway station	Alternatives to private vehicle use	Rail based Park & Ride	2007		Network Rail/East Midlands Trains		NO	Funded		Completed		Restrain average journey times in the morning peak to a 1% increase per year		
10	Nottingham City Workplace Parking Levy (WPL)	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway	2012		NCiC		NO	Funded		Implementation		Restrain average journey times in the morning peak to a 1% increase per year	NCiC introduced WPL within the city in 2012 and have used funding to make passenger transport improvements in the city. Introduced 2012 and ongoing	
11	NCC travel plan	Promoting Travel Alternatives	Workplace Travel Planning			NCC	integrated transport block funding	NO	Funded		Implementation		Restrain average journey times in the morning peak to a 1% increase per year	Ongoing - operational for nearly 20 years	
12	Workplace travel plans	Promoting Travel Alternatives	Workplace Travel Planning			Rushcliffe BC planning/NCC	integrated transport block funding	NO	Funded		Implementation		Restrain average journey times in the morning peak to a 1% increase per year	Developed with businesses as part of planning conditions	
13	Personalised travel planning with residents	Promoting Travel Alternatives	Workplace Travel Planning	2017		NCC/AECOM	integrated transport block/Access Fund funding	NO	Funded		Implementation		Restrain average journey times in the morning peak to a 1% increase per year	Future PTP will be delivered should revenue funding sources be identified and secured for its delivery	
14	School travel plans	Promoting Travel Alternatives	School Travel Plans	2000		NCC	DfT funding	NO	Funded		Completed		Restrain average journey times in the morning peak to a 1% increase per year	STPs developed with all schools in Rushcliffe	
15	Flexible working arrangements	Promoting Travel Alternatives	Encourage / Facilitate home-working			NCC/RBC		NO	Funded		Implementation		Restrain average journey times in the morning peak to a 1% increase per year	NCC operates flexible working arrangements for all its staff	
16	Car sharing scheme	Alternatives to private vehicle use	Car & lift sharing schemes	Pre-2006		NCC		NO	Partially Funded		Implementation	1077kg (1.06t) of NOx reductions during 2020	Restrain average journey times in the morning peak to a 1% increase per year	4592 members currently registered. Implementation ongoing	
17	Annual walking and cycling promotional marketing	Promoting Travel Alternatives	Promotion of cycling			NCC	NCC	NO			Implementation		Increased cycling and walking trips	Implementation ongoing. PTP delivered during 2018 following completion of cycle route improvements. Greater Nottingham	

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	
															cycling maps published	
18	Adult and child cycle training	Promoting Travel Alternatives	Promotion of cycling			NCC	DfT	NO	Funded		Implementation		Increased cycling trips		9,383 people received cycle training in 2019/20, Implementation ongoing	
19	Walking and cycling infrastructure improvements	Promoting Travel Alternatives	Promotion of cycling	Ongoing		NCC		NO	Partially Funded		Implementation	Increased cycling and walking trips			NCC secured funding to develop and deliver West Bridgford strategic cycling network during 2017/18. D2N2 LCWIP developed. Technical analysis being undertaken to identify future county-wide priorities.	Dependant on outcome of technical analysis prioritisation
20	Web based journey planners	Public Information	Via the Internet	Ongoing		NCC		NO			Implementation	Increased walking/cycling/passenger transport trips			Web based tools included on NCC Travel Choice website	
21	Cycle hire scheme	Transport Planning and Infrastructure	Public cycle hire scheme	2017/18		NCC		NO	Funded		Implementation	Increased cycling trips				
22	Marketing and promotion of passenger transport	Promoting Travel Alternatives	Other	Ongoing		NCC/NCiC/PT operators		NO			Implementation		Increase passenger transport patronage			
23	Integrated ticketing	Transport Planning and Infrastructure	Other	2014	2015	NCC/NCiC/PT operators		NO			Implementation		Increase passenger transport patronage		Integrated ticketing strategy developed in 2014/15. New smartcard platform introduced in 2014. Robin Hood card scheme introduced in 2015	
24	Concessionary fare schemes	Transport Planning and Infrastructure	Other	Ongoing		NCC/NCiC/PT operators		NO			Implementation		Increase passenger transport patronage	Ongoing		
25	Bus service improvements	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	Ongoing		NCC/NCiC/PT operators					Implementation		Increase passenger transport patronage	Ongoing		
26	Nottingham to Lincoln rail line service improvements	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	pre 2015	2019	NCC/district councils/East Midlands Trains	NCC/district councils/DfT revenue and LGF funding	NO	Funded		Completed		increased public transport use		NCC secured funding from a number of partners to increase services and enable faster peak service. Improvements to be sought permanently as part of refranchise renewal	

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
27	Encouragement of low-emission public transport fleets	Vehicle Fleet Efficiency	Promoting Low Emission Public Transport			NCC/NCiC/PT operators	OLEV funding	NO	Funded	£1 million - £10 million	Implementation	reduced vehicle emissions			All local buses operating into Nottingham City Centre and through the AQMA will meet Euro VI standards by September 2021. Operator NCT has invested £4.7m of OLEV funding to operate gas buses along two routes through the AQMA and invested a further £12.4m to upgrade its facilities to enable running of a gas fleet. In addition, NCT has invested £1.5m in 10 new Euro VI midibuses operating on four routes through the AQMA. Operator trentbarton has invested just over £2m in 12 new euro VI buses operating on three routes in the AQMA. By September 2021, NCC will have spent 0.9m from the Clean Bus Technology Fund to retrofit older buses to achieve Euro VI equivalent and this will include 8 routes operated by several operators in the AQMA
28	Eco-Stars programme	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	2013	2015	District councils/NCC/NCiC	LSTF	NO	Partially Funded		Completed	reduced vehicle emissions		Introduced 2013 but funding (LSTF) expired in 2015	
29	Nottingham Go-Ultra Low City bid	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2016	2021	NCiC/NCC	OLEV funding	NO	Funded	£1 million - £10 million	Implementation	reduced vehicle emissions	Ongoing take-up of cleaner vehicles	£6.1m funding secured for 2016-2021	
30	Development of a more up-to-date guidance document	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2020		RBC	None	NO	Not Funded		Planning			Guidance Document available to download from the Rushcliffe Website to assist Developers is dated. Update planned to reflect guidance provided in EMAQN document	EMAQN Air Quality Emissions and Mitigation: Guidance for Developers 2019
31	A6514 Ring Road improvements	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2013	2016	NCiC		NO	Funded	> £10 million	Completed		Restrain average journey times in the morning peak to a 1% increase per year	£16.2m package of measures completed in 2016	

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
32	Environmental Strategy • Development and delivery of NCC Environmental Strategy • Conversion of NCC fleet to low emission vehicles • Introduction of wider network of EV charging points to encourage the take-up of alternative fuel vehicles	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2020		NCC		NO	Funded	£1 million - £10 million		reduced vehicle emission	Increase in EV vehicles; No. of EV charge points introduced in the borough	£6.1m funding secured by NCC and NCiC (Nottm Go Ultra Low) for 2016-2020; Dependent on strategy and available funding.	New NCC Environmental Strategy being developed. Review of on-street and rural EV charging infrastructure to be undertaken during 2020/21
33	Co-ordination of strategy - environmental, development control and local transport strategy	Transport Planning and Infrastructure	Other			NCC/RBC		NO	Not Funded		Implementation	reduced vehicle emissions		Review of Nottinghamshire Clean Air Strategy undertaken during 2019 and revised strategy adopted in June 2019	Ensuring existing strategies and policies complement and enable actions to improve air quality
34	Introduction of wider network of EV charging points to encourage the take-up of alternative fuel vehicles	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2020	2022	NCC		NO			Implementation	No. of EV charge points introduced in the borough		Implementation ongoing. Review of on-street and rural EV charging infrastructure currently being undertaken and will be completed during 2021/22	
35	A52: Proposals to ban the U-turn west to west and reconfigure the signals to improve efficiency, have been developed further and initial consultation with local stakeholders has been undertaken	Traffic Management	UTC, Congestion management, traffic reduction	2017	2022	HE		NO	Funded		Implementation	reduced vehicle emissions		Part of A52 Nottingham Junctions programme	
36	Ensure sustainable development on sites within Borough that may impact on AQMA	Policy Guidance and Development Control	Other policy			RBC		NO	Not Funded		Implementation	No. of AQ impact assessments related to AQMA		Ensuring AQ is at the heart of planning decision. Sustain compliance & reduce NO ₂ concentrations to well below the AQS objective (in the region of 10%)	
37	Working on a regional basis with other Local Authorities & partners to develop area-wide strategies and guidance as required	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality			RBC		NO	Not Funded		Implementation	Development of regional strategies, policies and guidance as required		Nottinghamshire Air Quality Strategy published 2020	RBC will continue to work with other authorities and relevant partners on a regional basis. RBC are a member of the East Midlands Air Quality Network

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
38	Raise awareness of the wider government initiatives to reduce air emissions eg ban on the sale of house coal and wet wood	Policy Guidance and Development Control	Low Emissions Strategy	2021		RBC		NO	Not Funded		Planning	Reduction in complaints relating to domestic burning		Promote awareness via focussed campaigns using social media outlets	
39	Widen access to staff cycle purchase scheme	Promoting Travel Alternatives	Promotion of cycling	2020		RBC		NO			Implementation	Reduced vehicle emissions			
40	Investigate potential replacement/upgrading of RBC refuse trucks & vans with ULEV, Biogas, hydrogen fuelled vehicles	Vehicle Fleet Efficiency	Vehicle Retrofitting programmes	2021		RBC		NO			Planning	Reduced vehicle emissions			Aligned with RBC Carbon Management Plan
41	Introduction of wider network of off-street EV charging points to encourage take up of alternative fuel vehicles	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2020		RBC/NCiC	OZEV	NO	Funded	£1 million - £10 million	Implementation	Reduced vehicle emissions		RBC working in partnership with NCiC to develop the CP infrastructure along the D2N2 corridor –funding via Transforming Cities Fund	
42	Use of planning conditions for mitigation; inc. travel plans etc. and to ensure for planning applications within AQMAs that are introducing sensitive receptors to the area that air quality assessments are required, and developments with vulnerable end users that the assessment takes account of WHO guidelines on air quality and PM2.5	Policy Guidance and Development Control	Other policy			RBC		NO			Implementation		No. of travel plans required as planning conditions and number of AQ assessments submitted with mitigation measures put in place		

Green indicates measures considered to most effective; Orange indicates partially effective and Red measures which have been completed or considered to be less effective.

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.

Within towns and cities, road traffic is an important source of PM_{2.5} emissions and consequently roadside levels tend to be much higher than those in background locations. Industrial emissions are also a source as is domestic burning which can also significantly increase levels of indoor air pollution.

Rushcliffe Borough Council does not undertake monitoring for particulate matter however an indication of the background concentrations of PM_{2.5} can be obtained from the current Defra background mapping resource available via UK-AIR. The background data provides estimated concentrations of PM_{2.5} across the Borough for the current 2018 reference year and indicates concentrations range from 8µg m⁻³ to 10.5µg m⁻³. Across the wider Midlands region estimated concentrations of PM_{2.5} range from 5.5µg m⁻³ to 12.5µg m⁻³.

The Public Health England Public Health Outcomes Framework indicator D01 provides estimates of local mortality burdens associated with particulate air pollution. This data, presented for each local authority, is based on the research evidence of mortality risk and modelled levels of background air pollution to which populations are exposed at a local level. The attributable fraction (ie the proportion of deaths estimated as due to long-term exposure to anthropogenic particulate PM_{2.5} air pollution) for Rushcliffe for 2019¹⁰ was 5.33% which is in line with the regional level of 5.34% and the national level of 5.13%.

The Nottingham and Nottinghamshire Air Quality Strategy 2020-2030 aims are (1) to reduce average concentrations of NO₂ and particulate matter across the County; and (2) to reduce the estimated proportion of disease and deaths attributable to air pollution.

Rushcliffe Borough Council is taking the following measures to address PM_{2.5}:

¹⁰ Public Health Outcomes Framework At a Glance Summary – Rushcliffe (2019) [Public Health Outcomes Framework - at a glance summary \(phe.org.uk\)](https://publichealthoutcomes.org.uk/)

- Rushcliffe Borough Council continues to work with our transport partners (Nottinghamshire County Council and Highways England) and other stakeholders to reduce transport impacts as a whole. This has benefit not only for NO₂ but all emissions from transport sources, including PM_{2.5};
- Planning applications for commercial wood/biomass burning plants are screened to determine whether an air quality assessment is required. One of the key considerations within an assessment will be emissions of particulate matter;
- We will continue to work with PHE in considering the data on the Rushcliffe population in relation to respiratory illness in order to determine whether there is a correlation between the areas of high prevalence respiratory illnesses and the AQMAs. The principal application used is the Strategic Health Asset Planning and Evaluation (SHAPE) tool which is a web-enabled evidence-based application which informs and supports strategic planning of services and physical assets across the health economy;
- Within the Borough the areas of Edwalton and West Bridgford have been declared Smoke Control Areas. The Council works to ensure only exempt appliances are used and authorised fuels are burnt in these areas;
- As awareness of the health effects of exposure to particulate matter increases within the population, we anticipate an increase in enquiries/complaints in relation to local air quality, including domestic burning and bonfires. We will consider running focussed campaigns to increase awareness and help residents to make informed choices.

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

This section sets out the monitoring undertaken within 2020 by Rushcliffe Borough Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2016 and 2020 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Rushcliffe Borough Council undertook automatic (continuous) monitoring at two sites during 2020. The continuous monitors are both located within AQMAs. Table A.1 in Appendix A shows the details of the automatic monitoring sites. Automatic monitoring results are available through the UK-Air website.

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

3.1.2 Non-Automatic Monitoring Sites

Rushcliffe Borough Council undertook non-automatic (ie passive) monitoring of NO₂ at twenty-seven sites during 2020. Table A.2 in Appendix A presents the details of the non-automatic sites.

As part of the ongoing review and management of the local air quality monitoring network nine locations (HH, PC, SH, BH, A52 HHF2, A52 HHF3, Trent B2, Trent B3 and Monitor) were removed from the 2019 network. Several locations (HH, PC, SH and BH) had consistently reported NO₂ annual mean concentrations below the air quality objective. Other locations (A52 HHF2, A52 HHF3, Trent B2, Trent B3 and Monitor) were duplicate or triplicate tubes located alongside a continuous monitor. These were originally installed with a view to engaging in co-location studies however as this had not happened the duplicate and triplicate tubes were no longer deemed necessary. At each of the two existing continuous monitor locations at least one diffusion tube has been retained.

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 (eg annualisation and/or distance correction), are included in Appendix C.

3.2 Individual Pollutants

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

3.1.3 Nitrogen Dioxide (NO₂)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40µg m⁻³. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (ie 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. It was not necessary to undertake distance correction as the NO₂ annual mean concentration was below 36µg m⁻³ at all locations where this may have been required. There was no monitoring data recorded for April 2020 due to the COVID-19 pandemic and the implementation of the national lockdown limiting our ability to install and remove the diffusion tubes within the required time period. For all other months in 2020 tubes were installed in accordance with the 2020 diffusion tube calendar. Annualisation was required at one location (1HS) as data capture fell below 75%.

Table A.5 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past five years with the air quality objective of 200µg m⁻³, not to be exceeded more than 18 times per year. There were no exceedances of the hourly air quality objective at either continuous monitoring site which is consistent with the trend for the past four years.

The data presented in Table A3 and Table A4 shows the NO₂ annual mean concentration did not exceed the air quality objective at any location during 2020. It can be seen from Figure A.1 the NO₂ annual mean concentration was lower in 2020 at all locations across the network than in any of the previous five years.

In AQMA No 1 Trent Bridge the NO₂ annual mean concentration was 27µg m⁻³, a reduction of 27% when compared to 2019 data. The maximum hourly mean was 136µg m⁻³ so there were no exceedances of the NO₂ hourly limit of 200µg m⁻³.

In AQMA No 1/2011 Stragglethorpe Road the NO₂ annual mean concentration was 31µg m⁻³, a reduction of 24% when compared to 2019 data. The maximum hourly mean was 128µg m⁻³ so there were no exceedances of the NO₂ hourly limit of 200µg m⁻³.

As indicated previously the 2020 data has been impacted by the COVID-19 pandemic and associated lockdowns therefore it is difficult to draw robust conclusions from the dataset for this year. It remains to be seen whether the lifestyle changes required to deal with the pandemic will have a long-term impact on population behaviour eg if significant numbers of people continue to work from home this may reduce traffic congestion at peak times. However, the pandemic also resulted in a significant drop in the number of people using public transport which is may lead to an increase in road traffic.

Rushcliffe Borough Council will continue to monitor in both AQMAs. In AQMA No 1 Trent Bridge the NO₂ annual mean concentration has been below the air quality objective for a number of years. We will consider revocation of the AQMA within the next 1-2 years should monitoring results demonstrate continued compliance and achieve concentrations in the region of 10% below the objective.

In AQMA No 1/2011 Stragglethorpe Road NO₂ annual mean concentrations have decreased significantly since declaration and have been at or close to the objective over the past few years. We will continue to monitor within the AQMA and review the data annually.

3.1.4 Particulate Matter (PM₁₀)

Rushcliffe Borough Council does not monitor Particulate Matter (PM₁₀).

3.1.5 Particulate Matter (PM_{2.5})

Rushcliffe Borough Council does not monitor Particulate Matter (PM_{2.5}).

3.1.6 Sulphur Dioxide (SO₂)

Rushcliffe Borough Council does not monitor sulphur dioxide (SO₂).

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
Trent Bridge	Loughborough Road/Trent Bridge, West Bridgford	Roadside	458256	338156	NO ₂	YES (AQMA No1 Trent Bridge)	Chemiluminescent	0	3.75	1.5
Holme House	Holme House, A52 Stragglethorpe junction, Radcliffe on Trent	Roadside	463005	338208	NO ₂	YES (AQMA No1/2011 Stragglethorpe Road)	Chemiluminescent	0	7.5	1.5

Notes:

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

(2) N/A if not applicable

Table A.2 – Details of Non-Automatic Monitoring Sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
WLR/2	39/41 Wilford Lane	Roadside	457873	337426	NO ₂	NO	0.0	9.0	No	2.2
A52/SA	A52 South Ave, Radcliffe on Trent	Roadside	465929	339543	NO ₂	NO	0.0	4.2	No	2.9
CL	Cloverlands	Roadside	457223	335033	NO ₂	NO	0.0	16.3	No	2.5
HR	Hampton Road	Urban Background	458326	336714	NO ₂	NO	0.0	5.4	No	2.1
LR	Loughborough Road (Res)	Roadside	458126	337727	NO ₂	YES (AQMA No 1 Trent Bridge)	0.0	8.9	No	1.9
37RR	Radcliffe Road	Roadside	458457	338215	NO ₂	NO	-3.3	13.8	No	4.0
A52/RT	Radcliffe A52	Roadside	464644	338730	NO ₂	NO	6.5	3.3	No	2.0
RR	Radcliffe Road	Roadside	458284	338150	NO ₂	YES (AQMA No 1 Trent Bridge)	0.0	4.0	No	2.3
TBLA	Trent Boulevard A	Roadside	458752	338278	NO ₂	YES (AQMA No 1 Trent Bridge)	0.0	7.1	No	2.0
TBLB	Trent Boulevard B	Roadside	458756	338267	NO ₂	YES (AQMA No 1 Trent Bridge)	0.0	3.4	No	2.4
TBI	Trent Bridge Inn	Roadside	458274	338117	NO ₂	YES (AQMA No 1 Trent Bridge)	0.0	6.6	No	2.6

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)
WL3	Wilford Lane 3	Roadside	458134	337581	NO ₂	YES (AQMA No 1 Trent Bridge)	5.2	2.1	No	2.9
WW	Windyways	Roadside	457651	334840	NO ₂	NO	0.0	12.0	No	1.8
A52/HHF1	A52 Home House(façade) Stragglethorpe	Roadside	463011	338213	NO ₂	YES (AQMA No1/2011 Stragglethorpe Road)	0.0	6.0	Yes	2.5
A52/HHF4	A52 Home House(façade) Stragglethorpe	Roadside	463040	338232	NO ₂	YES (AQMA No1/2011 Stragglethorpe Road)	0.0	6.0	Yes	2.5
15KHG	15 Kirkhill Gardens	Roadside	470202	340092	NO ₂	NO	2.0	0.5	No	2.5
RuRo	Rugby Road	Roadside	458132	336462	NO ₂	NO	3.5	2.0	No	2.5
Trent B1	Trent Buildings	Roadside	458249	338167	NO ₂	YES (AQMA No 1 Trent Bridge)	0.0	3.6	Yes	2.5
2LA	2A Long Acre, Bingham	Roadside	470248	339834	NO ₂	NO	0.0	1.2	No	2.6
sains	Sainsburys Wilford Road, Ruddington	Roadside	457303	333214	NO ₂	NO	0.0	2.2	No	2.6
1HS	1 High Street, Ruddington	Kerbside	457323	333124	NO ₂	NO	-1.1	2.8	No	2.6
Mag 1	Magnolia 1, Edwalton	Kerbside	459366	334244	NO ₂	NO	12.9	0.9	No	2.6
Mag2	Magnolia 2, Edwalton	Kerbside	459324	334227	NO ₂	NO	3.9	1.9	No	2.6

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)
LR1	Centenary House 1	Kerbside	458100	337543	NO ₂	YES (AQMA No 1 Trent Bridge)	9.0	2.4	No	2.6
WL1	Centenary House 2	Kerbside	458055	337566	NO ₂	YES (AQMA No 1 Trent Bridge)	7.0	2.0	No	2.6
NK1	Nottingham Knight	Kerbside	457612	334859	NO ₂	NO	10.8	2.3	No	2.1
TSQ	Davis Road / Tudor SQ	Kerbside	458977	337434	NO ₂	NO	11.0	1.3	No	2.6

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results: Automatic Monitoring (µg m⁻³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
Trent Bridge	458256	338156	Roadside		95.4		37	36	37	27
A52 Holme House	463005	338208	Roadside		99.5	41	38	39	41	31

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

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

Notes:

The annual mean concentrations are presented as µg m⁻³.

Exceedances of the NO₂ annual mean objective of 40µg m⁻³ are shown in **bold**.

All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Table A.4 – Annual Mean NO₂ Monitoring Results: Non-Automatic Monitoring (µg 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 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
WLR/2	457873	337426	Roadside	N/A	92.3	26.0	23.0	26.0	26.3	17.3
A52/SA	465929	339543	Roadside	N/A	92.3	32.0	29.0	29.0	27.6	19.8
CL	457223	335033	Roadside	N/A	92.3	29.0	30.0	28.0	28.5	20.5
HR	458326	336714	Urban Background	N/A	92.3	19.0	17.0	15.0	21.0	14.2
LR	458126	337727	Roadside	N/A	92.3	29.0	26.0	28.0	27.0	21.4
37RR	458457	338215	Roadside	N/A	76.9	31.0	27.0	24.0	25.7	17.0
A52/RT	464644	338730	Roadside	N/A	82.7	33.0	32.0	28.0	27.3	21.5
RR	458284	338150	Roadside	N/A	82.7	33.0	30.0	31.0	29.8	23.9
TBLA	458752	338278	Roadside	N/A	92.3	32.0	33.0	31.0	31.4	23.4
TBLB	458756	338267	Roadside	N/A	92.3	37.0	32.0	32.0	32.7	23.2
TBI	458274	338117	Roadside	N/A	92.3	42.0	40.0	40.0	39.3	28.1
WL3	458134	337581	Roadside	N/A	92.3	37.0	37.0	34.0	33.8	25.4
WW	457651	334840	Roadside	N/A	92.3	35.0	34.0	31.0	36.2	27.6

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
A52/HHF1	463011	338213	Roadside	N/A	92.3	38.0	37.0	38.0	37.4	24.3
A52/HHF4	463040	338232	Roadside	N/A	92.3	40.0	41.0	39.0	38.1	26.9
15KHG	470202	340092	Roadside	N/A	92.3	27.0	26.0	25.0	23.8	17.8
RuRo	458132	336462	Roadside	N/A	92.3	30.0	29.0	29.0	28.4	19.3
Trent B1	458249	338167	Roadside	N/A	92.3	38.0	37.0	36.0	37.3	26.6
2LA	470248	339834	Roadside	N/A	92.3	37.0	36.0	31.0	30.9	23.3
sains	457303	333214	Roadside	N/A	92.3	33.0	30.0	31.0	30.4	21.1
1HS	457323	333124	Kerbside	N/A	67.3	30.0	28.0	27.0	25.9	19.8
Mag 1	459366	334244	Kerbside	N/A	92.3				28.3	20.3
Mag2	459324	334227	Kerbside	N/A	92.3				28.3	19.0
LR1	458100	337543	Kerbside	N/A	75.0				30.3	25.2
WL1	458055	337566	Kerbside	N/A	92.3				32.6	25.5
NK1	457612	334859	Kerbside	N/A	92.3				40.1	28.1
TSQ	458977	337434	Kerbside	N/A	92.3				24.1	15.6

- ☒ **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), ie prior to any fall-off with distance correction.**

Notes:

The annual mean concentrations are presented as $\mu\text{g m}^{-3}$.

Exceedances of the NO_2 annual mean objective of $40 \mu\text{g m}^{-3}$ are shown in **bold**.

NO_2 annual means exceeding $60 \mu\text{g m}^{-3}$, 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 (eg, if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Figure A.1 – Trends in Annual Mean NO₂ Concentrations Across All Diffusion Tube Locations between 2016 and 2020

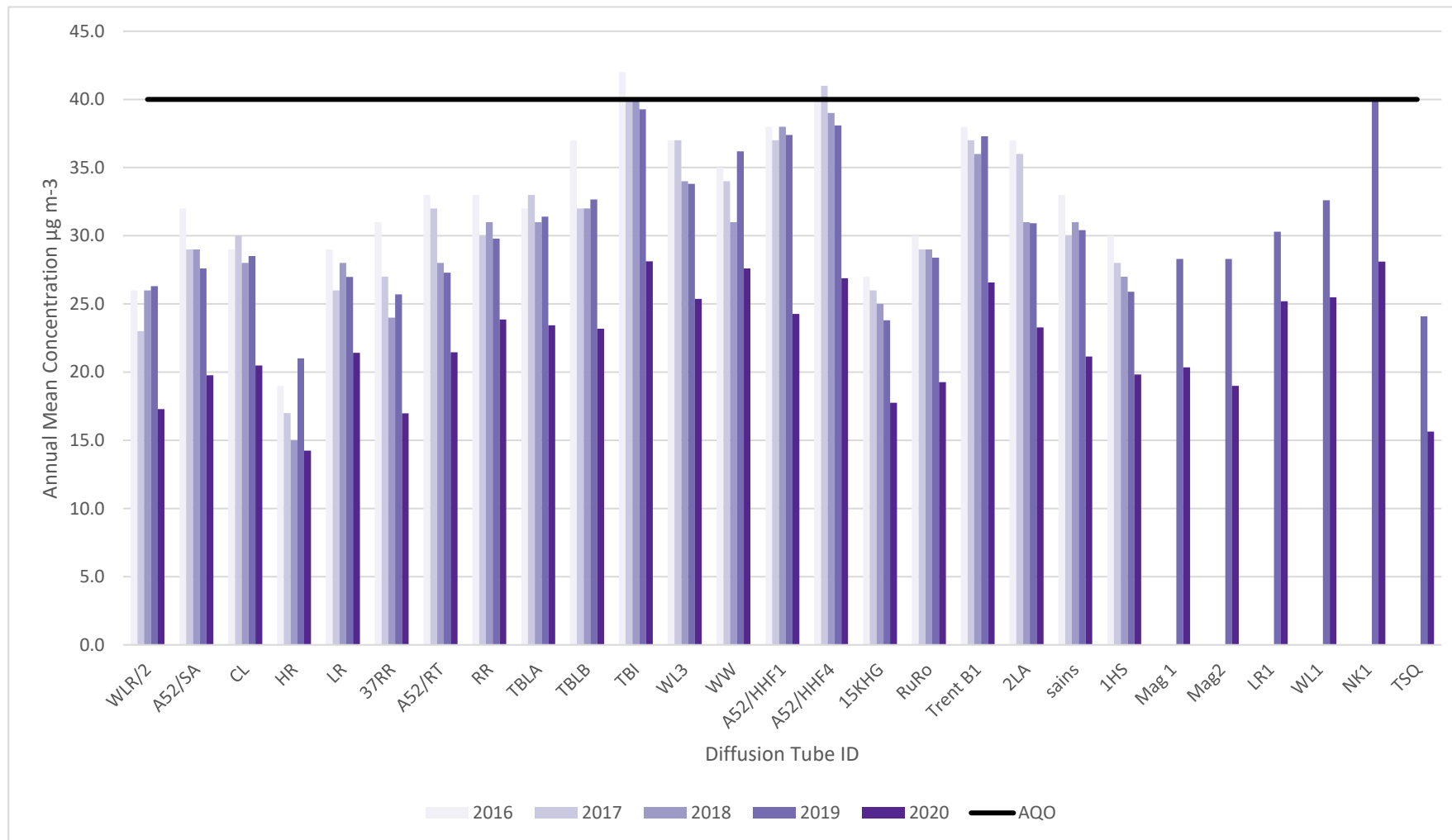


Figure A.2 – Trends in Annual Mean NO₂ Concentrations Across Diffusion Tube Locations in AQMA No 1 Trent Bridge between 2016 and 2020

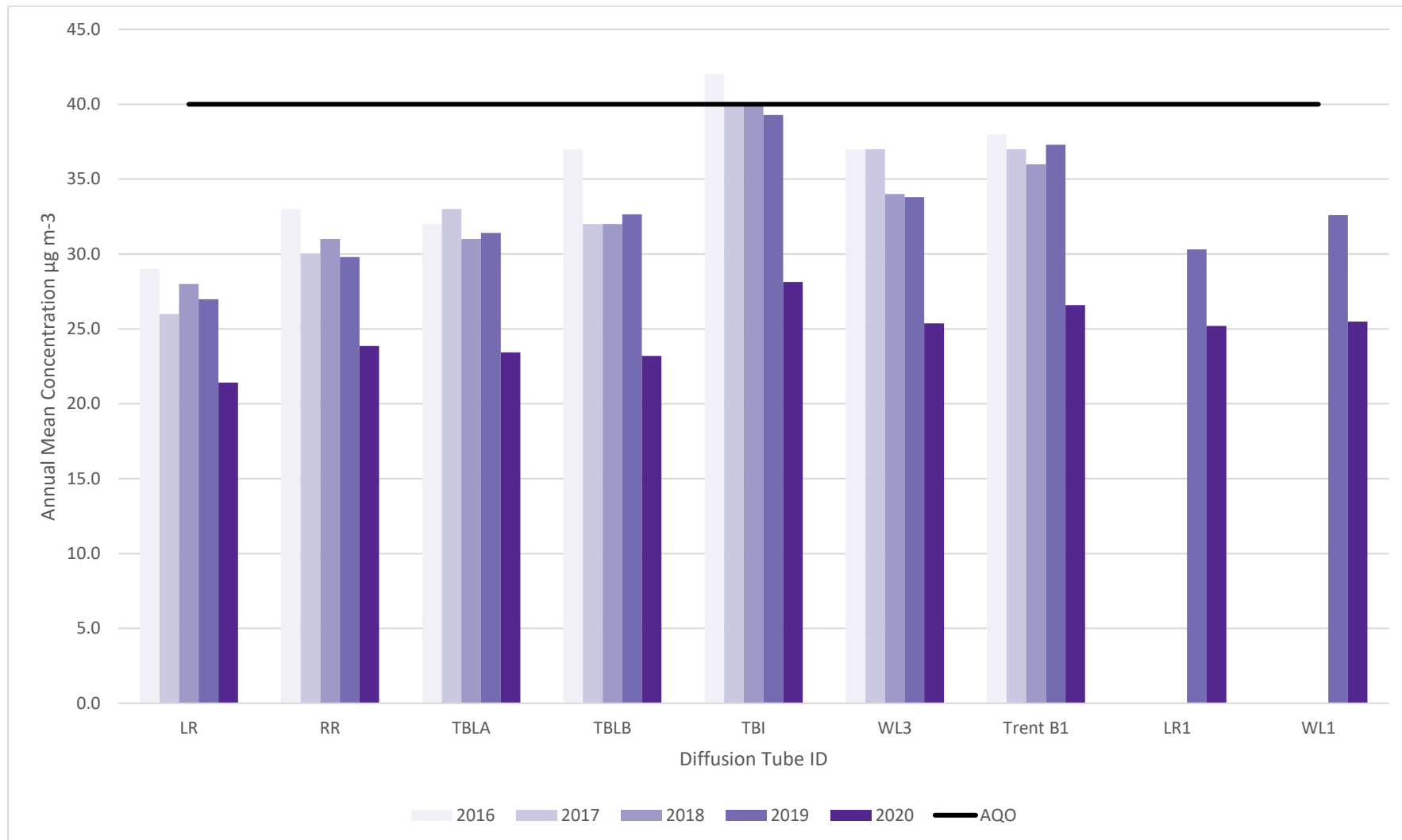


Figure A.3 – Trends in Annual Mean NO₂ Concentrations Across Diffusion Tube Locations in AQMA No 1/2011 Stragglethorpe Road between 2016 and 2020

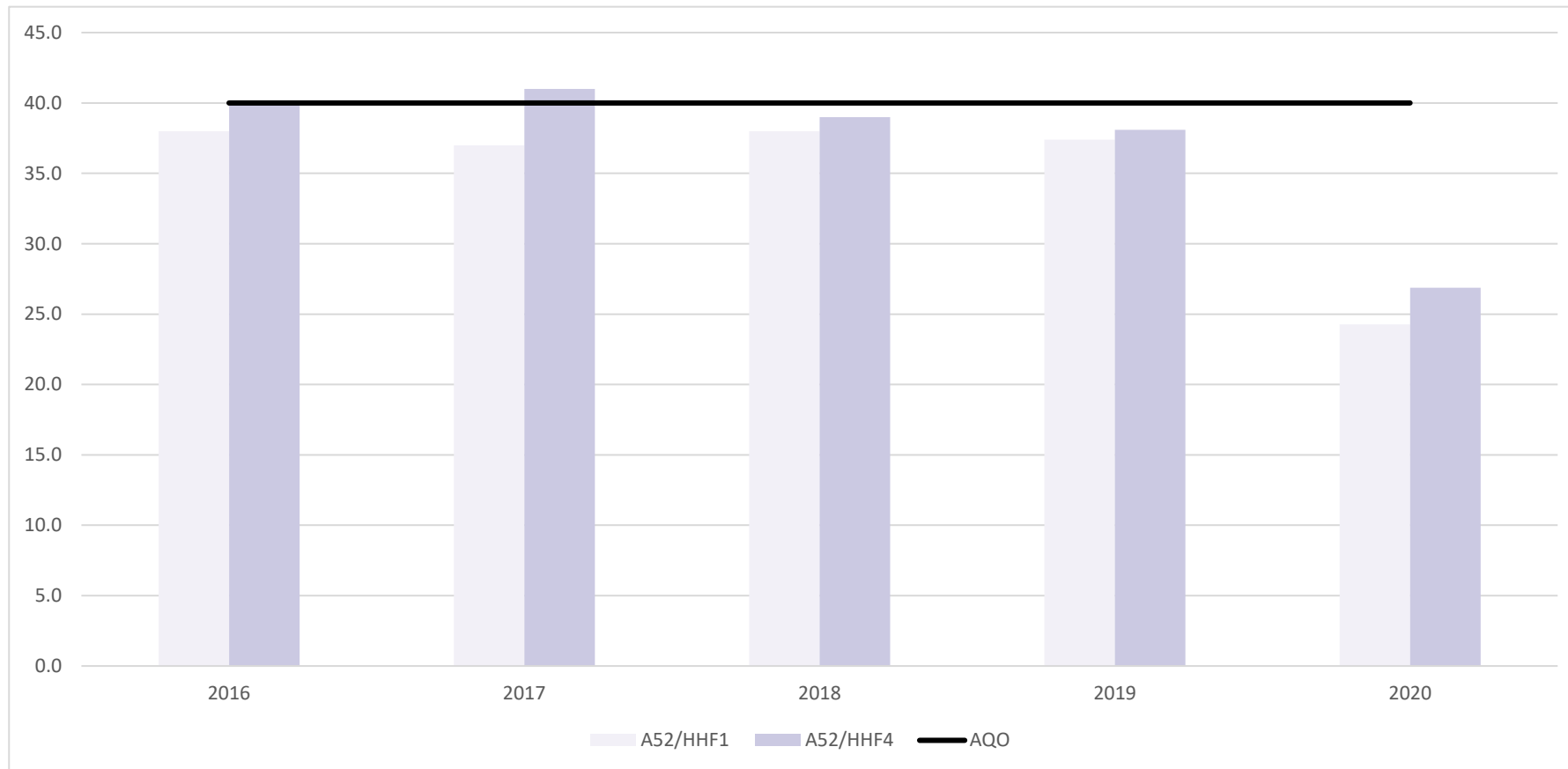


Table A.5 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg m⁻³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2020 (%) ⁽²⁾	2016	2017	2018	2019	2020
Trent Bridge	458256	338156	Roadside		95.4		0	0	0	0
A52 Holme House	463005	338208	Roadside		99.5	0	0	0	0	0

Notes:

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

Exceedances of the NO₂ 1-hour mean objective (200µg m⁻³ not to be exceeded more than 18 times/year) are shown in **bold**.

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

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

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

Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1 – NO₂ 2020 Diffusion Tube Results (µg 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: Annualised and Bias Adjusted (0.81)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
WLR/2	457873	337426	29.9	24.3	22.7		12.6	15.2	13.6	18.1	21.6	22.7	27.9	26.2	21.3	17.3	-	
A52/S A	465929	339543	32.2	25.8	26.4		16.4	20.8	16.4	21.6	24.6	24.3	31.6	28.3	24.4	19.8	-	
CL	457223	335033	42.8	30.5	24.2		12.5	15.7	15.7	18.0	22.4	27.7	37.9	30.8	25.3	20.5	-	
HR	458326	336714	28.8	20.9	18.0		9.4	9.2	11.0	9.5	16.2	19.2	25.6	25.6	17.6	14.2	-	
LR	458126	337727	35.3	30.4	27.3		15.3	20.9	17.8	22.4	27.2	27.0	35.6	31.6	26.4	21.4	-	
37RR	458457	338215			25.0		12.4	15.0	14.4	17.7	21.2	24.1	31.6	27.1	21.0	17.0	-	
A52/R T	464644	338730	32.8	26.1	24.9			23.3	21.7	24.1	24.7	25.7	33.0	28.8	26.5	21.5	-	
RR	458284	338150	39.7	31.6	29.7		19.5	22.8	18.9		29.6	30.0	36.2	36.6	29.5	23.9	-	
TBLA	458752	338278	41.0	37.3	27.9		20.5	21.5	21.4	24.3	30.0	29.2	35.3	30.0	28.9	23.4	-	
TBLB	458756	338267	37.7	33.0	29.7		15.9	26.2	22.1	22.5	31.4	30.4	33.7	32.5	28.6	23.2	-	
TBI	458274	338117	50.3	42.7	35.8		20.5	25.0	23.2	31.2	28.5	37.3	46.8	40.6	34.7	28.1	-	
WL3	458134	337581	51.7	38.0	31.8		16.8	21.2	21.1	26.0	30.8	33.7	35.8	37.7	31.3	25.4	-	
WW	457651	334840	53.7	34.8	34.6		19.9	30.2	19.8	32.5	31.0	33.6	43.2	41.5	34.1	27.6	-	
A52/H HF1	463011	338213	38.8	31.5	33.3		21.8	13.1	22.1	35.0	32.5	34.7	34.2	32.7	30.0	24.3	-	
A52/H HF4	463040	338232	47.4	39.2	31.8		20.2	26.8	30.2	32.1	34.6	34.4	35.6	32.7	33.2	26.9	-	
15KH G	470202	340092	34.0	26.8	22.9		13.3	17.9	10.9	19.1	20.6	21.7	27.7	26.2	21.9	17.8	-	
RuRo	458132	336462	37.3	29.0	25.4		14.6	18.9	17.5	20.1	10.8	23.3	34.2	30.5	23.8	19.3	-	
Trent B1	458249	338167	41.2	32.8	39.6		20.5	27.5	20.3	32.5	33.9	34.4	40.7	37.6	32.8	26.6	-	

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 (0.81)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
2LA	470248	339834	43.8	36.4	37.0		14.1	20.1	19.0	23.6	27.0	27.7	35.8	31.8	28.7	23.3	-	
sains	457303	333214	33.4	22.9	30.6		18.3	26.2	18.1	28.8	27.5	28.5	35.7	17.2	26.1	21.1	-	
1HS	457323	333124	35.4	24.3	25.7		15.1	20.2	17.5	23.1		25.1			23.3	19.8	21.1	
Mag 1	459366	334244	38.9	29.0	22.9		12.7	19.7	17.5	20.6	24.3	25.6	35.0	30.1	25.1	20.3	-	
Mag2	459324	334227	34.5	27.6	22.9		13.1	18.8	15.8	19.8	23.1	22.8	33.3	26.4	23.5	19.0	-	
LR1	458100	337543	39.2	36.2	32.4		18,56		18.6	26.5	28.5	28.3	36.9	33.4	31.1	25.2	-	
WL1	458055	337566	44.5	37.7	31.1		18.8	28.3	21.0	31.6	30.1	32.9	39.3	30.9	31.5	25.5	-	
NK1	457612	334859	52.8	39.8	32.1		19.5	29.8	23.4	33.5	32.2	34.9	46.9	36.7	34.7	28.1	-	
TSQ	458977	337434	28.8	23.3	19.9		10.5	13.6	12.1	14.8	19.4	19.0	25.5	25.5	19.3	15.6	-	

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

Rushcliffe 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 objective of 40µg m⁻³ are shown in **bold**.

NO₂ annual means exceeding 60µg m⁻³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Rushcliffe Borough Council During 2020

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

Additional Air Quality Works Undertaken by Rushcliffe Borough Council During 2020

Rushcliffe Borough Council has not completed any additional works within the reporting year of 2020.

QA/QC of Diffusion Tube Monitoring

All monitoring and data management is undertaken by fully trained in-house employees who have several years' experience in air quality monitoring and data management. Any new personnel undertake appropriate supervised training in line with the Service's competency scheme prior to any unsupervised monitoring, calibration or data management. Currently two personnel are trained and competent to undertake such work.

The location of the diffusion tube monitoring sites is reviewed periodically (at least annually). Locations may be removed where for example data indicates annual mean concentrations are consistently well below the Air Quality Objective; and new locations may be added where potential new sources have been identified or concerns have been raised by the public.

Nitrogen Dioxide Diffusion Tube Monitoring

Rushcliffe Borough Council use Gradko diffusion tubes prepared using 20% Triethanolamine (TEA) in water to measure nitrogen dioxide at a number of sites across the Borough. The diffusion tubes are stored in an airtight bag in a refrigerator upon receipt in the post and are used within 6 weeks of the preparation date displayed on the label.

Tube batches are exposed at selected sites to the atmosphere for approximately 4 weeks with the changeover date aiming to be +/-one day of the published diffusion tube change over date for the month to allow comparison with other Local Authority studies if necessary. All tubes are mounted using spacer brackets and grommets supplied by Gradko.

Each tube is labelled with a bar code and unique identification number. Each batch is supplied with a data collection form to record the location, date and time each tube is exposed in that period. The exposure period is calculated using an Excel spreadsheet and in addition Gradko recheck the calculated exposure period for each tube on receipt at the laboratory.

On the day of collection, the tubes are sent in an airtight bag to Gradko International Limited for analysis, together with a control blank that is stored unexposed in the sample fridge. The diffusion tubes are analysed within the scope of Gradko International Limited Laboratory Quality Procedures utilising in-house Laboratory Method GLM7. Gradko is a UKAS accredited laboratory and undertakes diffusion tube monitoring and analyses on the same basis for a number of other local authorities and environmental consultants. All local authorities in the Nottinghamshire Pollution Working Group use Gradko for their diffusion tube monitoring and analyses.

Nitrogen dioxide absorbed as nitrite by TEA is determined by spectrophotometric measurement at 540nanometres. Nitrite reacts with the added reagent to form a reddish-purple azo dye and the optical density of this complex is measured using Camspec UV/Visible Spectrophotometer. The concentrations of nitrogen dioxide are then calculated from a pre-calibrated response factor and exposure times. The values are blank corrected using the blank 'control' diffusion tube provided by Rushcliffe Borough Council.

The accuracy of the measurements made by Gradko are monitored by participation in an external laboratory measurement proficiency scheme, the Workplace Analysis Scheme for Proficiency (WASP), implemented by the Health and Safety Laboratory in Sheffield. The results of the most recent WASP analysis are available [LAQM - Diffusion Tube QA/QC Framework](#).

Data Ratification

All diffusion tube data is checked on a monthly basis to identify any spurious data and compared with other local monitoring sites to further identify any suspect data.

In 2020 monitoring was completed in adherence with the 2020 Diffusion Tube Monitoring Calendar with the exception of one month (April) when tubes were not exposed due to the COVID-19 lockdown which came into force at the end of March 2020. Therefore, there is no data available for April 2020 at any of the diffusion tube monitoring sites. Monitoring continued in accordance with the 2020 Diffusion Tube Monitoring Calendar from May onwards.

Diffusion Tube Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. Therefore, based on this criteria annualisation was required for one diffusion tube location (1HS) which had 8 months of data (66% data capture) for 2020. Annualisation was undertaken using the Diffusion Tube Data Processing Tool. The nearest continuous background site were Nottingham Centre (Defra UK-AIR ID: UKA00274), Leicester University (Defra UK-AIR ID: UKA00573) and Burton-on-Trent Horninglow (Defra UK-AIR ID: UKA00652) each of which had data capture greater than 85% for 2020. The annualisation tool calculated an average annualization factor of 1.05 from the data for the three continuous background sites which was used to adjust the raw data simple annual mean for location 1HS.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2020 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO₂ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Whilst we had the option of using either a local factor derived from co-location studies with the NO_x analyser we have used the national bias adjustment factor as

- The co-location sites are not typical of the locations of the diffusion tube study; and
- The national bias adjustment factor has been used in previous Annual Status Reports. Continuing to use this factor will provide a consistent approach to bias adjustment year on year.

Rushcliffe Borough Council have applied a national bias adjustment factor of **0.81** to the 2020 monitoring data. This was derived from the national database of bias factors (Database_Diffusion_Tube_Bias_Factors_v03_21 v2) for Gradko tubes, 20% TEA in water and based on 18 studies. A summary of bias adjustment factors used by Rushcliffe Borough Council over the past five years is presented in Table C.1.

A comparison of the national bias adjustment factor with the local adjustment factor (based on two co-location sites) indicated the local adjustment factor was slightly higher at 0.93. As the raw diffusion tube data was well below the air quality objective of $40\mu\text{g m}^{-3}$ the selection of the national factor over the local factor has no significant impact on the overall findings for 2020.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	National	03/21 v2	0.81
2019	National	03/20	0.93
2018	National	03/19	0.93
2017	National	03/18	0.89
2016	National	06/17	0.92

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.

Distance correction should be considered at any monitoring site where the annual mean concentration is greater than $36\mu\text{g m}^{-3}$ and the monitoring site is not located at a point of relevant exposure (taking the limitations of the calculator into account). No diffusion tube NO₂ monitoring locations within Rushcliffe Borough Council required distance correction during 2020 as the annual mean concentration was below $36\mu\text{g m}^{-3}$ for the two sites not representative of exposure (37RR and 1HS).

QA/QC of Automatic Monitoring

The NO₂ continuous monitor within AQMA No 1 Trent Bridge is located at the junction of Radcliffe Road and Loughborough Road, West Bridgford and is a permanent site. It was installed at this location in 2017 and is a ML9841B single chamber chemiluminescence analyser and is approved by TUV, USEPA and NETCEN. Within AQMA No 1/2011 Stragglethorpe Road a chemiluminescence analyser was installed adjacent to the dwelling façade in a Kaizen enclosure in early 2014.

The analysers have a resolution of 0.001ppm and a reported lower detection limit of <0.5ppb. The linearity error of the analyser is +/-1% of the full scale (from best line fit), and the precision is 0.5ppb or 1% of concentration reading (whichever is greater).

Instrument Checks and Calibration

Daily automated calibration: Zero air is generated by passing air through the scrubbers and the reaction cell. Span gas is generated by a permeation tube and passed to the reaction chamber to give the span calibration response. The daily automatic calibrations are used to check the instrument performance and drift.

Analyser Inspection and Manual Calibration: The analysers are covered by an annual service and maintenance contract to include calibration checks, flow and leak checks, cleaning of components, analyser diagnostic checks, replacement of faulty components and consumables and fault call-out.

Manual calibration checks are carried out by Rushcliffe Borough Council staff on a fortnightly basis using scrubbed zero air derived from the integrated scrubber column and a certified NO/NO_x calibration gas is supplied by BOC gases. The BOC gas is changed when the certification expires. The analyser is taken out of service and the inlet filter changed prior to connecting the calibration gases. The zero air and NO/NO_x gases are run through the analyser and the response times noted together with the instrument gain factor. The output of the analyser (eg the gain) is only reset or altered following equipment service or repair or if drift occurs necessitating a change of the gain setting. The calibration zero values, span values and gas certified values are used to rescale the raw data received from the analyser.

Validation: all data are continuously screened algorithmically and manually for anomalies. There are several techniques designed to discover spurious and unusual measurements within large datasets. These anomalies may be due to equipment failure, power failure,

human error, interference or other disturbances. Automatic screening can only safely identify spurious results that need further manual investigation.

Raw data from the gaseous instruments are scaled into concentrations using the latest values derived from the automatic and manual calibrations. These instruments are not absolute and suffer drifts. Both the zero baseline and the sensitivity may change over time. Regular calibrations with certified gas standards are used to measure the zero and sensitivity. However, these are only valid for the moment of the calibration since the instrument will continue to drift.

Data Ratification

All raw data is examined for consistency and the existence of any spurious results. Negative values are examined and either removed or rescaled further and high values interrogated to see if the readings are consistent with expectations or an equipment error may have occurred. Data obtained during calibration checks is automatically excluded from the database by a software service switch on the instrument panel which is used during calibration checks.

If any doubts exist as to the satisfactory status of any data it is excluded from the database calculations. The reason for exclusion of a dataset is annotated against it to allow for traceability and data ratification. The most common reason for exclusion is monitor breakdown leading to consistently high or low readings. However, a power failure can also be a cause as can specific events noted by Officers during visits eg trucks/equipment in operation next to the monitor for building façade maintenance or similar.

Information from other analysers on the system can also be accessed to compare any data that may be experiencing high or low readings to enable a decision to be made on the status of any highlighted data. This includes the Automatic Urban and Rural Network (AURN) monitors operated by Nottingham City Council.

Air Quality Data Management (AQDM) prepare a monthly monitoring report of provisional measurements for the Rushcliffe and Nottingham network and every quarter the available information is critically assessed so that the best data scaling is applied and all anomalies are appropriately edited. Although this quarterly data processing helps build a reliable dataset as unexpected faults can be identified during the routine servicing or independent audits the data can only be fully ratified in 12 month or annual periods. Data ratification is undertaken by AQDM to LAQM (TG16) standards and reported for each of the two continuous monitors.

The data presented in this ASR has been ratified.

Automatic Monitoring Annualisation

All automatic monitoring locations within Rushcliffe Borough Council recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

The NO₂ annual data capture for the continuous monitor located in AQMA No 1 Trent Bridge was 95.4% and 99.5% for the continuous monitor located in AQMA No 1/2011 Stragglethorpe Road.

NO₂ Fall-off with Distance from the Road

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

No automatic NO₂ monitoring locations within Rushcliffe Borough Council required distance correction during 2020.

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

Site ID	Annualisation Factor Site 1 Nottingham Centre	Annualisation Factor Site 2 Leicester University	Annualisation Factor Site 3 Burton on Trent Horninglow	Annualisation Factor Site 4 Name	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
1HS	1.0475	1.0217	1.0837	-	1.0510	23.3	24.5	

Table C.3 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4	Local Bias Adjustment Input 5
Periods used to calculate bias	10	10			
Bias Factor A	0.94 (0.85 - 1.05)	0.94 (0.85 - 1.05)			
Bias Factor B	7% (-5% - 18%)	7% (-5% - 18%)			
Diffusion Tube Mean ($\mu\text{g m}^{-3}$)					
Mean CV (Precision)	32.5	32.5			
Automatic Mean ($\mu\text{g m}^{-3}$)	6.1%	6.1%			
Data Capture					
Adjusted Tube Mean ($\mu\text{g m}^{-3}$)	30.5	30.5			

Notes:

A combined local bias adjustment factor of 0.93 has been used for comparison purposes with the national bias adjustment factor. The national factor has been used bias adjust the 2020 diffusion tube results.

Appendix D: Maps of Monitoring Locations and AQMAs

Figure D.1 – Map Showing the Borough wide diffusion tube network

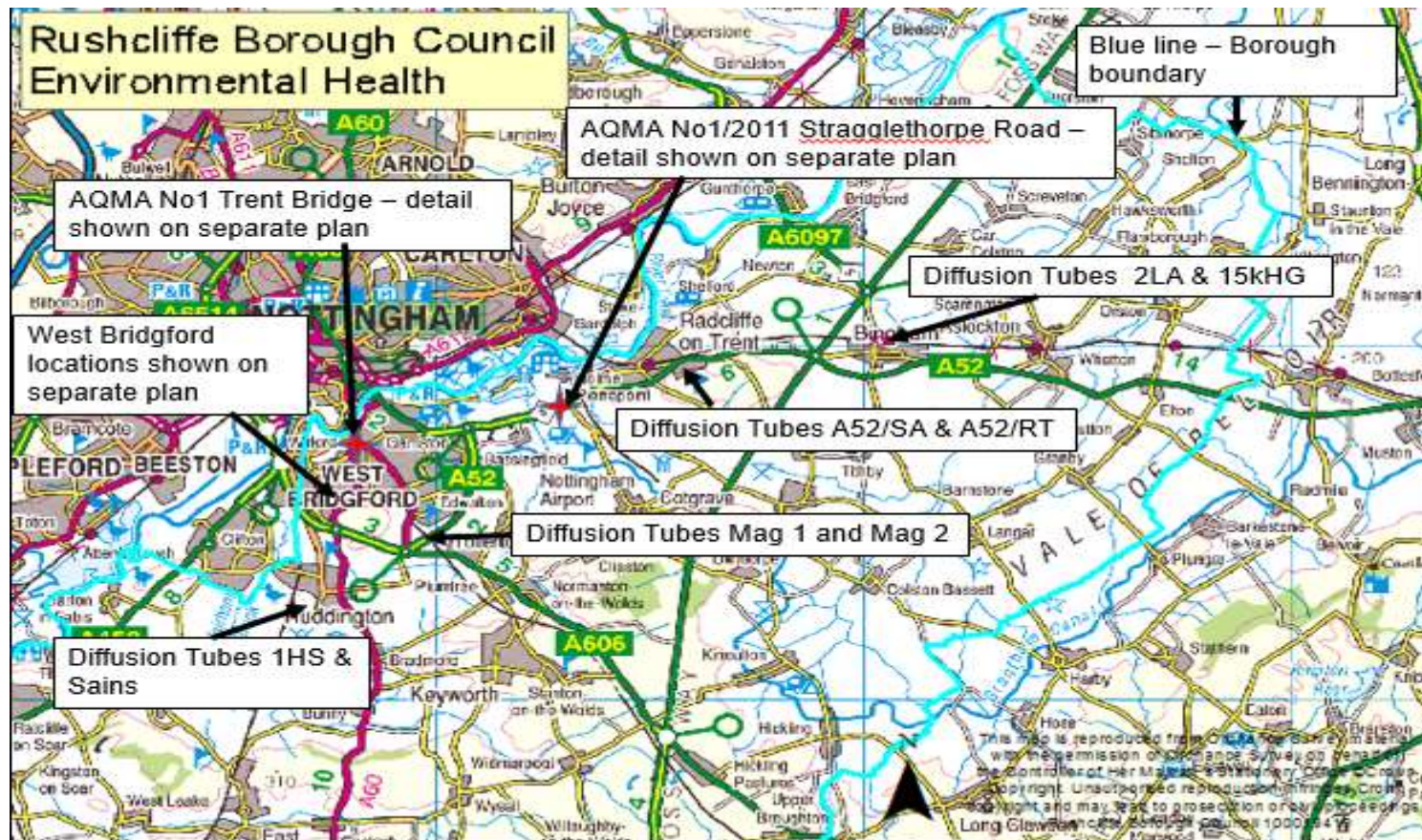


Figure D.2 – Map Showing the diffusion tube network across West Bridgford

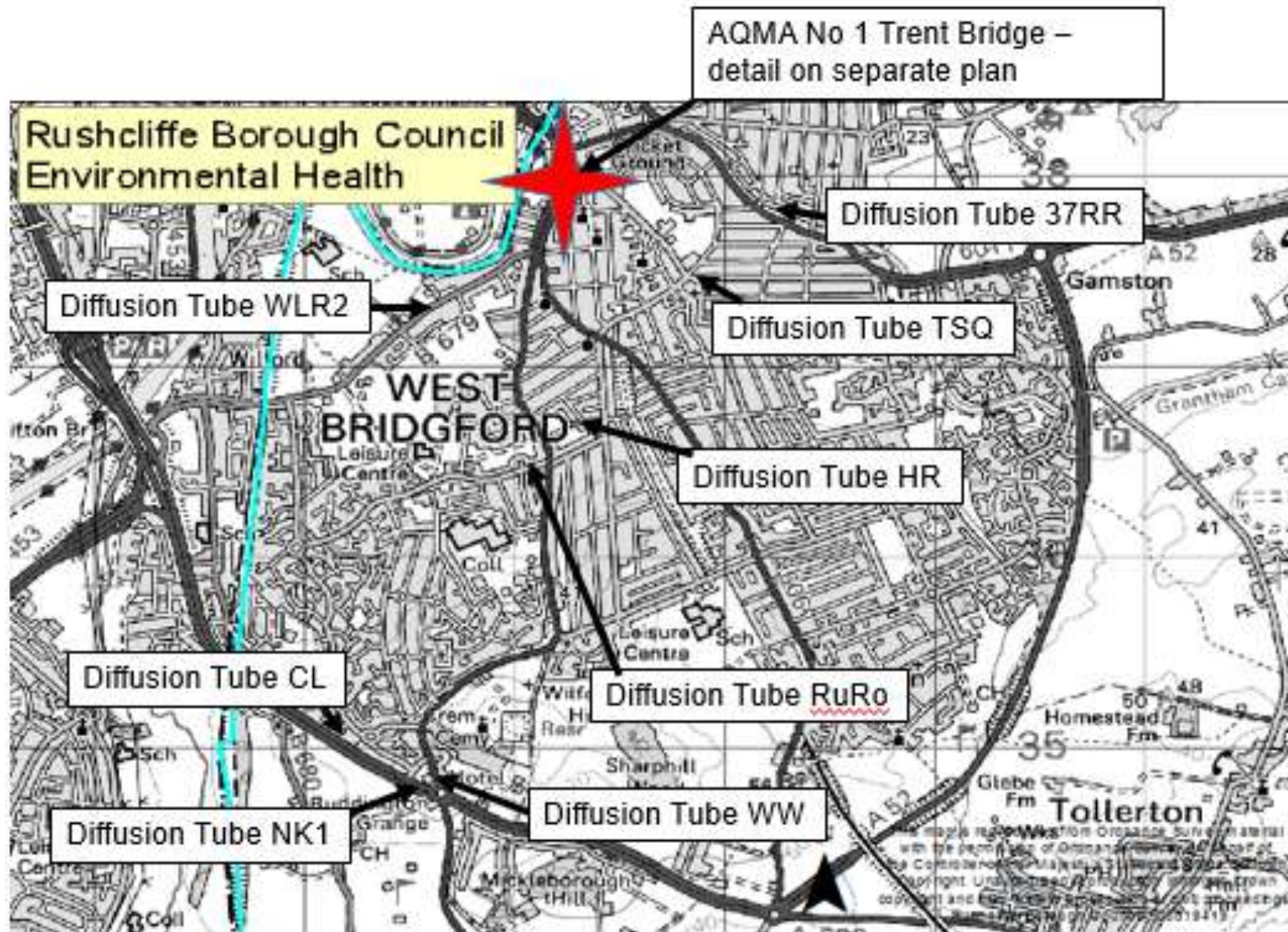


Figure D.3 – Map Showing Location of AQMA No 1 Trent Bridge and continuous monitor and diffusion tube locations

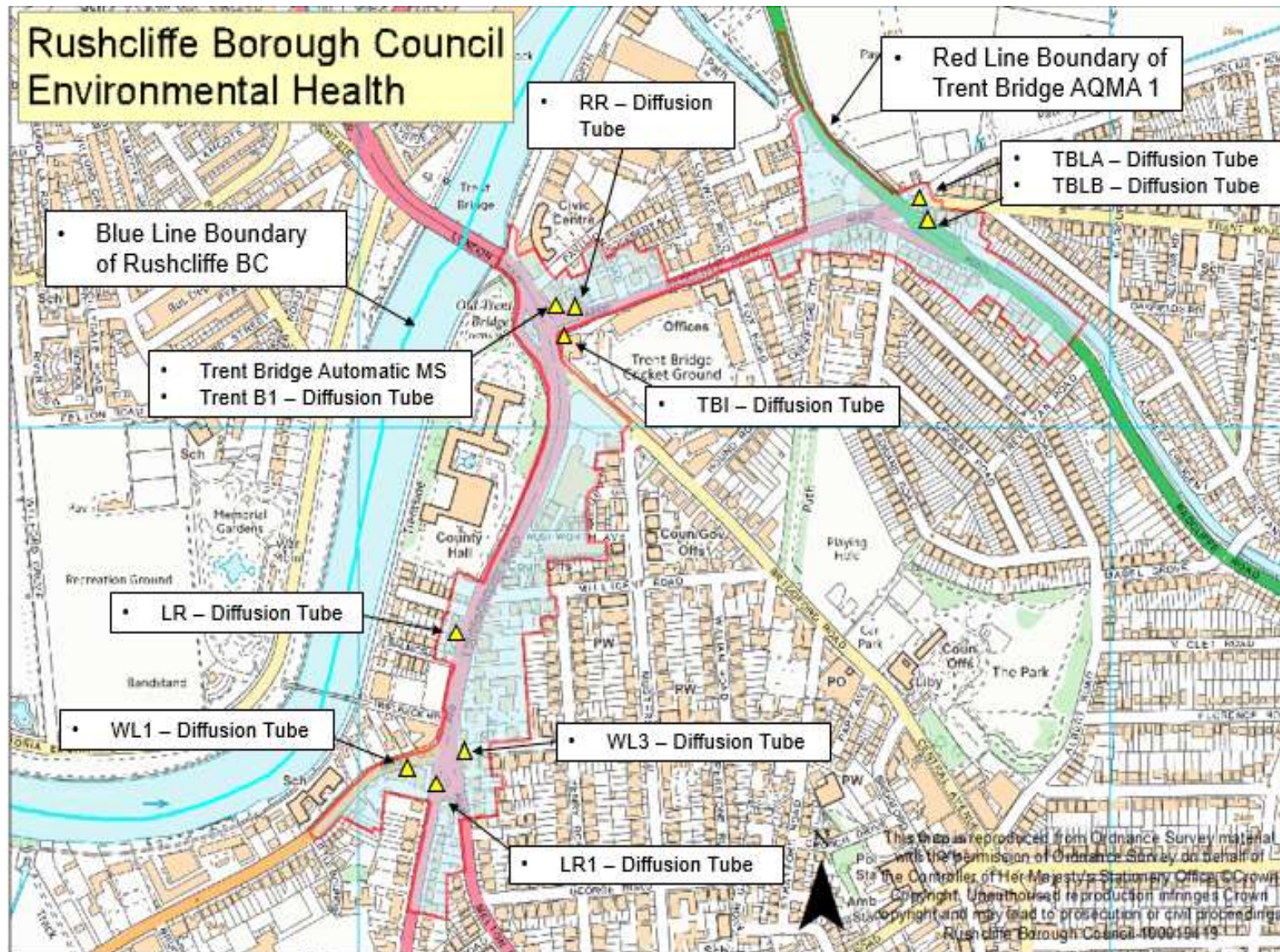
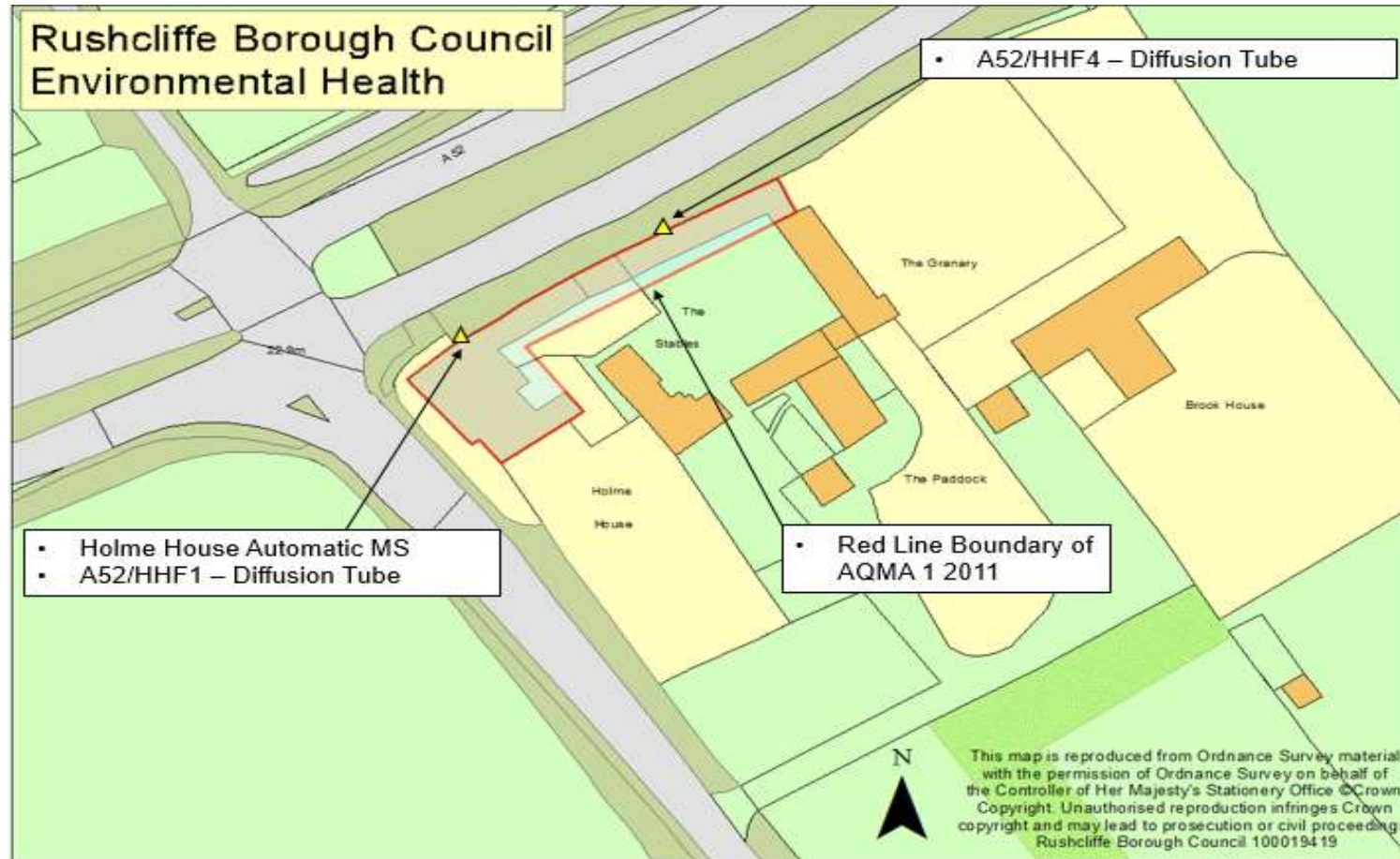


Figure D.4 – Map of AQMA No 1/2011 Stragglethorpe Road showing continuous monitor and diffusion tube locations



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England¹¹

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

¹¹ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Appendix F: Impact of COVID-19 upon LAQM

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

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

Despite the challenges that the pandemic has given rise to, the events of 2020 have also provided Local Authorities with an opportunity to quantify the air quality impacts associated with wide-scale and extreme intervention, most notably in relation to emissions of air pollutants arising from road traffic. The vast majority (>95%) of AQMAs declared within the UK are related to road traffic emissions, where attainment of the annual mean objective for nitrogen dioxide (NO₂) is considered unlikely. On 23rd March 2020, the UK Government released official guidance advising all members of public to stay at home, with work-related travel only permitted when absolutely necessary. During this initial national lockdown (and to a lesser extent other national and regional lockdowns that followed), marked reductions in vehicle traffic were observed; Department for Transport (DfT) data¹² 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, ie nitrous oxides (NO_x), and exhaust and non-exhaust particulates (PM). The Air Quality Expert Group (AQEG)¹³ 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

¹² Prime Minister's Office, COVID-19 briefing on the 31st of May 2020

¹³ Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020

represents an absolute reduction of between 10 to 20µg/m³ if expressed relative to annual mean averages. During this period, changes in PM_{2.5} concentrations were less marked than those of NO₂. PM_{2.5} concentrations are affected by both local sources and the transport of pollution from wider regions, often from well beyond the UK. Through analysis of AURN monitoring data for 2018-2020, AQEG have detailed that PM_{2.5} concentrations during the initial lockdown period are of the order 2 to 5µg/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 Rushcliffe Borough Council

As discussed in Section 3 above at all locations across the network (automatic and non-automatic) the NO₂ annual mean concentration was lower in 2020 than in any of the previous five years (where comparable data is available). In addition, the NO₂ annual mean concentration air quality objective was not exceeded at any of our monitoring locations in 2020.

In summary

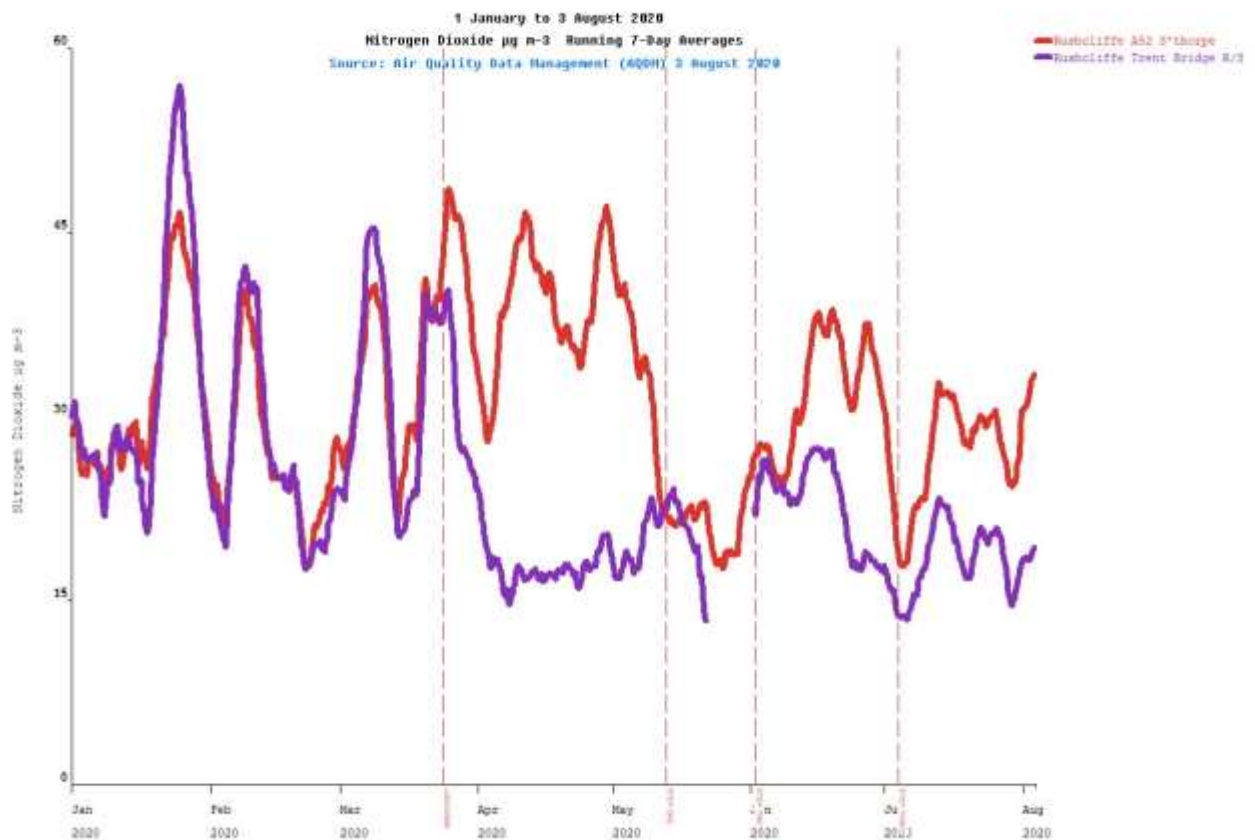
- Reductions of between 17% and 35% were observed for 2020 across the network in comparison to the NO₂ annual mean concentrations for 2019;
- For the monitoring locations (9 passive and 1 continuous) within AQMA No 1 Trent Bridge the 2020 NO₂ annual mean concentration was between 17% and 29% lower than in 2019;
- For the period of the first national lockdown (April to June) when the reduction in road traffic based on national statistics was most marked the data shows a decrease in NO₂ concentrations in AQMA No 1 Trent Bridge of between 18% and 55% in comparison to the corresponding months in 2019. The biggest decrease (55%) was in the concentration recorded by the continuous monitor for April. It should be noted diffusion tube data is not available for April 2020. However, in May and June the reduction in the concentration was fairly consistent for the continuous monitor (44%) and the diffusion tubes (21% to 44%);

- For the monitoring locations (2 passive and 1 continuous) within AQMA No 1/2011 Stragglethorpe Road the 2020 NO₂ annual mean concentration was between 17% and 29% lower than in 2019;
- For the period of the first national lockdown (April to June) when the reduction in road traffic based on national statistics was most marked the data shows a decrease in NO₂ concentrations in AQMA No 1/2011 Stragglethorpe Road of between 16% and 62% in comparison to the corresponding months in 2019. The largest decrease (62%) was in the concentration recorded by diffusion tube at location A52/HHF1 in June 2020. It should be noted diffusion tube data is not available for April 2020. The continuous monitor showed a decrease of 25% (April), 49% (May) and 16% (June) when compared to the 2019 data;
- Across the Borough diffusion tube network the largest reduction in the NO₂ monthly data (reduction in comparison to the same month in 2019) occurred in May and again in July. It should be noted diffusion tube data is not available for April 2020.
- At the continuous monitors the largest reduction in comparison to the same month in 2019 were seen in April & May and again in October & November which would correspond to periods of national lockdown. The continuous monitor located in AQMA No 1 Trent Bridge showed more prolonged decrease in NO₂ concentrations (in comparison to the 2019 data) ranging from 55% (April), 44% (May), 33% (June) and 37% (July). Whereas the decrease in concentrations in comparison to 2019 data was generally less marked at the continuous monitor located in AQMA No 1/2011 Stragglethorpe Road ranging from 25% (April), 49% (May), 16% (June) and 9% (July). At both locations the decrease was in the region of 10% for August and September, rising again in Oct (34% and 23% respectively) and November (38% and 41% respectively). By December 2020 NO₂ concentrations were 3% less than the corresponding data at AQMA No 1 Trent Bridge and 9% in AQMA No1/2011 Stragglethorpe Road.
- Traffic count data provided by Nottingham City Council for the A60 Trent Bridge and the DfT Count Point 17853 also on the A60 show a 14% decrease in the Average Annual Daily Traffic (AADT) from 2019 to 2020. Nottinghamshire County Council have a counter on Loughborough Road also within AQMA No 1 Trent Bridge which showed a similar decrease of 13% in traffic volumes in comparison to 2019. Although the provisional data currently available indicates the daily volume of HGVs travelling on major roads within AQMA No 1 Trent Bridge increased from 2019 to

2020 this is most likely as a result of major roadworks on the A52 Clifton Bridge (ring road) forcing traffic to use alternative routes through the City.

- Within AQMA No 1/2011 Stragglethorpe Road traffic count data provided by Nottinghamshire County Council indicates a 26% decrease in the AADT from 2019 to 2020. The decrease in Heavy Goods Vehicles (HGVs) was much lower at around 2% which is likely to be reflective of the fact that key industries (eg construction and logistics) continued to operate during the various periods of lockdown.
- Figure 1 below shows the continuous monitor data (Running 7-day plot) for the two continuous monitors for the period from January to August 2020. The impact of national lockdown in March 2020 can be seen in AQMA No 1 Trent Bridge with an immediate decline in NO₂ concentrations with dampened peaks. Whereas in AQMA No1/2011 Stragglethorpe Road the NO₂ levels did not change immediately.

Figure 1 Continuous Monitor Data (Running 7-day plot) for period January to August 2020



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

During the lockdown periods there was a general increase in the number of people cycling and walking in their local vicinity. Rushcliffe Borough Council are seeking to develop a Borough specific cycling strategy to sit alongside the County Council strategy to try to harness the enthusiasm for cycling developed during the pandemic.

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

The COVID-19 pandemic imposed challenges and constraints on all local authorities for example staff were redeployed to deal with the impact of lockdown and the application of guidance; increase in the number of noise/dust/odour complaints as more people worked from home; staff unable to undertake routine site visits and staff having to self-isolate.

Within Rushcliffe Borough Council the impact on LAQM is not considered to be significant with monitoring continuing as usual, with the exception of April 2020. Where relevant, an impact rating has been provided below for each challenge and/or constraint in line with guidance presented within the LAQM Impact Matrix provided within Table F 1.

- It was not possible to put the diffusion tubes out across the monitoring network in April 2020 therefore there is no data available for this period. The monitoring was unaffected for the remainder of the year with data capture of greater than 75% at all locations with one exception. **No Impact**
- As with previous years, a national bias adjustment factor has been utilised to adjust the diffusion tube results for 2020. Within 2019 there were 27 co-location studies that were utilised to calculate the bias factor for the laboratory and preparation method used. For 2020, this number has reduced to 18 studies. There is therefore the potential for there to be a greater degree of uncertainty associated with the resultant annual mean NO₂ concentrations in 2020 than in previous years. **Medium Impact**
- A consolidated revised AQAP is being developed for AQMA 1 and AQMA 2. However, owing to the reallocation of Council resources during 2020, the development and implementation of the AQAP has been delayed. An initial consultation has been undertaken with our key partners and current estimates are

that the revised AQAP will be issued for public consultation in July 2021. **Small 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 (eg 3 to 4 months). Interruption to service and maintenance regime and no audit achieved
Passive Monitoring – Data Capture (%)	More than 75% data capture	50 to 75% data capture	25 to 50% data capture	Less than 25% data capture
Passive Monitoring – Bias Adjustment Factor	Bias adjustment undertaken as normal	<25% impact on normal number of available bias adjustment colocation studies (2020 vs 2019)	25-50% impact on normal number of available bias adjustment studies (2020 vs 2019)	>50% impact on normal number of available bias adjustment studies (2020 vs 2019) and/or applied bias adjustment factor studies not considered representative of local regime
Passive Monitoring – Adherence to Changeover Dates	Defra diffusion tube exposure calendar adhered to	Tubes left out for two exposure periods	Tubes left out for three exposure periods	Tubes left out for more than three exposure periods
Passive Monitoring – Storage of Tubes	Tubes stored in accordance with laboratory guidance and analysed promptly.	Tubes stored for longer than normal but adhering to laboratory guidance	Tubes unable to be stored according to be laboratory guidance but analysed prior to expiry date	Tubes stored for so long that they were unable to be analysed prior to expiry date. Data unable to be used
AQAP – Measure Implementation	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP
AQAP – New AQAP Development	Unaffected	Short delay (<6 months) in development of a new AQAP, but is on-going	Long delay (>6 months) in development of a new AQAP, but is on-going	No progression in development of a new AQAP

Glossary of Terms

Abbreviation	Description
AADT	Annual Average Daily Traffic
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'
AQDM	Air Quality Data Management
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
AQO	Air Quality Objective
AQS	Air Quality Standard
ASR	Annual Status Report
AURN	Automatic Urban and Rural Network (Defra) - UK's largest automatic monitoring network and is the main network used for compliance reporting against the Ambient Air Quality Directives. It includes automatic air quality monitoring stations measuring oxides of nitrogen (NO _x), sulphur dioxide (SO ₂), ozone (O ₃), carbon monoxide (CO) and particles (PM ₁₀ , PM _{2.5}).
D2N2	Local Enterprise Network area covering Derby, Derbyshire, Nottingham and Nottinghamshire
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
EMAQN	East Midlands Air Quality Network
EU	European Union
EVCP	Electric Vehicle Charging Points
FDMS	Filter Dynamics Measurement System
HE	Highways England
HGV	Heavy Goods Vehicle
LAQM	Local Air Quality Management
LTP	Local Transport Plan
NCC	Nottinghamshire County Council
NO ₂	Nitrogen Dioxide

Abbreviation	Description
NO _x	Nitrogen Oxides
NPWG	Nottinghamshire Pollution Working Group
OLEV	Office for Low Emission Vehicles (now known as OZEV Office for Zero Emission Vehicles)
OZEV	Office for Zero Emission Vehicles
PHE	Public Health England
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	Rushcliffe Borough Council
SO ₂	Sulphur Dioxide

References

- Air Quality Strategy for Nottingham and Nottinghamshire 2020-2030. Published by Nottingham City Council in partnership with the Nottinghamshire Local Authorities.
- 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.