Rushcliffe Borough Council

2023 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995 Local Air Quality Management, as amended by the Environment Act 2021

Date: June, 2023

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Executive Summary: Air Quality in Our Area

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].

The mortality burden of air pollution within the UK is equivalent to 29,000 to 343,000 deaths at typical ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

Road traffic is the main source of air pollution within the Borough and nitrogen dioxide (NO_2) is the primary pollutant of concern. Nitrogen dioxide is a brown gas with the chemical formula NO_2. It is chemically related to nitric oxide and together NO and NO_2 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. NO_2 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 NO_2 is measured as micrograms per cubic metre of air ($\mu g\ m^{-3}$) and to protect health the Government has set air quality standards. The hourly objective which is the concentration of NO_2 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 NO_2 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.

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

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

[3] Defra. Air quality appraisal: damage cost guidance, January 2023

[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

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 NO_2 and these primary emissions of NO_2 can lead to high concentrations at the roadside. NO_2 is also formed in the atmosphere when there is a chemical reaction between NO and ozone, and this is known as secondary NO_2.

Rushcliffe Borough Council currently undertakes air quality monitoring for NO_2 at 31 monitoring sites across the Borough. Twenty-nine of these locations are passive sites, monitoring NO_2 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.

Rushcliffe Borough Council also have two continuous analysers (automatic) where air is continuously pumped into the analyser and the level of NO_2 recorded. These provide more accurate data on NO_2 concentrations however they are a more expensive way of monitoring air quality.

Rushcliffe Borough Council currently has two active Air Quality Management Areas (AQMAs) for NO_2. An AQMA is an area where air pollutant concentrations exceed or are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives and within Rushcliffe both were declared for NO_2 and exceedance of the annual mean concentration objective of 40µg m^{-3}. The location of the AQMAs can be seen at Defra UK AIR website. Monitoring is undertaken in both AQMAs using both diffusion tubes (non-automatic or passive) and a continuous analyser (automatic).

Within AQMA No 1 Trent Bridge the highest NO_2 annual mean concentrations recorded in 2022 across all locations were 27.9µg m^{-3} at the diffusion tube location TBI and 28µg m^{-3} at the continuous monitor. Therefore, the NO_2 annual mean concentrations were all well below the air quality objective. There were also no exceedances of the NO_2 hourly limit of 200µg m^{-3} and therefore no exceedance of the 1-hour mean air quality objective. The data continue the downward trend in the NO_2 annual mean concentration evident over the past five years with a decrease (ranging from 3 to 22%) at all 10 monitoring locations in 2022 in comparison to 2021. During 2020, NO_2 annual concentration in AQMA No 1 Trent Bridge was significantly reduced (by up to 27%) in comparison to previous year due to the COVID-19 pandemic national and regional lockdowns and the associated impact on traffic

levels. The NO_2 annual mean concentrations rose slightly in 2021 but remained well below the pre-COVID-19 pandemic levels. It is notable the data indicates the annual mean concentrations levels have decreased again in 2022 and are similar to the 2020 levels even though there were no COVID-19 related lockdowns or restrictions in place in 2022. This is most likely due to a combination of factors including the longer-term lifestyle impacts of the pandemic with increased working from home resulting in less congestion at the Radcliffe Road/Loughborough Road junction; and increased electric vehicle use (including buses).

In AQMA No 1/2011 Stragglethorpe Road a maximum NO_2 annual mean concentration of 35µg m^{-3} was recorded by the continuous monitor. This is well below the air quality objective. In AQMA No 1/2011 Stragglethorpe Road there was a slight increase (6%) in the measured NO_2 annual mean concentrations recorded at the continuous monitor when compared with 2021 although the data continues the downward trend when viewed over the past five years. There was a decrease in the annual mean concentration (up to 12%) at the two passive monitoring sites in comparison to the 2021 data. There were no exceedances of the NO_2 hourly limit of 200µg m^{-3} and therefore no exceedance of the 1-hour mean air quality objective. The data remains well below the pre-pandemic levels and again this is most likely due to a combination of factors including the longer-term lifestyle impacts of the pandemic with increased working from home resulting in less congestion at the junction; and increased electric vehicle use. The increase in the NO_2 annual mean concentration from 2021 to the 2022 data at the continuous monitor could be attributable to an increase in traffic flow and associated congestion possibly resulting from the National Highways junction improvements works at the Gamston roundabout which resulted in significant roadworks in the vicinity of the junction during 2022.

In general, over the last five year period monitoring data shows a decline in the NO_2 concentrations across the Borough. Across the monitoring network the NO_2 annual mean concentrations recorded in 2022 remain well below the levels recorded prior to the COVID-19 pandemic. In general, the 2022 data shows a decline in the NO_2 annual mean concentrations when compared with the 2021 data when there was a slight bounce back following the removal of the COVID-19 restrictions. Although the data is very limited it would appear the lifestyle changes required to deal with the pandemic are having a longer-term impact on population behaviour e.g. significant numbers of people continue to work from home which reduces traffic congestion at peak times. In addition, there has been a

significant increase in the electric vehicle ownership with Zap Map[5], which is a charging point platform designed to support the electric vehicle (EV) community reporting 40% growth in the number of battery electric car registrations in 2022 when compared with 2021.

During 2022, Rushcliffe Borough Council and its partners continued to implement the measures contained in the 2021 Air Quality Action Plan (AQAP) to improve air quality in the Borough. Prior to 2021 we had two AQAPs – one specific to each of our AQMAs - and whilst the two have now been consolidated into one AQAP, there remains (where appropriate) measures specific to each of the AQMAs. In the AQAP actions have been developed under nine broad topics:

- Traffic management;
- Transport planning and infrastructure;
- Policy guidance and development control;
- Alternatives to private vehicle use;
- Promoting low emission transport;
- Promoting travel alternatives;
- Public information; and
- Vehicle fleet efficiency.

The AQAP priorities are:

- To continue to monitor nitrogen dioxide levels at AQMA No1 Trent Bridge and at AQMA No1/2011 Stragglethorpe Road and to revoke the AQMAs (in consultation with Defra) if and when there is sufficient robust data to demonstrate concentrations are well below the air quality standard objectives[6] for a period of four to five years;
- To work with Nottinghamshire County Council, as the highway authority at the location of AQMA No 1 Trent Bridge, to implement the relevant actions set out within the AQAP to manage traffic volume and flow and enable residents to make smarter travel choices;
- To work with National Highways, as the highway authority at the location of AQMA No 1/2011 Stragglethorpe Road to implement the relevant actions set out within the AQAP to manage traffic volume and flow; and

[5] Electric Vehicle Charging Statistics 2023 | Zapmap (zap-map.com)

[6] Air Quality Standards 2010

- Rushcliffe Borough Council will continue to work with partners to actively promote policies to encourage an increased use of low emission travel options in the Borough; and to secure funding for the installation of a publicly accessible vehicle charging network infrastructure across our estate.

The aim of these priorities is to maintain sustained compliance with the air quality standards, to encourage a shift to low emission transport options and smarter travel choices to facilitate and encourage walking, cycling and public transport use, all of which have co-benefits on health and well-being.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, there are some areas where local action is needed to protect people and the environment from the effects of air pollution.

The Environmental Improvement Plan[7] sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term $PM_{2.5}$ targets. The National Air Quality Strategy[8], published in April 2023, provides more information on local authorities' responsibilities to work towards these new targets and reduce $PM_{2.5}$ in their areas. The Road to Zero[9] details 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 National Highways. Rushcliffe Borough Council will continue to work these partners to improve air quality across the Borough. This requirement for collaboration is further strengthened in the recently published National Air Quality Strategy which sets out a framework to enable

[7] Defra. Environmental Improvement Plan 2023, January 2023

[8] Defra. National Air Quality Strategy: Framework for Local Authority Delivery, April 2023

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

local authorities to deliver for their communities and contribute to the long-term air quality goals, including the new targets for fine particulate matter ($PM_{2.5}$). In recognition of air quality as a public health issue the strategy requires the involvement of Directors of Public Health in local air quality action and better collaboration between lower and upper tier authorities. Where causes of, or contributors to, an Air Quality Management Area fall within the control of another relevant body, those bodies should contribute measures to the Air Quality Action Plan and carry out those measures.

Within Rushcliffe Borough Council 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 (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 2022 there were a number of applications relating to proposed residential and commercial developments where air quality assessments were required and reviewed. Works are also progressing on a number of previously permitted housing developments at various locations across the Borough, including Ruddington, Edwalton, Keyworth, Radcliffe on Trent, Newton, Clifton and East Leake. In addition to considering potential air quality impacts as part of the development process the Environmental Health Service are involved in ensuring effective measures to manage any fugitive dust emissions are in place during the construction works.

Of particular note is the proposed Local Development Order for the development of the Ratcliffe on Soar Power Station which seeks to transform the Site into a centre for energy production and storage, advanced manufacturing and industry. The Site comprises 265 hectares with part comprising the power station used for the generation of electrical power from coal and gas oil; and part comprising agricultural land, settlement ponds, wooded areas and the ash disposal site. The Power Station is due to cease operations in 2024. Two hundred hectares have been designated as part of the East Midlands Freeport.

Rushcliffe Borough Council has a requirement for electric vehicle charging points (EVCP) to be installed on all residential and commercial developments (where possible) as part of any planning approval.

The road network within AQMA No 1 Trent Bridge is managed by Nottinghamshire County Council and the core actions continue to be the integration of measures within the Local Transport Plan (LTP) which is implemented by Nottinghamshire County Council and include

- Continued traffic control and management in the area to optimise traffic flow and minimise congestion;
- Cycling and walking infrastructure improvements;
- Public transport improvements, including the introduction of a low emission bus fleet; and
- Promotion of active travel alternatives.

The A52, the road associated with AQMA No 1/2011 Stragglethorpe Road is managed by National Highways. 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. National Highways (formerly Highways England) determined the most appropriate solution to help reduce queuing and delays at the Stragglethorpe Road junction was 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 and the subsequent order to remove the U-turn movement was brought into force in May 2022. In addition, improvement works at the nearby Gamston roundabout continued throughout 2022 with the widening of all approaches to the roundabout, installation of new traffic lights and a traffic light controlled pedestrian crossing and a dedicated bus lane to reduce traffic congestion and queuing and improve safety. As the Gamston roundabout and Stragglethorpe junction are in relatively close proximity the timing of the traffic signals at the Stragglethorpe junction following the removal of the U-turn movement will remain unchanged until the Gamston roundabout works are completed which is expected to be mid 2023.

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. The Council continues to work to implement the Carbon Management Plan 2020 which sets out the measures to be taken 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 e.g. 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. Specific measures include:

- Removal of large fossil fuel gas boilers at the Cotgrave Swimming Pool and replacing them with zero emission air source heat pump technologies;
- Vastly improving the efficiency of approximately 170 fuel poor properties across the Borough resulting in them having to use less fossil fuel gas heating and/or entirely taken off oil or LPG in off gas areas;
- Exploring 90% CO_2 reduction in heavy bin lorry fleet by fuelling them on HVO (Hydrogenated Vegetable Oil); and
- Purchase of all electricity for Council facilities from a REGO (Renewable Energy Guarantee of Origin) tariff.

Rushcliffe Borough Council seeks to reduce impacts on air quality and the environment in their ongoing capital projects. During 2022 work continued on the construction of Rushcliffe Oaks which is a new crematorium facility and community space located in Stragglethrope near Cotgrave. The modern contemporary building seeks to provide an environmentally conscious building and memorial gardens that are sensitive to its surroundings. To ensure the facility is as energy efficient as possible and to help meet the Council's target to be carbon neutral in its operations by 2030 an electric cremator has been installed. Recent research undertaken by Coventry University provides a comparison of gas and electric cremator emissions in the UK. The study undertaken as part of degree level thesis focuses on carbon dioxide (CO_2) and NO_x emissions and concludes an electric cremator produces 50-80% less CO_2 emissions and 33% less NO_x emissions[10]. Rushcliffe Oaks opened in April 2023 and will be operated by the Council.

Work also continued on the Bingham Arena and Enterprise Centre which is a £16m leisure centre and office development project partly funded by the European Regional Development Fund (ERDF) and D2N2 Local Enterprise Partnership. The build is 80% lower carbon than standard new build leisure centres /offices due to the installation of a range of design parameters and equipment choices which will have a co-benefit of reducing the impact on air quality. These include combined heat and power units in the

[10] Copeland B (2021) A comparison of gas and electric cremator emissions in the UK. A dissertation submitted to the School of Energy, Construction and Environment, Faculty of Engineering, Environment and Computing, Coventry University in partial fulfilment of the requirements for the degree of Geography BSc (Hons)

leisure centre, air source heat pumps and photovoltaic solar panels on the office roof. The development opened in February 2023.

To encourage an increased use of low emission travel options Rushcliffe Borough Council using investment secured via the Transforming Cities Fund installed Electric Vehicle Charging Points at three locations in 2022 Gamston - (4 rapid with a solar canopy); Bingham Arena (4 rapid chargers) and at the Gresham Sports Pavillion in West Bridgford (3 rapid chargers). Further installations at Rushcliffe Country Park are planned for 2023. We will continue to explore funding opportunities to increase EV charging point coverage across the Council estate and work with others to try to overcome capacity issues and smarten the grid to facilitate charging point installation.

In 2022 Rushcliffe Borough Council published it's Walking and Cycling Action Plan which aims to increase participation in walking and cycling by all in Rushcliffe. This has been promoted through a series of cycling and walking events, including guided rides and learn to ride sessions. Refurbishment works have also been carried out on some infrastructure in Rushcliffe Country Park. Further cycling and walking events are planned for 2023.

In addition, we continue to engage and with other organisations to promote greener transport measures and better air quality in the Nottinghamshire area. For example, Rushcliffe Borough Council are working with GP surgeries to encourage sign-up to the Active Practice Charter which seeks to encourage staff and patients to be more physically active and use their car less. We are also supporting the Rushcliffe Primary Care Network and Social Prescribing Team with the Rushcliffe Green Calendar which is a series of campaigns tied in at a national level, some of which encompass active travel e.g. Walk to School week. We are seeking to improve collaboration with Public Health and the Primary Care Network to promote awareness of air quality for example by undertaking co-ordinated campaigns around Clean Air Day.

The Environmental Health service also continues to work with other local authorities in the area through the Nottinghamshire Environmental Protection Working Group (NEPWG) and the East Midlands Air Quality Network (EMAQN) which comprises local authorities and UK Health Security Agency (UKHSA). We will continue to promote air quality issues in emerging work via the NEPWG and EMAQN.

In 2019 the Air Quality Strategy for Nottingham and Nottinghamshire 2020-2030[11] 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. This vision aligns with the ambition in the National Air Quality Strategy [12] 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.

Improving air quality is also now a priority of the 2022-2026 Nottinghamshire Joint Health and Wellbeing Strategy[13] as part of the ambition to develop Healthy and Sustainable Places.

Conclusions and Priorities

The air quality monitoring data for 2022 shows there were no exceedances of the NO_2 annual mean concentration air quality objective at any of the monitoring locations across the Borough.

Overall, the data indicate a slight decrease in NO_2 annual mean concentrations when compared with 2021 and remain significantly below the levels recorded prior to the COVID-19 pandemic.

Over the past five years the NO_2 annual mean concentration in AQMA No 1 Trent Bridge has been in the region of 36-37µg m^{-3} i.e. 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 and a slight increase to 29µg m^{-3} at the same location in 2021. The consistent downward trend continued in 2022 with a NO_2 annual mean concentration recorded by the continuous monitor of 28µg

[11] Air Quality Strategy for Nottingham and Nottinghamshire 2020-2030 (2020)

[12] Defra. National Air Quality Strategy: Framework for Local Authority Delivery, April 2023

[13] The Joint Health and Wellbeing Strategy for 2022 - 2026 | Nottinghamshire County Council

m^{-3}. As the concentrations remain well below the air quality objective it is our intention to work towards the revocation of the AQMA within the next year (resources permitting).

Prior to the COVID-19 pandemic in AQMA No 1/2011 Stragglethorpe Road the NO_2 annual mean concentration had been hovering around the air quality objective of 40µg m^{-3} with 39µg m^{-3} recorded by the continuous monitor in 2018 and 41µg m^{-3} in 2019. In 2020 there was a decline in the NO_2 annual mean concentration to 31µg m^{-3} with an increase to 33µg m^{-3} in 2021 and a further increase to 35µg m^{-3} in 2022. This increase in 2022 may have been influenced by congestion caused by the significant road improvements in the vicinity of the AQMA throughout 2022 and/or an increase in road traffic levels and associated roadside emissions as the COVID-19 restrictions were lifted. We will continue to monitor in the AQMA and review its status annually.

Over the coming year we will continue to monitor NO_2 annual mean concentrations across the Borough and work towards the implementation of the measures contained in our AQAP which was published in 2021 and sets out how Rushcliffe Borough Council and its partners will seek to improve air quality over the next five years.

As required by the National Air Quality Strategy[14] Rushcliffe Borough Council will continue to engage with our partners including Nottinghamshire County Council Transport Planners and National Highways to secure improvements in air quality. We will work closely with other neighbouring authorities to share resources and knowledge for the benefit of residents across the wider Nottinghamshire area. We will seek to develop improved links and collaborations with other bodies/partners whose responsibilities/functions are also working towards air quality improvements, including Public Health and Trading Standards.

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 our website Transport - Rushcliffe Borough Council where there is signposting to public transport and greener car travel, including car sharing. Events linked to our recently published Walking and Cycling Action Plan are publicised on our website and via our social media channels. There is also detailed

[14] Defra. National Air Quality Strategy: Framework for Local Authority Delivery, April 2023

information on cycling and walking, including a cycle journey planners available via the Nottinghamshire County Council website Walking, Cycling & Rights of Way - NCC

All of our air quality related reports, including the Annual Status Reports and the Air Quality Action Plan can be found on our website Air Quality - Rushcliffe Borough Council.

The Nottingham and Nottinghamshire Air Quality webpage has recently been upgraded to provide real time data from the continuous monitoring stations across the County in a more accessible and engaging format. Passive monitoring (diffusion tube) data can also be viewed.

Rushcliffe Borough Council are engaging with County Public Health and a range of NHS partners to promote and disseminate consistent messaging in the lead up to the annual Clean Air Day. This is generally done through our social media channels.

Over the course of 2023 it is our intention to engage in public awareness campaigns around anti-idling and domestic burning. We will seek to undertake these in conjunction with other partners and neighbouring authorities, and to make relevant information available to residents and businesses through a range of different media to ensure accessibility for all.

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.

Similarly, under the environmental permitting regime changes to existing or new permitted processes are subject to public consultation and we will ensure public engagement as 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 Plans and Development Team, Nottinghamshire County Council, County Hall, West Bridgford Nottingham NG2 7QP; Tel: 0300 500 8080.

Further information on the A52 junction improvements can be obtained from National Highways A52 Nottingham Junctions website; Tel: 0300 123 5000.

Local Responsibilities and Commitment

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

- Development Control;
- Communities;
- Human Resources; and
- The Contract Hub.

This ASR has been approved by:

David Banks

Director - Neighbourhoods and Deputy Chief Executive

This ASR has been signed off by John Wilcox, Senior Public Health & Commissioning Manager on behalf of Nottinghamshire Public Health.

If you have any comments on this ASR, please send them to the Environmental Health Department at:

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1 Local Air Quality Management

This report provides an overview of air quality in Rushcliffe Borough Council during 2022. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), 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 order to achieve and maintain the objectives and the dates by which each measure will be carried out. 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 18 months. The AQAP should specify how air quality targets will be achieved and maintained, and provide dates by which measures will be carried out.

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.

AQMA No 1 Trent Bridge covers an area of West Bridgford, including Lady Bay Bridge, Radcliffe Road, Trent Bridge and Loughborough Road junctions. This AQMA was declared in 2005 due to a NO_2 annual mean concentration of 47µg m^{-3} which is an exceedance of the Air Quality Standard objective (AQS) of 40µg m^{-3}. Air quality monitoring is undertaken at a number of locations within the AQMA via a continuous monitor (active monitoring) and a series of diffusion tubes (passive monitoring).

AQMA No 1/2011 Stragglethorpe Road at Radcliffe on Trent is located at the Stragglethorpe junction of the A52 dual carriageway which is one of the main easterly routes into/out of Nottingham. The general aspect is open with a small group of residential properties in one area adjacent to the junction. This AQMA was declared in 2011 due to a NO_2 annual mean concentration of 50.5µg m^{-3}.

Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of the AQMAs and the air quality monitoring locations in relation to the AQMAs. The air quality objectives pertinent to the current AQMA designations are as follows:

- NO_2 annual mean.

As the NO_2 annual mean concentration has been below the air quality objective for at least the last five years we propose to work towards the revocation of AQMA No 1 Trent Bridge over the coming year.

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	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
AQMA No 1 Trent Bridge	Declared 01/09/2005	NO_2 Annual Mean	An area including Lady Bay Bridge/Radcliffe Road/Trent Bridge/Loughborough Road junctions in West Bridgford.	NO	47	28	5 years	Air Quality Action Plan for Rushcliffe dated December 2021	AQAP 2021
AQMA No1 2011 Stragglethorpe Rd	Declared 01/10/2011	NO_2 Annual Mean	Land adjacent to A52 at Stragglethorpe Lane Junction	YES	50.5	35	3 years	Air Quality Action Plan for Rushcliffe dated December 2021	AQAP 2021

☒ **Rushcliffe Borough Council confirm the information on UK-Air regarding their AQMA(s) 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 report was detailed, concise and satisfies the criteria of relevant reporting standards. Specific comments made by Defra are provided below and where required, details given on how the matters raised have been addressed in the 2023 report:

- The report has been completed to a high standard, with the accuracy of data presented and the discussion included with the report welcomed. No comment required.
- Robust and accurate QA/QC procedures were applied. Calculations for bias adjustment and annualisation factors were outlined in detail. No comment required.
- The Council has included discussion and review of its AQMAs and monitoring strategy, informed due to the monitoring network and also the additional tube in place to provide data. This demonstrates the Councils proactive approach to ensuring good air quality across the district. No comment required.
- Council have provided very clear and detailed maps of the diffusion tube monitoring network, this is welcomed. No comment required.
- Overall, the report is detailed, concise and satisfies the criteria of relevant reporting standards. The Council should continue their good and thorough work.

Rushcliffe Borough Council and its partners have taken forward a number of direct measures during the current reporting year of 2022 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. Fifty-three measures are included within Table 2.2, with the type of measure and the progress Rushcliffe Borough Council and its partners have made during the reporting year of 2022 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in our Air Quality Action Plan (2021 Air Quality Action Plan). The 2021 AQAP replaces the two previous plans which were specific to each of the AQMAs. Whilst the two have been consolidated into one AQAP, there remains (where appropriate) measures specific to each of the AQMAs. The primary required outcomes of the measures contained in the AQAP are to ensure

- the downward trend in NO_2 levels continues in both AQMAs to a point where there is sustained compliance with the AQS which will enable the revocation of the AQMA; and
- we strive for continued improvements in air quality, to encourage a shift to low emission transport options and smarter choices to facilitate and encourage walking, cycling and public transport use, all of which have co-benefits on health and well-being.

In Table 2.2 – Progress on Measures to Improve Air Quality the column labelled 'Measure No' generally reflects the numbering system used in the AQAP. The measures labelled NC 01-24 are the Nottinghamshire County Council measures which relate predominantly to AQMA No 1 Trent Bridge; NH 01-05 are the National Highways measures which relate predominantly to AQMA No 1/2011 Stragglethorpe Road; and RB 01-24 are the Rushcliffe Borough Council measures which are generally applicable across the Borough. The expected efficacy of the measures is provided by a traffic light colour coded system with measures highlighted in green as the most effective and red as least effective.

Key completed measures are:

- Bus Service Improvement Plans (BSIP) for the Greater Nottingham (Robin Hood) area - which was developed in partnership between Nottinghamshire County Council, Nottingham City Council, and the Bus Partnership Group was published in October 2022. The core objectives of the BSIP are the delivery of a bus network and an elevated passenger experience which delivers convenient, affordable, and reliable public transport journeys. With reference to Rushcliffe Borough Council the feasibility of the project to improve journeys along the A60 to Central Avenue in West Bridgford (with an initial budget of £2.0m) is still being scoped. Other measures in the BSIP include:
    - A refresh of the Robin Hood network maps, with updated maps circulated to the Robin Hood Marketing Group in December 2022. The map is set to include an extension of the network, with an emphasis on tram and train lines so that they become equal with bus lines.
    - The current bus fleet in Greater Nottingham is 91% Euro VI compliant or better, with some buses operating on Biogas. The small percentage of buses that are not operating with Euro VI will be replaced or updated by January 2024, in line with the Greater Nottingham Enhanced Partnership guidelines.

  - An initial budget of £0.5m has been assigned to the upgrade of the traffic light priority network in Greater Nottingham. This project aims to build on the existing TLP network, working with MOVA and SCOOT technology, to provide priority to late running bus services.
  - Working with Nottingham City Transport, Nottingham City Council and Nottinghamshire County Council secured ZEBRA funding for the migration of the Greenline buses which serve the Rushcliffe area to electric in next two years.
  - Research is being undertaken to determine the feasibility of Hydrogen fuelled buses operating in the city.
- Bus Service Improvement Plans (BSIP) for Nottinghamshire – County continued to work towards the publication of the BSIP, in partnership the bus operators, local stakeholders and communities across Nottinghamshire. The BSIP will run from 2021-2026 with the overall aim of building a sustainable, efficient, and growing bus network that meets peoples travel needs and expectations;
- Electric Vehicle Charging Network - the County Council is working to determine the Council's long term on-street EV strategy. NCC is developing a bid in partnership with the district councils for Local Electric Vehicle Infrastructure (LEVI) capital funding for EV infrastructure;
- Electric Vehicle Cable Channels – a report on 'On-street Electric Vehicle Charging Infrastructure' was considered at the Transport & Environment Committee in February 2022, and approval was granted for the introduction of an Electric Vehicle Cable Channel pilot scheme. The planned trials will grant permission to eligible households without off-street parking provision to commission the County Council's highway partners, Via East Midlands Ltd., to install cable channels, which are cut into the footway to extend EV charging cables from an off-highway domestic EV charge point to the public highway through a discreet and safe conduit, without creating a trip hazard to road users or adding to street clutter. NCC successfully secured (and received in January 2023) £774k from the Government's Local Electric Vehicle Infrastructure (LEVI) Pilot Funding enabling the delivery of up to 300 EV cable channels. Delivery started in February 2023;
- Effective network management – The County Council continues to work with stakeholders to effectively manage its highway network. This includes the co-ordination of works, contingency planning, and effective event and incident planning;

- Local Cycling & Walking Infrastructure Plan (LCWIP) – the County Council (in partnership with Derby City, Derbyshire County, and Nottingham City councils) have developed a D2N2 wide LCWIP. Three stakeholder events were undertaken in 2022 with further public engagement on the D2N2 LCWIP undertaken in late 2022/early 2023. Future countywide infrastructure priorities will be identified through technical analysis undertaken as part of the LCWIP development and will be subject to feasibility, consultation, and County Council Cabinet Member approval;
- The Order to remove the U-turn movement at the Stragglethorpe junction on the A52 was brought into force in May 2022. This ban prevents vehicles travelling on the A52 east (towards Radcliffe on Trent and Bingham) from making a U-turn at Stragglethorpe junction to travel west towards Nottingham and should improve traffic flow and ease congestion at the junction which is the location of AQMA No 1/2011 Stragglethorpe Road. However, the timings on the new traffic signals remain unchanged pending completion (due mid 2023) of the works at the nearby Gamston roundabout;
- Rushcliffe Borough Council, working together with Nottingham City Council secured investment via the Transforming Cities Fund to increase the provision of electric vehicle charging points in the D2N2 area with the following provision across the Borough:
    - Gamston March 2022 4x rapid charger with solar canopy
    - Bingham Arena December 2022 4x fast chargers
    - Gresham Sports Pavillion in West Bridgford December 2022 3x rapid chargers;
- The Rushcliffe Borough Council Walking and Cycling Action Plan was published in 2022 with the aim to increase participation in walking and cycling by all in Rushcliffe. The Council have supported Workplace Health initiatives to encourage staff to walk more, delivered a Summer of Cycling Event at Rushcliffe Country Park, funded learn to ride session and guided bike rides around the Borough and undertaken improvements to some our existing cycling infrastructure.
- Rushcliffe Borough Council has continued participation in the Green Rewards scheme which is a joint initiative with other Nottinghamshire Local Authorities to help and encourage residents make more sustainable choices and lower their carbon footprint. The Green Rewards app and web platform enables residents to accumulate points and earn the prizes for many activities they do every day at

home or out and about. The scheme encourages active travel by rewarding activities such as walking/cycling to work/school and using public transport. Further details of the Green Rewards Scheme can be found on their webpage.

- Several partners and enterprises across the Borough (including the University of Nottingham, British Geological Survey, Artex, Belvoir Health Group) continue to share learning, views and skills on carbon reduction through the Rushcliffe Borough Council Big Business Carbon Club;
- Rushcliffe Borough Council purchases all electricity from a REGO (Renewable Energy Guarantee of Origin) tariff;
- The RBC private hire and hackney vehicles policy refers to the increased use of Ultra Low Emission Vehicles (ULEV) and is likely to be enhanced further in the near future;
- Continuing to secure via planning condition the provision of electric vehicle charging points in new build residential and commercial developments;
- Requiring the submission of air quality assessments for developments in or close to the AQMAs prior to determination of a planning application;
- Increasing residents' awareness of changes in legislation that seek to improve air quality including the phasing out of the sale of wet wood and coal for domestic burning between 2021 and 2023; and taking enforcement action, where necessary.
- Rushcliffe Borough Council has been working with GP practices across the Borough on the Green Impact for Health Scheme which is designed to encourage practices to take steps to become more environmentally friendly and all Rushcliffe practices are now accredited. The scheme provides a free online toolkit with over 100 actions to improve environmental sustainability including strategies such as active travel. Rushcliffe Borough Council are supporting the Rushcliffe Primary Care Network and Social Prescribing Team with the Rushcliffe Green Calendar which includes Clean Air Day and Walk to School Month. More info can be found at Rushcliffe Green Impact. Green social prescribing is a way of connecting people to nature based activities and green groups, projects and schemes in their local community for support with health and wellbeing. The Rushcliffe Big Green Book is a directory of nature-based activity providers which aims to be used as a tool to support identifying green social prescribing opportunities. It also includes a

Greenground map (similar to a London underground map) to promote walking, cycling and cultural opportunities in the area for residents to become involved with.

- Integration of design parameters and plant/equipment in Rushcliffe Borough Council capital projects to help achieve carbon neutral status in its operations by 2030 with a co-benefit of improving air quality:
    - This includes the installation of an electric cremator in the new Rushcliffe Oaks, a new crematorium facility and community space in Stragglethorpe. Recent research undertaken by Coventry University provides a comparison of gas and electric cremator emissions in the UK. The study undertaken as part of degree level thesis focuses on carbon dioxide (CO2) and NOx emissions and concludes an electric cremator produces 50-80% less CO2 emissions and 33% less NOx emissions15. Rushcliffe Oaks opened in April 2023 and is operated by the Council.
    - Work continued on the Bingham Arena and Enterprise Centre which is a £16m leisure centre and office development project partly funded by the European Regional Development Fund (ERDF) and D2N2 Local Enterprise Partnership. The build is 80% lower carbon than standard new build leisure centres /offices due to the installation of a range of design parameters and equipment choices which will have a co-benefit of reducing the impact on air quality. These include combined heat and power units in the leisure centre, air source heat pumps and photovoltaic solar panels on the office roof. The development opened in Spring 2023.
- The Regatta Way Active Travel Fund (ATF) Scheme was completed in August 2022 with the delivery of a segregated cycleway/footway along the A6011 Radcliffe Road to Adbolton Lane in West Bridgford, allowing cyclists to be better connected to facilities at Holme Pierrepont Country Park as well as other cycle routes in the wider area. The County Council secured funding from Tranche 2 of the ATF to undertake the improvements.

[15] Copeland B A comparison of gas and electric cremator emissions in the UK. A dissertation submitted to the School of Energy, Construction and Environment, Faculty of Engineering, Environment and Computing, Coventry University in partial fulfilment of the requirements for the degree of Geography BSc (Hons)

- Work has progressed on a scheme for a new dedicated pedestrian and cycle bridge over the River Trent with the appointment of the contractors. The City Council secured funding (£9.25m) for the Waterside Bridge from the Government's Transforming Cities fund. The project is being led by Nottingham City Council, working in partnership with Rushcliffe Borough Council and in consultation with Nottinghamshire County Council;
- Rushcliffe Borough Council actively promoted Clean Air Day on 16th June 2022. We also undertook awareness raising around domestic burning across our social media channels in Autumn 2022;
- Rushcliffe Borough Council continues to support tree planting across the Borough with 797 trees & shrubs planted on the Rushcliffe estate, the supply of 1200 via the Free Tree Scheme and 161 trees via the Community Trees Scheme in 2021 – 2022.

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

- Local Cycling & Walking Infrastructure Plan (LCWIP) – the County Council (in partnership with Derby City, Derbyshire County, and Nottingham City councils) have developed a D2N2 wide LCWIP. The cycling and walking improvements priorities identified through technical analysis undertaken as part of the LCWIP development will be subject to feasibility, consultation, and County Council Cabinet approval;
- Following the implementation of the U-turn ban at the Stragglethorpe junction and the completion of the roadworks at the nearby Gamston roundabout the timings on the new traffic signals at the junction can be adjusted to improve traffic flow and ease congestion;
- Expansion of the EV Charging Point network across the Borough estate with the installation of 2 rapid chargers at Rushcliffe Country Park;
- Rushcliffe Borough Council will continue to explore funding opportunities to increase EV charging point coverage across our estate and work with the relevant organisations/bodies as part of the D2N2 Local Energy Area Plan (LEAP) to smarten the grid and attempt to resolve infrastructure constraints that may be limiting the ability to expand the charging point network to other locations;

- As part of the Rushcliffe Walking and Cycling Action Plan the Council will continue to engage and support active travel schemes and initiatives, including funding and hosting Guided Ride Leaders courses and bicycle registration and marking sessions with the Police, and engaging in the Nottinghamshire Strategic Walking Partnership;
- Work will continue on the two-year project for the removal of the large fossil fuel gas boilers at the Cotgrave Swimming Pool for replacement with zero emission air source heat pump technologies in line with Net Zero by 2030 strategy as committed in the Rushcliffe Borough Council Climate Change Strategy (2021 – 2030);
- Rushcliffe Borough Council is exploring 90% CO_2 reduction in heavy bin lorry fleet by fuelling on HVO (Hydrogenated Vegetable Oil)
- Develop awareness campaigns to improve air quality, for example around Clean Air Day, domestic burning and engine anti-idling. Where possible we will undertake these campaigns in conjunction with other partners, including the Primary Care Network and Public Health and neighbouring authorities to help disseminate the messages as widely as possible;
- Rushcliffe Borough Council will seek to reconsider coverage of Smoke Control Areas across the Borough and develop a policy around the introduction of a civil penalty scheme for smoke emissions in a Smoke Control Area in line with the statutory guidance[16] published in 2022; and
- In line with the National Air Quality Strategy[17] we will seek to improve links and increase collaboration between partners to achieve improvements in air quality. This may be achieved through the NEPWG.

Rushcliffe Borough Council's priorities for the coming year are to continue to work with our partners to:

- implement the relevant actions set out within the AQAP 2021 to manage traffic volume and flow and enable residents to make smarter travel choices; and

[16] Defra. Smoke Control Area Enforcement by Local Authorities in England. May 2022

[17] Defra. National Air Quality Strategy: Framework for Local Authority Delivery, April 2023

- actively promote policies to encourage an increased use of low emission travel options in the Borough; and to secure funding for the installation of a publicly accessible vehicle charging network infrastructure across our estate.

Rushcliffe Borough Council worked to implement these measures in partnership with the following stakeholders during 2022:

- Nottinghamshire County Council; and
- National Highways.

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

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	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
NC01	Optimisation of traffic signals	Traffic Management	UTC, Congestion management, traffic reduction			Nottinghamshire County Council (NCC)/Via EM Ltd: integrated transport block funding		NO			Implementation	Reduced vehicle emissions	Restrain average journey times in the morning peak to a 1% increase per year	Implementation ongoing	SCOOT and MOVA equipped signals are relayed back to the Traffic Control Centre so that they can be altered in real time as required.
NC02	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	2019		Nottinghamshire County Council (NCC)/Via EM Ltd/Nottingham City Council (NCiC)	NCC and NCiC revenue funding	NO	Funded	£100k - £500k	Implementation	Reduced vehicle emissions	Restrain average journey times in the morning peak to a 1% increase per year	Implementation on-going	The UTCC is a shared facility between Nottinghamshire County Council and the City Council. Estimated cost shown is the County Council's annual contribution. Potential barrier: Lack of future revenue funding
NC03	Co-ordination of street works to minimise traffic disruption and unnecessary congestion	Traffic Management	UTC, Congestion management, traffic reduction	2019		NCC/Via EM/NCiC/Highways England (HE)	NCC, NCiC, HE revenue funding	NO	Funded	£100k - £500k	Implementation	Reduced vehicle emissions	Restrain average journey times in the morning peak to a 1% increase per year	Implementation on-going	Regular coordination meetings held between all works promoters and regional partners in additional to regular meetings between National Highways and regional partners to create a framework programme of planned works affecting strategic and local routes. The County Council introduced a streetworks permit scheme on 1 April 2020 to help plan/coordinate roadworks on its managed highway network. Detailed journey time monitoring undertaken annually since 2005/06
NC04	Incident management and effective contingency planning to minimise traffic disruption and unnecessary congestion	Traffic Management	UTC, congestion management, traffic reduction	2019		NCC/Via EM Ltd	NCC/Via EM/NCiC/National Highways: NCC, NCiC, National Highways revenue funding	NO	Funded	£100k - £500k	Implementation	Reduced vehicle emissions		Implementation on-going	Information conveyed by all forms of media (press, radio, website, social media etc.).
NC05	Bus stop clearways	Traffic Management	UTC, congestion management, traffic reduction	2016		NCC/Via EM Ltd:	NCC revenue funding	NO	Funded		Completed	Reduced vehicle emissions	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Complete. Bus stop clearways introduced in and on approaches to the AQMA. CCTV enforcement car introduced in 2016, second vehicle purchased in 2018; and third vehicle introduced in 2019.	Further clearways will only be considered should vehicles parking in bus stops be identified as impeding traffic flows

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NC06	Real time travel information	Public Information	Other			NCC / Via EM Ltd	NCC revenue funding	NO	Funded		Implementation	Reduced vehicle emissions	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Implementation on-going	Information conveyed by all forms of media (press, radio, website, social media etc.). The Travelwise centre remains in operation 24hrs a day, every day.
NC07	On-street parking management and control	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway	2012		NCC	NCC revenue funding	NO	Funded		Implementation	Reduced vehicle emissions	Manage parking to improve journey time reliability	Implementation on-going	Parking restrictions already in place within AQMA. No additional side-road/off-line locations currently identified as requiring restrictions to aid traffic flow
NC08	Nottingham city workplace parking levy (WPL)	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway	2012		NCiC	WPL funding	NO	Funded		Implementation	Reduced vehicle emissions	Restrain average journey times in the morning peak to a 1% increase per year	Implementation on-going	Whilst not within the county remit the scheme may reduce the number of vehicles travelling through the AQMA en-route to the City
NC09	NCC travel plan	Promoting Travel Alternatives	Workplace Travel Planning	2012		NCC	NCC revenue funding	NO	Not Funded		Paused	Reduced vehicle emissions	Restrain average journey times in the morning peak to a 1% increase per year	Review on-going	NCC travel plan in operation for over 20 years. This is currently under review to take account of new hybrid working arrangements.
NC10	Personal travel planning (PTP) with residents	Promoting Travel Alternatives	Personalised Travel Planning	2017	2018	NCC/AECOM; integrated transport block	Access Fund funding	NO	Funded		Completed	Reduced vehicle emissions	Restrain average journey times in the morning peak to a 1% increase per year	PTP undertaken with West Bridgford residents in 2016. Further Access Fund funded travel planning undertaken in West Bridgford during 2018	Future PTP will be delivered should revenue funding sources be identified and secured for its delivery
NC11	Car sharing scheme	Alternatives to private vehicle use	Car & lift sharing schemes	2010		NCC	NCC	NO	Funded	< £10k	Implementation	Reduced vehicle emissions	Restrain average journey times in the morning peak to a 1% increase per year	3,250 members currently registered. Implementation is ongoing Covid-19 pandemic has impacted on peoples travel to work patterns/behaviours, which has impacted on car sharing requirements.	Scheme value under review as minimal usage currently

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NC12	Development of ITSO public transport smartcard ticketing	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	2010		NCC/NCiC/PT operators		NO	Funded	Ongoing	Implementation	Increased passenger transport patronage	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Integrated ticketing strategy developed in 2014/15. New smartcard platform introduced in 2014. Robin Hood card scheme introduced in 2015. The major bus operators have now all introduced contactless payments for their own ticketing products alongside the Robinhood card and this was completed in around March 2020. The first multi-operator contactless ticketing system in the UK outside London was launched in the Nottingham area in May 2022. Public transport users can now pay a single daily capped fare across the majority of the city's buses and trams using their chosen contactless payment method.	The Nottinghamshire Enhanced Partnership is seeking to use indicative BSIP funding to deliver a multi operator ticket (MOT) in Newark & Mansfield, alongside development of an add-on for passengers travelling into the Robinhood network in Greater Nottingham. MOT strategy completed: December 2022 Robinhood add-on to launch: March 2024
NC13	Countywide off-peak concessionary public transport fare scheme for the over 60s and disabled.	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	2019		NCC/NCiC/PT operators	NCC	NO	Funded	>£10 million	Implementation	Increase passenger transport patronage	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Implementation on-going	Estimated annual cost of measure shown
NC14	Web based journey planners	Public Information	Other	2019		NCC	NCC	NO	Funded		Implementation	Increased walking/cycling/ passenger transport trips	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Implementation on-going	Web based tools included on NCC Travel Choice website: https://travelchoice.nottinghamshire.gov.uk/journey-planner/ And on NCC's website: http://www.nottinghamshire.gov.uk/transport/public-transport/plan-journey
NC15	Enhancements to bus services operating within the AQMA	Transport Planning and Infrastructure	Other			NCC/PT operators		NO	Funded		Implementation	Increased passenger transport patronage, reduced vehicle emissions	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Implementation on-going	Capacity increases will be considered should passenger information demonstrate that there is insufficient capacity on existing services
NC16	Park and ride site to the east of Nottingham	Alternatives to private vehicle use	Bus based Park & Ride		2026	NCC	No funding source identified	NO	Not Funded		In planning	Reduced vehicle emissions	Restrain average journey times in the morning peak to a 1% increase per year	No site currently identified. No funding source identified	Scheme dependent on identifying appropriate site, business case for any proposals and securing funding for its delivery

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NC17	Annual walking and cycling promotional marketing	Promoting Travel Alternatives	Promotion of cycling	2019		NCC	NCC revenue funding	NO	Funded		Implementation	Increased cycling trips	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	General promotion (e.g. website and literature) ongoing. PTP delivered during 2018 following completion of cycle route improvements. Greater Nottingham cycling maps published. NCC's website and Travel Choice webpages provide information on alternatives to using private vehicles, including cycle maps, leisure 'Routes and Rides' and the Rights of Way network	Travel Choice website: https://travelchoice.nottinghamshire.gov.uk/
NC18	Annual walking and cycling promotional marketing	Promoting Travel Alternatives	Promotion of walking	2019		NCC	NCC revenue funding	NO	Funded		Implementation	Increased walking trips	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	General promotion (e.g. website and literature) ongoing. PTP delivered during 2018 following completion of cycle route improvements. NCC's website and Travel Choice webpages provide information on alternatives to using private vehicles, including cycle maps, leisure 'Routes and Rides' and the Rights of Way network	Travel Choice website: https://travelchoice.nottinghamshire.gov.uk/
NC19	Adult and child cycle training	Promoting Travel Alternatives	Promotion of cycling		Ongoing	NCC	DfT funding	NO	Funded		Implementation	Increased cycling trips	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Across the county, 7,089 people received cycle training during 2022/23 and in Rushcliffe specifically, 1,566 people received training. Implementation is ongoing.	
NC20	Walking and cycling infrastructure improvements	Transport Planning and Infrastructure	Cycle network	2017	2024	NCC	Active Travel Fund	NO	Funded	£1 million - £10 million	Completed	Increased cycling trips	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	NCC secured funding to develop and deliver West Bridgford strategic cycling network during 2017/18. NCC secured funding from Tranche 2 of the Active Travel Fund (ATF) to deliver segregated cycleway/footway improvements along Regatta Way, West Bridgford. The new cycleway opened to members of the public in August 2022.	Potential new Trent walking/cycling bridge and improvements to it funded by Nottingham City Council's TCF allocation proposed for delivery in 2023/24 or 2024/25 (subject to feasibility, consultation and Cabinet Member approvals). Further improvements identified as priorities through the D2N2 LCWIP subject to securing funding for their development and delivery as well as vfm assessments and necessary Cabinet Member approvals.
NC21	Cycling networks - development of Local Cycling and Walking Infrastructure Plan (LCWIP)	Transport Planning and Infrastructure	Cycle network	2019	2020	NCC/NCiC/DCC/DCiC/borough and district councils/Sustrans/other stakeholders	DfT funding	No	Funded	Within existing resources	Ongoing	Reduced Emissions of N02 and PM	Increased levels of cycling	Funding secured to develop D2N2 wide LCWIP. Data collected; three stakeholder events held to date Public engagement on the D2N2 LCWIP took place between December 2022 and March 2023. The LCWIP document will be reviewed and continue to evolve and develop over time. Future countywide infrastructure priorities will be identified through technical analysis undertaken as part of the LCWIP development and will be subject to feasibility, consultation, and County Council Cabinet Member approval	The D2N2 LCWIP public engagement focused on cycle corridors only, and not specific schemes. Any future cycle improvement schemes will be subject to funding availability, feasibility consultation, and approvals

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NC22	Bus fleet low emission vehicles	Promoting Low Emission Transport	Promoting Low Emission Public Transport			NCC/NCiC/PT operators; NCT (operator)	OLEV funding	NO	Funded		Implementation	Ongoing take-up of cleaner vehicles	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Implementation ongoing. SQBP in place affecting all buses travelling through AQMA	All local buses operating into Nottingham City Centre and through the AQMA meet Euro VI standards. 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. NCC has spent £0.9m from the Clean Bus Technology Fund to retrofit older buses to achieve Euro VI equivalent and this includes 8 routes operated by several operators in the AQMA. ZEBRA funding has been secured by the City to support NCT in migrating Greenline buses to electric in next two years.
NC23	Introduction of wider network of EV charging points to encourage the take-up of alternative fuel vehicles	Promoting Low Emission Transport	Potential residential EV charging infrastructure (on and off street)	2023/24	2025/26	NCC / districts	OLEV funding	NO	LEVI revenue funding secured for EV infrastructure programme development and NCC are currently developing a bid for future LEVI capital funding allocations	Costs to be determined	In progress	No. of EV charge points introduced in the Borough	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	The County Council is working to determine the Council's long term on-street EV strategy. NCC is developing a bid in partnership with the district councils for LEVI capital funding for EV infrastructure.	Measure is reliant on a successful LEVI bid
NC24	Nottinghamshire on-street EV charging pilot scheme - electric vehicle cable channels (EVCC)	Promoting Low Emission Transport	On-street EV charging infrastructure	2022	2030	NCC/Via EM Ltd	Privately funded by resident and OZEV LEVI pilot funding	No	Privately funded by resident and OZEV LEVI pilot funding	Costs to be determined	In progress	Reduction in pollutants and emissions due to increased use of low emission vehicles.	Number of EVCC installed and back-office data from EV charge point	County Council approved the trialling of on-street EV charging cable channels at Transport & Environment Committee in February 2022. Nottinghamshire County Council successfully secured (and received in January 2023) £774k from the Government's Local Electric Vehicle Infrastructure (LEVI) Pilot Funding enabling the delivery of up to 300 EV cable channels. Delivery started in February 2023	The County Council trial is in progress

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NH01	Using new traffic light control technology to minimise the frequency of stops for large vehicles (lorries & buses predominantly). It is hoped that reducing stops for these vehicles it will reduce their emissions; further benefits may accrue by reducing their idle time and the capacity implications of larger, slower, vehicles pulling off at the front of a traffic queue.	Traffic management	Strategic highway improvements			NH		NO	Funded		Implementation	Improved traffic flow	Reduction in NO_2 annual mean concentration of 1µg m-3 required to achieve the AQS – further reduction (in the region of 10%) required to demonstrate well below the AQS and sustained compliance.		Technology is effective at detecting large vehicles and influencing signal control. Control set up used showed benefits in some cases but in others proved detrimental by overriding the well developed adaptive control system (MOVA). The net effect was shown to be negative on stops and delays however this did not translate into a material change in air quality readings; it is assumed therefore that even focussing on the positive elements the level of impact from this system is too small to have a meaningful impact on emissions at a single junction. NH have reverted out those changes shown to be detrimental but left in those they are confident were beneficial. As part of the proposed upcoming changes as part of the A52 Nottingham Junctions project NH are hoping to further review and see if some softer priority measures can be re-introduced for HGVs.
NH02	Ban on the U-turn east to west and reconfiguration of the signals to improve efficiency.	Traffic management	Strategic highway improvements	2016	2023	NH		NO	Funded			Improved traffic flow	Reduction in NO_2 annual mean concentration of 1µg m-3 required to achieve the AQS – further reduction (in the region of 10%) required to demonstrate well below the AQS and sustained compliance.	Implementation ongoing. The order to remove the U-turn movement at Stragglethorpe was brought into force in May 2022	The Traffic Regulation Order (TRO) will facilitate a reconfirmation of the signal control which will reduce the signal cycle time (and hence shorter red periods, queues and idling) and improve capacity. It is these further changes that will bring about any change in emissions and air quality. Signal reconfiguration will happen when roadworks at nearby Gamston roundabout have been completed (expected Spring 2023)
NH03	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	2020		NH (EV infrastructure on the trunk road network)					Implementation	No. of EV charge points introduced in the Borough	Reduction in NO2 annual mean concentration of 1µg m-3 required to achieve the AQS – further reduction (in the region of 10%) required to demonstrate well below the AQS and sustained compliance.		Implementation ongoing. Review of on-street and rural EV charging infrastructure undertaken during 2020/21

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	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
NH04	Co-ordination of street works to minimise traffic disruption and unnecessary congestion	Traffic Management	UTC, congestion management, traffic reduction			NH		NO	Funded		Implementation	Improved traffic flow, reduced vehicle emissions	Reduction in NO2 annual mean concentration of 1µg m-3 required to achieve the AQS – further reduction (in the region of 10%) required to demonstrate well below the AQS and sustained compliance.	Implementation ongoing.	
NH05	Walking and cycling infrastructure improvements	Transport Planning and Infrastructure	Cycle Network	2020		NH		NO	Not Funded		Planning	Walking and cycling infrastructure improvements	Reduction in NO2 annual mean concentration of 1µg m-3 required to achieve the AQS – further reduction (in the region of 10%) required to demonstrate well below the AQS and sustained compliance.	NH seeking funding for a strategic study to identify further options and explore potential routes to funding and delivery	The A52 corridor from Bingham to Gamston (and further into Nottingham City) has been identified as having potential for wider walking, cycling and public transport improvements and NH are seeking funding for a strategic study to identify further options and explore potential routes to funding and delivery.
RB01	Off-street parking management and control (including review of car parking offer/charging)	Traffic Management	Workplace Parking Levy, Parking Enforcement on highway			RBC	LA funded	NO	Funded	< £10k	Implementation	Improved traffic flow, reduced vehicle emissions	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)		Not relevant within AQMA No 1/2011 Stragglethorpe Road
RB02	Ensure sustainable development on sites within Borough that may impact on AQMA	Policy Guidance and Development Control	Other policy	2012	2032	RBC	LA funded	NO	Funded		Implementation	Developments within and potentially impacting on an AQMA supported by AQ assessments. No. of AQ impact assessments related to AQMA	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Implementation ongoing - Ensuring AQ is at the heart of planning decision.	Resource permitting - Propose to adapt and introduce EMAQN Air Quality and Emissions Mitigation – Guidance for Developers for RBC to ensure consistency of approach

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	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
RB03	Co-ordination of land-use planning and transport infrastructure	Policy Guidance and Development Control	Other policy	2012	2032	RBC/NCC/NH		NO			Implementation	No. of impact assessments	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Implementation ongoing - Ensuring AQ is at the heart of planning decision.	
RB04	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 air quality and $PM_{2.5}$	Policy Guidance and Development Control	Other policy	2012	2031	RBC		NO			Implementation	No. of travel plans required as planning conditions and number of AQ assessments submitted with mitigation measures put in place	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Ongoing as part of the development control process - Development specific requirement	
RB05	Secure appropriate levels of developer contributions (Section 106 and/or CIL) for use on sustainable transport and air quality improvement projects	Policy Guidance and Development Control	Other policy	2012	2032	RBC/NCC		NO			Implementation	Sums collected for such infrastructure projects	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Ongoing as part of the development control process - Development specific requirement	
RB06	Promote carbon reduction policies and guidance to developers working within Rushcliffe with a co-benefit of improving air quality	Policy Guidance and Development Control	Other policy	2019	2030	RBC		NO	Funded		Implementation	No. of EV charge points introduced in the Borough through planning conditions.	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Ongoing - driven by the policies in the Local Plan adopted in 2019	Provision of/for EV charging points in new residential and commercial developments.
RB07	Workplace travel plans	Promoting Travel Alternatives	Workplace Travel Planning	2016		RBC planning/NCC		NO			Implementation	Restrain average journey times in the morning peak to a 1% increase per year	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Developed with businesses as part of planning conditions when secured by RBC. Targeted travel planning (funded by the County Council) was held at workplaces within the AQMA during 2014/15	

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	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
RB08	RBC travel plan	Promoting Travel Alternatives	Workplace Travel Planning	2019		RBC/ RBC planning/NCC		NO			Implementation	Restrain average journey times in the morning peak to a 1% increase per year	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)		RBC developed travel plan as a planning condition for occupation of new premises
RB09	Flexible working arrangements	Promoting Travel Alternatives	Encourage / Facilitate home-working	2020		RBC		NO			Implementation	Restrain average journey times in the morning peak to a 1% increase per year	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	RBC operate flexible working arrangements for appropriate staff	Flexible/remote working arrangements have been updated/revised as part of the smarter ways of working framework in new People Strategy which was adopted in 2021
RB10	Travel planning with residents at new developments	Promoting Travel Alternatives	Personalised Travel Planning	2016		RBC		NO			Implementation	Restrain average journey times in the morning peak to a 1% increase per year	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Implementation ongoing. Planning conditions secured by RBC to ensure residential travel planning is undertaken where appropriate	
RB11	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	2019		RBC/NCiC;		NO	Funded	£500k - £1 million	Implementation	Reduced vehicle emissions. No. of EV charge points introduced across the Borough	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Successful in funding bid to OZEV – residents off street charging provision in Gamston, at Bingham Arena and Gresham Sports Pavillion in 2022. Site investigation ongoing to determine feasibility of other sites. Currently assessing other potential funding schemes.	RBC working in partnership with NCiC to develop the CP infrastructure along the D2N2 corridor –funding via Transforming Cities Fund. Implementation ongoing. Constraints identified in some locations due to power supply issues. Working with electricity distributor to improve supply provision.
RB12	Develop a strategy for further EV provision across the Borough	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2020		RBC		NO	Funded		Implementation	Reduced vehicle emissions. No. of EV charge points introduced across the Borough	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Installation of one solar canopy hub – others under consideration	Constraints identified around power supply in some locations. Partnering with City under Transforming Cities Fund to increase D2N2 offering across the Borough; exploring wider options. Assessing other potential funding sources e.g. LEVI

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	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
RB13	Promotion of low emission vehicles through taxi licensing	Promoting Low Emission Transport	Taxi emission incentives	2021		RBC		NO	Not Funded		Planning	Reduced vehicle emissions	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Review of taxi licence criteria/incentives for use of electric vehicles. Under consideration – exploring possible options	Currently reviewing case studies
RB14	Procurement of new RBC vehicles	Vehicle Fleet Efficiency	Other	2020		RBC		NO	Not Funded		Planning	Reduced vehicle emissions	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	No. of electric and/or other low emission vehicles within RBC fleet. Replace Rushcliffe Country Park diesel buggies with electric buggies.	Applicable to RBC operations - link with Carbon Management Plan
RB15	Investigate potential replacement/upgrading of RBC refuse trucks & vans with ULEV, Biogas, hydrogen fuelled vehicles	Vehicle Fleet Efficiency	Other	2021		RBC		NO	Not Funded		Planning	Reduced vehicle emissions. No. of electric and/or other low emission vehicles within RBC fleet	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Successful trial undertaken in 2020/21 working with a partner organisation providing biofuel; going forward sourcing fuel facility for Borough Council depot	Applicable to RBC operations - link with Carbon Management Plan and accelerating shift to low carbon transport.
RB16	Integrate RBC driver training with annual certification and investigate in-cab monitoring and route optimisation	Vehicle Fleet Efficiency	Other	2021		RBC			Not Funded		Planning	Reduced vehicle emissions	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)		Applicable to RBC operations - link with Carbon Management Plan and accelerating shift to low carbon transport.
RB17	Widen access to staff cycle purchase scheme	Promoting Travel Alternatives	Promotion of cycling and walking	2015	2025	RBC		NO	Funded	£10k - 50k	Implementation	Increase in cycle purchases via staff scheme	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	RBC staff initiative. 40 people have availed of the scheme since it was introduced in 2015	Scheme open to all staff

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	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
RB18	Work with partners to promote active travel to the public - (e.g. school travel plans including accreditation (stars) and walking bus; travel choice programme including active travel; well-being at work scheme / work place health; business e-bike scheme; healthy futures fund – cycling on prescription; community cycling groups; Ridewise training	Promoting Travel Alternatives	Promotion of cycling and walking	2016		NCC/RBC		NO			Implementation	Increase cycling and walking	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Implementation ongoing. Further bike repair and learn to cycle sessions made available in 2022. Green Rewards scheme introduced in 2020 - encouraging active travel where residents who isgn up to the scheme can earn points which give discounts in local shops and entry into prize draws.	217 people had their bikes registered across 7 events which took place in Keyworth, Bingham, Radcliffe on Trent and West Bridgford. Continued growth of the Green Rewards scheme by end of 2021. Funded Women's Learn to Ride sessions. Funded Ridewise to deliver guided rides across the Borough. Continued promotion of Green prescribing.
RB19	Development of RBC cycling strategy	Promoting Travel Alternatives	Promotion of cycling and walking	2021		RBC		NO	Not Funded		Implementation	Increased cycling trips; reduced vehicle emissions	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	RBC Cycling and Walking Action Plan published in 2022 - The aim is to 'increase participation in walking and cycling by all in Rushcliffe' focussing on 3 priority outcomes – Promotion; Safety; Infrastructure. Increase awareness through events & publication of Borough wide cycling map; improvements to infrastructure; working with partners including Big Business Carbon Club partners and schools to promote cycling; development of policy to ensure Section 106 agreements are realised.	The RBC Cysling and Walking action Plan supports the NCC cycling strategy with RBC working in collaboration with NCC to develop the cycling infrastructure.
RB20	Raise awareness of the wider government initiatives to reduce air emissions e.g. ban on the sale of house coal and wet wood	Policy guidance and development control	Low emissions strategy	2021		RBC		NO	Not Funded		Implementation	Reduction in complaints relating to domestic burning	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Environment Bill 2021 has improved and streamlined enforcement powers in Smoke Control Areas; a policy for a civil penalties scheme for smoke emissions in Smoke Control Areas and potential changes to the existing smoke control area coverage will go before Council.	Will seek to work with Nottinghamshire County Council Trading Standards & neighbouring authorities to ensure appropriate fuel is sold in the Borough

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	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
RB21	Work with partners to encourage more sustainable travel	Promoting Travel Alternatives	Promotion of cycling and walking	2020		NCC/RBC		NO	Not Funded		Implementation	reduced vehicle emissions, increased cycling/walking, wider benefit to public health	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Linking with public health to promote the health benefits of walking and cycling. Link with NCC Travel Choice programme https://travelchoice.nottinghamshire.gov.uk/	RBC working with GPs - Active Practice Charter looking to encourage staff and patients to be more physically active and less sedentary. Six of eleven practices now accredited. Adoption of cycle to work schemes and team virtual race competitions leading to more people being active and using their car less; Green social prescribing is a way of connecting people to nature based activities and green groups, projects and schemes in their local community for support with health and wellbeing. The Rushcliffe Big Green Book is a directory of nature-based activity providers which aims to be used as a tool to support identifying green social prescribing opportunities. It also includes a Greenground map (similar to a London underground map) to promote walking, cycling and cultural opportunities in the area for residents to become involved with
RB22	Regulation of Permitted Activities	Environmental permits	Introduction /increase of environmental funding through permit systems and economic instruments	2012	2032	Environment Agency and RBC		NO			Implementation	Conditions applied in line with Defra guidance and support best practice	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Ongoing programme for inspection of permitted activities	
RB23	New Trent Crossing	Promoting Travel Alternatives	Promotion of cycling and walking	2020	2024	NCiC working in partnership with RBC & NCC	Transforming Cities Fund	NO	Funded	£1 million - £10 million	Implementation	Increase cycling and walking; reduction in number of car journeys	Sustain compliance & reduce NO2 concentrations to well below the AQS objective (in the region of 10%)	Consultancy team nad principal contractor appointed; planning application now due to be submitted in Summer 2023.	The City Council secured £9.25m in 2020 from the Government's Transforming Cities programme to deliver this scheme as part of a programme to invest in local transport infrastructure that will improve sustainable transport, support growth, and encourage more low carbon journeys.
RBC 24	Promotion of Clean Air Day and other awareness campaigns	Other	Other			RBC working with other Nottinghamshire authorities, Public Health and the NHS Primary Care Network		NO	Not Funded		Implementation	Increase public awareness	improve air quality	Plan to collobate more closely with partners to facilitate wider dissemination of the air quality related messages	

Note: Measure No in the above table reflects the numbering system used in the 2021 AQAP – measures NC 01-22 are the Nottinghamshire County Council measures which relate predominantly to AQMA No 1 Trent Bridge; NH 01-05 are the National Highways measures which relate predominantly to AQMA No 1/2011 Stragglethorpe Road; and RB 01-23 are the Rushcliffe Borough Council measures which are generally applicable across the Borough.

The expected efficacy of the measures is provided by a traffic light colour coded system with measures highlighted in green as the most effective and red as least effective.

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

As detailed in Policy Guidance LAQM.PG22 (Chapter 8), 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.

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

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 2022 (base year 2018) and indicates concentrations range from 7.4µg m^{-3} to 9.9µg m^{-3}. Across the wider Midlands region estimated concentrations of $PM_{2.5}$ range from 5.0µg m^{-3} to 12.0µg m^{-3}.

The Environment Act 2021 established a legally binding duty on government to bring forward at least two new air quality targets in secondary legislation by 31 October 2022. This duty sits within the environmental targets framework outlined in the Environment Act (Part 1).

The air quality targets set under the Act are:

- Annual Mean Concentration Target ('concentration target') - a maximum concentration of 10µg/m^3 to be met across England by 2040
- Population Exposure Reduction Target ('exposure target') - a 35% reduction in population exposure by 2040 (compared to a base year of 2018).

The targets will be set into law by The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023[18] which also contains provisions on how these will be monitored and assessed.

The Office for Health Improvement and Disparities (OHID) Public Health Outcomes Framework (PHOF) 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 most recent update of the PHOF utilises a new method for the calculation of the local mortality burdens and as a result there is new data for Rushcliffe Borough Council. The attributable fraction (i.e. the proportion of deaths estimated as due to long-term exposure to anthropogenic particulate $PM_{2.5}$ air pollution) for Rushcliffe for the most recent year available (2021[19]) was 5.42% which is in line with the regional level of 5.56% and the national level of 5.5%.

The Nottingham and Nottinghamshire Air Quality Strategy 2020-2030 aims are (1) to reduce average concentrations of NO_2 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 $PM_{2.5}$:

- Rushcliffe Borough Council continues to work with our transport partners (Nottinghamshire County Council and National Highways) and other stakeholders to reduce transport impacts as a whole. This has benefit not only for NO_2 but all emissions from transport sources, including $PM_{2.5}$;
- Planning applications for commercial wood/biomass burning plants (and similar) 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 recommend planning conditions requiring the submission for approval of Construction Management Plans for larger development to ensure adequate measures are in place during construction to control dust emissions;
- The Environment Act 2021 made amendments to Section 73 of The Clean Air Act 1993 and these came into force on 1st May 2022. This has introduced provisions

[18] The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (https://www.legislation.gov.uk/uksi/2023/96/note/made)

[19] Public Health Outcomes Framework– Rushcliffe (2021) Public Health Outcomes Framework - Rushcliffe

aimed at helping local authorities better enforce around smoke emissions in Smoke Control Areas, including the introduction of civil financial penalties and the strengthening of offences in relation to the sale of certain solid fuel types. We are currently considering the development of a policy for the introduction of a civil penalty scheme.

- Rushcliffe Borough Council is exploring the possibility of making adjustments to the Smoke Control Area coverage across the Borough. This work is at a preliminary stage and no decisions have yet been made. Any changes would have to be supported by senior management and elected members therefore any proposal for adjustments will need to follow due process and be subjected to scrutiny. We will continue to provide updates on this matter in future ASRs;
- 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;
- We will utilise the recently published amendments to Smoke Control Area enforcement under the Environment Act 2021 which came into effect on 1st May 2022, and the statutory guidance on enforcement to take action as necessary; and
- We will continue to work and share knowledge with our neighbouring authorities as part of the Nottinghamshire Environmental Protection Working Group (NEPWG). Discussions around changes to legislation and guidance for Smoke Control Areas are a regular topic during meetings.

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

This section sets out the monitoring undertaken within 2022 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 2018 and 2022 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 2022. Table A.1 in Appendix A shows the details of the automatic monitoring sites. The Nottingham Air Quality page presents automatic monitoring results for Rushcliffe Borough Council, with automatic monitoring results also 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 (i.e. passive) monitoring of NO_2 at 29 sites during 2022. Table A.2 in Appendix A presents the details of the non-automatic sites.

As part of our ongoing review and management of the local air quality network four locations (Fern Road, DS 1, TSQ and The Green) were removed from the 2021 network. Three of these (Fern Road, DS 1 and The Green) were new locations in 2021 and monitoring for a twelve-month period showed annual mean concentrations of 14.5µg m^{-3}, 14µg m^{-3}, 13.2µg m^{-3} respectively. As the levels are significantly below the objective it is not considered necessary to continue to monitor at these locations. At location TSQ monitoring had taken place since 2019 with a downward trend from 24µg m^{-3} (2019) to 17µg m^{-3} (2022). Even accounting for the impact on traffic levels during the COVID-19

pandemic in 2020 and 2021 the recorded levels are significantly below the objective and this location has therefore been removed from the monitoring network. Three additional locations were added to the network (Cot PO, GR1 and CR1) in 2022 – CotPO is located at a busy road junction in the village of Cotgrave, GR1 is a roadside location close to the centre of West Bridgford and CR1 is a roadside location adjacent to a road junction in Ruddington.

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

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO_2 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 (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2022 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 for any of the diffusion tube locations across the Rushcliffe Borough Council monitoring network in 2022. The diffusion tubes were installed in accordance with the 2022 diffusion tube calendar. Annualisation was required at one location (GR1) as data capture was 66.7% and below the 75% data capture threshold.

Table A.5 in Appendix A compares the ratified continuous monitored NO_2 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 five years. The maximum hourly mean recorded by the continuous monitors was 105µg/m^3 in AQMA No 1/2011 Straggelthorpe Road and 122µg/m^3 in AQMA No 1 Trent Bridge.

The data presented in Table A.3 and Table A.4 show the NO_2 annual mean concentration did not exceed the air quality objective at any location during 2022. It can be seen from Figure 1 the NO_2 annual mean concentration recorded at all locations across the network continues the overall downward trend identified over the past five years. With the exception of two locations (NK1 and Rempston) the NO_2 annual mean concentrations recorded in 2022 were lower (between 1 and 22%) than in 2021. At the majority of locations, the 2022 NO_2 annual mean concentrations were at or below the levels recorded in 2020 when the COVID-19 pandemic national lockdowns led to significant decreases in traffic levels.

In AQMA No 1 Trent Bridge the highest measured NO_2 annual mean concentration was 28µg m^{-3}, a decrease of 3% when compared with the 2021 data. The maximum hourly mean was 122µg m^{-3} therefore there were no exceedances of the NO_2 hourly limit of 200µg m^{-3}. The data (continuous and passive) for AQMA No 1 Trent Bridge for the period from 2018 to 2022 is presented in Figure A.2. When considering the overall data trend, it is important to take account of the impact of the COVID-19 pandemic lockdowns in 2020 and to a lesser extent in 2021. In 2020 the maximum NO_2 annual mean concentration recorded in AQMA No 1 Trent Bridge was 28µg m^{-3} (i.e. the same as for 2022) which was a significant decrease from the maximum level of 39µg m^{-3} recorded in 2019 (pre pandemic). In 2022 although there were no COVID-19 pandemic restrictions the data trend would suggest the lifestyle impacts of the pandemic, including for example working from home and/or lesser emphasis on the morning/evening commute may have remained post pandemic. The increase in the number of electric vehicles (EV) and possibly the ongoing cost of living crisis may also be contributing factors.

In AQMA No 1/2011 Stragglethorpe Road the highest measured NO_2 annual mean concentration was 35µg m^{-3}, an increase of 6% when compared with the 2021 data. The maximum hourly mean was 105µg m^{-3} therefore there were no exceedances of the NO_2 hourly limit of 200µg m^{-3}. Figure A.3 shows the trends in annual mean NO_2 concentrations across all locations (continuous & passive) in AQMA No 1/2011 Stragglethorpe Road between 2018 and 2022. There were no exceedances of the annual mean objective in

2022 and the concentrations at all locations were lower than pre-2020 levels. There has been a slight increase in the NO_2 annual mean concentration recorded by the continuous monitor. This could potentially be attributed to the ongoing roadworks on the A52 to improve the Gamston roundabout and ultimately remove the U-turn at the Stragglethorpe Junction. These works have resulted in frequent diversions with increased traffic using the junction thereby potentially increasing congestion at this location.

Figure A.4 shows a similar pattern in the NO_2 annual mean concentrations across the monitoring network for 2018 – 2022 at sites not located in an AQMA. The majority of sites with the exception of NK1 and Rempstone have seen a decrease in the NO_2 annual mean concentration. There are 3 monitoring sites with no historic data as these are new monitoring locations added in 2022.

As the NO_2 annual mean concentration in AQMA No 1 Trent Bridge has been below the air quality objective for a number of years, including pre pandemic we will consider revocation of the AQMA within the next year.

In AQMA No 1/2011 Stragglethorpe Road NO_2 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.

3.2.2 Particulate Matter (PM_{10})

Rushcliffe Borough Council does not monitor Particulate Matter (PM_{10}).

3.2.3 Particulate Matter ($PM_{2.5}$)

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

3.2.4 Sulphur Dioxide (SO_2)

Rushcliffe Borough Council does not monitor sulphur dioxide (SO_2).

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 (e.g. installed on the façade of a residential property).

(2) N/A if not applicable

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

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
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	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
A52/RT	A52/RT	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	Windy Ways	Roadside	457651	334840	NO_2	NO	0.0	12.0	No	1.8
A52/HHF1	A52 HOME HOUSE 1	Roadside	463011	338213	NO_2	YES (AQMA No1/2011 Stragglethorpe Road)	0.0	6.0	Yes	2.5
A52/HHF4	A52 HOLME HOUSE 2	Roadside	463040	338232	NO_2	YES (AQMA No1/2011 Stragglethorpe Road)	0.0	6.0	Yes	2.5
15 KHG	15 Kirk Hill	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
2LA	2A Long Acre, Bingham	Roadside	470248	339834	NO_2	NO	0.0	1.2	No	2.6
Trent B1	Trent Buildings	Roadside	458249	338167	NO_2	YES (AQMA No 1 Trent Bridge)	0.0	3.6	Yes	2.5
Mag 1	Magnolia 1, Edwalton	Kerbside	459366	334244	NO_2	NO	12.9	0.9	No	2.6
Mag 2	Magnolia 2, Edwalton	Kerbside	459324	334227	NO_2	NO	3.9	1.9	No	2.6
LR 1	Loughborough Road 1	Roadside	458100	337543	NO_2	YES (AQMA No 1 Trent Bridge)	9.0	2.4	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)
WL 1	Wilford Lane 1(Centenary)	Kerbside	458055	337566	NO_2	YES (AQMA No 1 Trent Bridge)	7.0	2.0	No	2.6
NK 1	Nottingham Knight	Kerbside	457612	334859	NO_2	NO	10.8	2.3	No	2.1
Sains	Sainsbury Ruddington	Kerbside	457303	333214	NO_2	NO	0.0	2.2	No	2.6
Rempston	Main street Rempston3	Roadside	457621	324386	NO_2	NO	8.5	1.6	No	2.6
A52 Bass	A52 Bassingfield	Roadside	461816	337855	NO_2	NO	30.0	10.0	No	2.5
CotPO	Cotgrave PO	Roadside	464495	335387	NO_2	NO	2.8	2.8	No	2.4
GR1	Gordon Road WB	Roadside	458897	337350	NO_2	NO	7.9	2.3	No	2.3
CR1	Clifton Road Ruddington	Roadside	457262	333336	NO_2	NO	2.8	1.7	No	2.5

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO_2 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 2022 (%) (2)	2018	2019	2020	2021	2022
Trent Bridge	458256	338156	Roadside		99	36	37	27	29	28
A52 Holme House	463005	338208	Roadside		88.9	39	**41**	31	33	35

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

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

Notes:

The annual mean concentrations are presented as µg/m^3.

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

All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Table A.4 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
WLR/2	457873	337426	Roadside		100.0	26.0	26.3	17.3	18.8	16.3
A52/SA	465929	339543	Roadside		100.0	29.0	27.6	19.8	21.3	17.3
CL	457223	335033	Roadside		90.4	28.0	28.5	20.5	20.8	19.4
HR	458326	336714	Urban Background		90.4	15.0	21.0	14.2	14.4	14.0
LR	458126	337727	Roadside		100.0	28.0	27.0	21.4	23.3	20.2
A52/RT	464644	338730	Roadside		100.0	28.0	27.3	21.5	21.7	18.7
RR	458284	338150	Roadside		100.0	31.0	29.8	23.9	24.5	22.2
TBLA	458752	338278	Roadside		100.0	31.0	31.4	23.4	24.8	22.3
TBLB	458756	338267	Roadside		92.3	32.0	32.7	23.2	26.5	20.6
TBI	458274	338117	Roadside		100.0	**40.0**	39.3	28.1	30.3	27.9
WL3	458134	337581	Roadside		90.4	34.0	33.8	25.4	25.5	24.2
WW	457651	334840	Roadside		100.0	31.0	36.2	27.6	30.7	30.0
A52/HHF1	463011	338213	Roadside		100.0	38.0	37.4	24.3	27.4	25.5

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2022 (%) [2]	2018	2019	2020	2021	2022
A52/HHF4	463040	338232	Roadside		92.3	39.0	38.1	26.9	29.1	25.4
15 KHG	470202	340092	Roadside		100.0	25.0	23.8	17.8	19.2	16.1
RuRo	458132	336462	Roadside		100.0	29.0	28.4	19.3	20.8	19.9
2LA	470248	339834	Roadside		100.0	31.0	30.9	23.3	23.6	21.3
Trent B1	458249	338167	Roadside		100.0	36.0	37.3	26.6	29.3	26.6
Mag 1	459366	334244	Kerbside		100.0		28.3	20.3	21.0	19.4
Mag 2	459324	334227	Kerbside		100.0		28.3	19.0	20.1	19.4
LR 1	458100	337543	Roadside		100.0		30.3	25.2	25.7	22.6
WL 1	458055	337566	Kerbside		100.0		32.6	25.5	28.4	24.9
NK 1	457612	334859	Kerbside		100.0		**40.1**	28.1	27.2	29.5
Sains	457303	333214	Kerbside		90.4	31.0	30.4	21.1	24.2	24.0
Rempston	457621	324386	Roadside		100.0				16.4	18.1
A52 Bass	461816	337855	Roadside		80.8				14.6	13.8
CotPO	464495	335387	Roadside		92.3					15.9

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 2022 (%) (2)	2018	2019	2020	2021	2022
GR1	458897	337350	Roadside		65.4					16.3
CR1	457262	333336	Roadside		82.7					21.1

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

☒ **Diffusion tube data has been bias adjusted.**

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

Notes:

The annual mean concentrations are presented as µg/m^3.

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

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

Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Figure A.1 – Trends in Annual Mean NO_2 Concentrations Across All Diffusion Tube Locations between 2018 and 2022

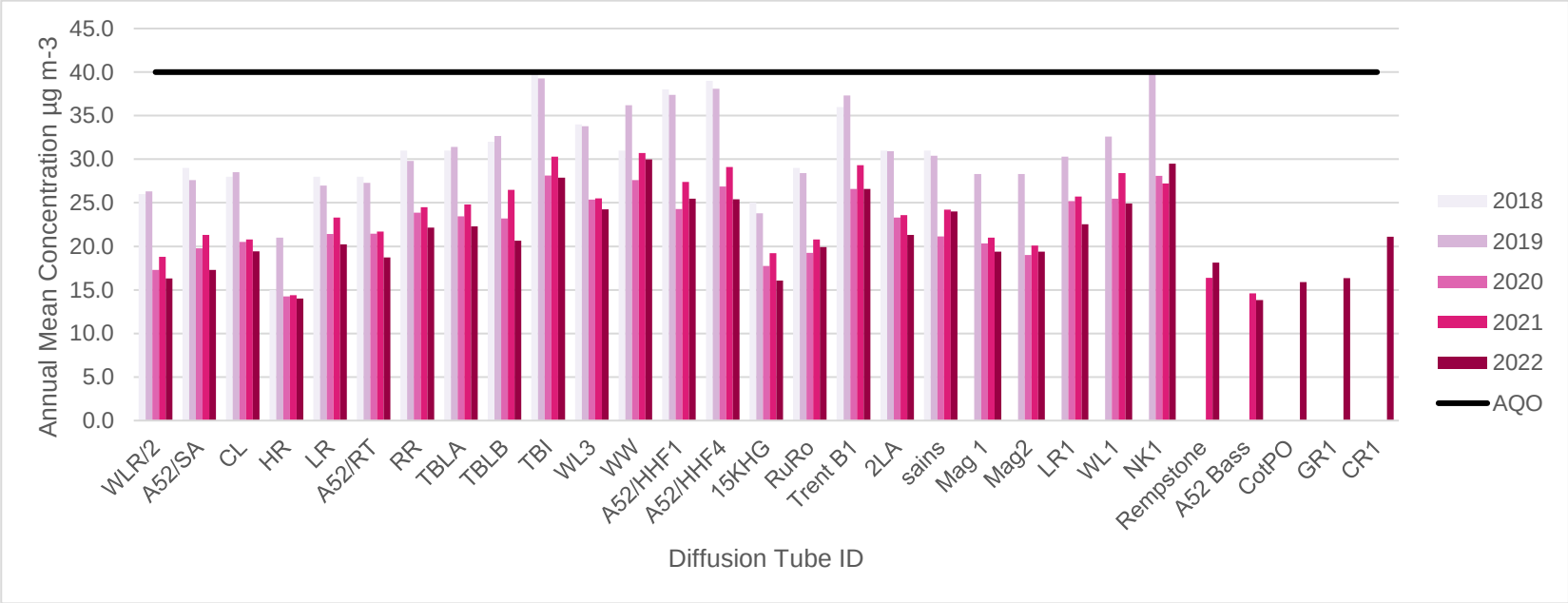


Figure A.2 – Trends in Annual Mean NO_2 Concentrations Across All Locations (Continuous & Passive) in AQMA No 1 Trent Bridge between 2018 and 2022

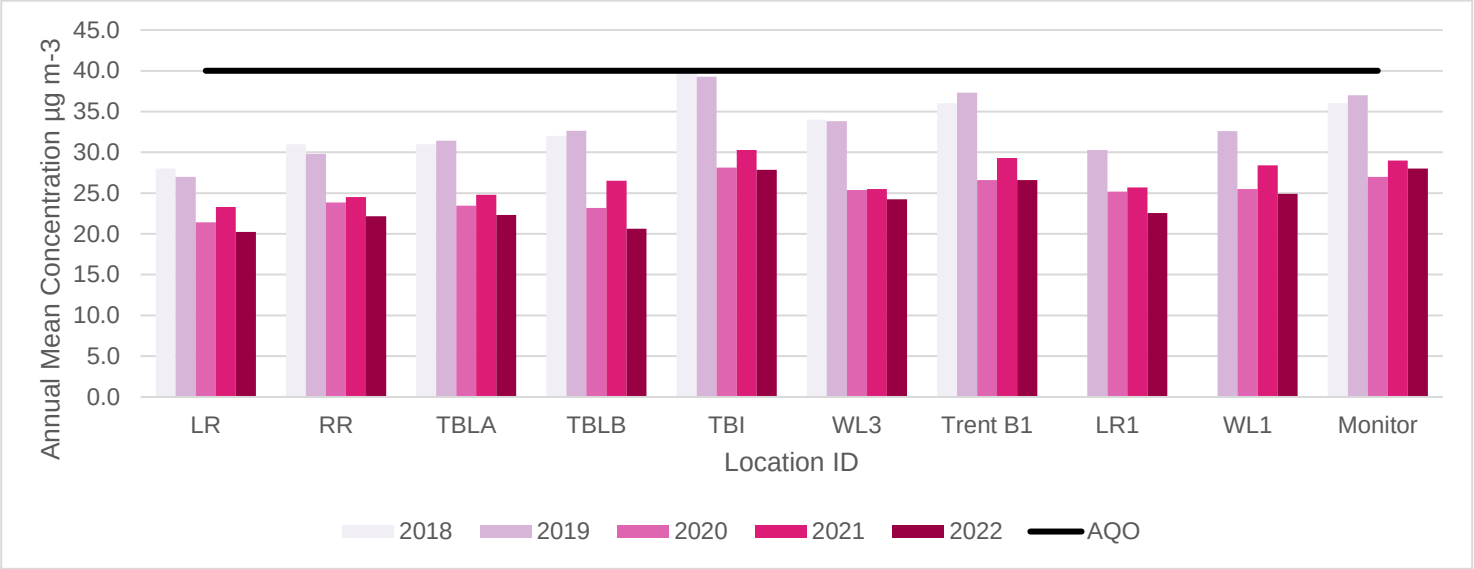


Figure A.3 – Trends in Annual Mean NO_2 Concentrations Across All Locations (Continuous & Passive) in AQMA No 1/2011 Stragglethorpe Road between 2018 and 2022

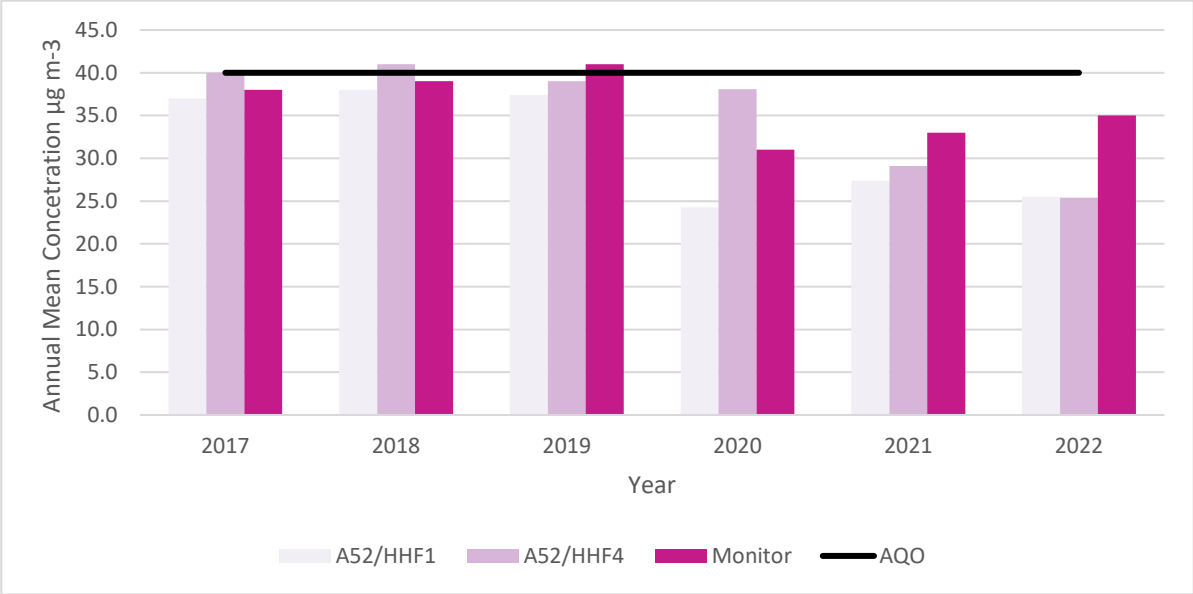


Figure A.4 – Trends in Annual Mean NO_2 Concentrations Across All Diffusion Tube Locations not in an AQMA between 2018 and 2022

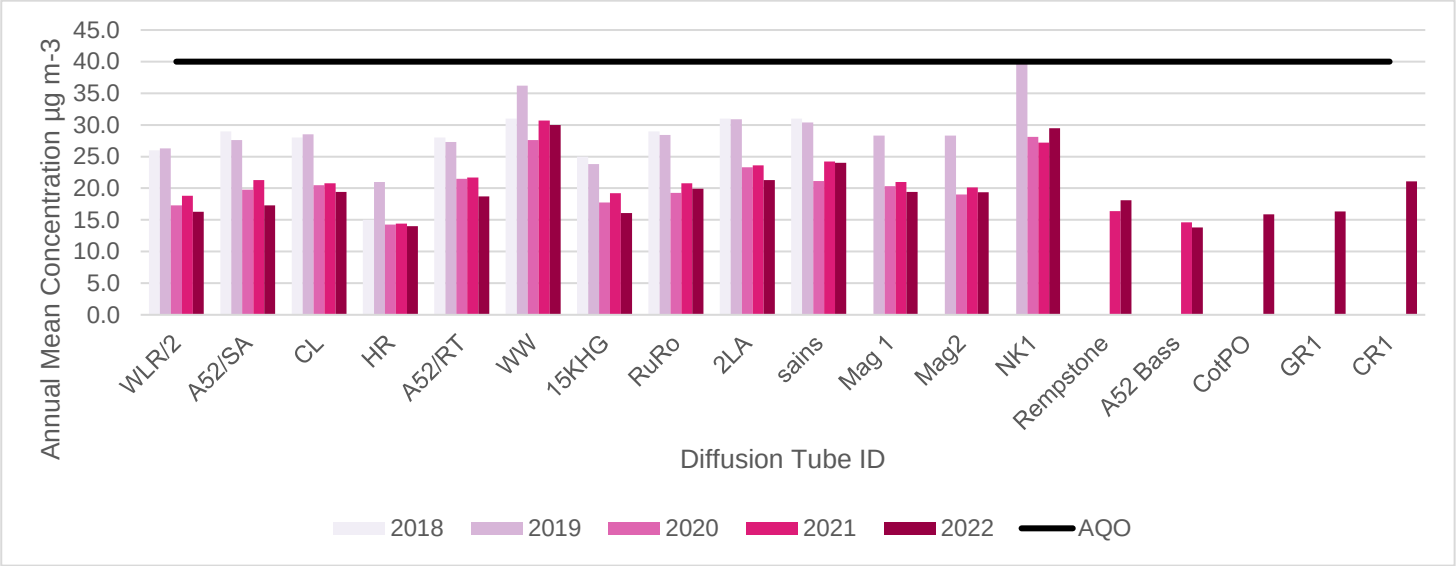


Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
Trent Bridge	458256	338156	Roadside		99	0	0	0	0	0
A52 Holme House	463005	338208	Roadside		88.9	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 NO_2 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 (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Appendix B: Full Monthly Diffusion Tube Results for 2022

Table B.1 – NO_2 2022 Diffusion Tube Results ($\mu g/m^3$)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.83)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
WLR/2	457873	337426	30.5	19.7	28.9	18.8	17.2	14.4	12.5	17.9	20.8	20.3	19.1	15.8	19.6	16.3	-	
A52/SA	465929	339543	31.1	18.8	26.6	20.6	15.3	17.5	13.7	23.7	25.0	20.2	23.6	14.3	20.9	17.3	-	
CL	457223	335033	39.6	29.0	21.5	18.7		20.5	16.3	16.6	23.8	23.5	30.5	17.8	23.4	19.4	-	
HR	458326	336714	31.5	16.4	31.2	13.7		5.4	9.3	12.0	15.5	15.7	20.4	14.8	16.9	14.0	-	
LR	458126	337727	34.8	24.9	25.5	22.3	22.6	20.5	15.7	23.0	28.0	23.6	30.0	21.6	24.4	20.2	-	
A52/RT	464644	338730	32.6	21.8	25.5	22.7	20.5	20.0	14.3	24.2	27.3	20.9	24.5	16.4	22.6	18.7	-	
RR	458284	338150	37.0	24.8	32.7	26.4	25.7	22.5	18.3	29.0	30.2	24.8	30.3	18.8	26.7	22.2	-	
TBLA	458752	338278	40.3	29.0	31.5	23.4	27.4	25.0	17.7	23.6	28.2	26.8	31.7	17.8	26.9	22.3	-	
TBLB	458756	338267	37.9		31.0	24.2	24.6	21.5	15.0	25.3	27.6	23.7	26.3	16.3	24.9	20.6	-	
TBI	458274	338117	41.5	35.5	40.6	28.9	29.5	31.8	25.8	34.3	37.0	35.8	39.3	22.9	33.6	27.9	-	
WL3	458134	337581	46.9	31.4	28.5	23.6	26.0	25.3	15.7	26.2	31.8	28.9	36.9		29.2	24.2	-	
WW	457651	334840	47.2	36.1	42.4	33.1	32.3	35.0	24.4	35.1	40.1	37.1	45.3	25.3	36.1	30.0	-	
A52/HHF1	463011	338213	40.3	32.0	29.6	29.6	33.0	30.5	21.4	32.5	34.6	30.2	35.8	18.8	30.7	25.5	-	
A52/HHF4	463040	338232	36.4		39.1	30.0	28.9	29.5	20.7	32.4	35.2	30.7	33.4	20.4	30.6	25.4	-	
15 KHG	470202	340092	29.3	18.8	24.0	18.0	14.5	16.8	12.9	18.8	22.2	18.8	22.4	16.0	19.4	16.1	-	
RuRo	458132	336462	38.2	23.5	30.9	19.8	21.3	18.4	17.4	22.1	27.0	22.7	28.3	18.3	24.0	19.9	-	
2LA	470248	339834	34.2	27.7	26.9	21.7	24.8	25.9	15.9	23.0	25.4	30.4	33.9	18.3	25.7	21.3	-	
Trent B1	458249	338167	46.6	30.2	39.6	32.2	30.8	23.9	21.7	38.0	37.9	26.7	35.3	21.4	32.0	26.6	-	
Mag 1	459366	334244	37.1	24.3	25.8	19.8	20.8	21.7	13.9	20.3	24.1	25.6	29.4	17.7	23.4	19.4	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.83)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
Mag 2	459324	334227	34.2	21.5	28.3	19.8	23.3	20.9	14.3	18.9	25.3	25.6	31.7	16.4	23.3	19.4	-	
LR 1	458100	337543	41.8	26.5	32.0	28.4	20.2	21.8	16.9	28.9	32.2	27.8	31.7	18.0	27.2	22.6	-	
WL 1	458055	337566	40.3	32.4	34.4	25.7	30.6	26.5	16.9	28.7	33.6	33.7	37.0	20.4	30.0	24.9	-	
NK 1	457612	334859	43.3	32.2	39.7	27.9	34.6	31.9	19.7	30.6	36.3	38.9	47.3	43.7	35.5	29.5	-	
Sains	457303	333214	35.2	23.1	39.5	27.8		21.6	20.8	27.3	30.5	25.8	32.7	34.0	28.9	24.0	-	
Rempston	457621	324386	30.6	18.9	23.6	20.0	19.7	19.1	16.3	21.3	21.9	19.2	25.9	25.5	21.8	18.1	-	
A52 Bass	461816	337855	23.4	14.3	21.6			10.3	10.6	16.3	18.6	13.0	16.0	22.4	16.7	13.8	-	
CotPO	464495	335387		17.6	28.2	20.4	16.6	12.5	12.4	17.8	21.4	16.8	21.3	25.8	19.1	15.9	-	
GR1	458897	337350		20.8	24.2	16.9	15.6	14.6	12.4	15.6	20.5				17.6	16.3	-	
CR1	457262	333336		27.0	30.5	20.7		21.2	17.5	22.4	26.7	24.6	31.7	32.0	25.4	21.1	-	

☒ **All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table B.1**.

☒ **Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.**

☐ **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 2022 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Rushcliffe Borough Council During 2022

Rushcliffe Borough Council has not identified any new sources relating to air quality within the reporting year of 2022.

Additional Air Quality Works Undertaken by Rushcliffe Borough Council During 2022

Rushcliffe Borough Council has not completed any additional works within the reporting year of 2022.

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 Spectrophotmeter. 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.

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.

The 2022 monitoring was completed in accordance with the 2022 Diffusion Tube Monitoring Calendar.

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 – GR1 which had 8 months of data (66.7% data capture) for 2022. Annualisation was undertaken using the Diffusion Tube Data Processing Tool. The nearest continuous background sites were Nottingham Centre (Defra UK-AIR ID: UKA00274), Leicester University (Defra UK-AIR ID: UKA00573) and Derby St Alkmund's Way (Defra UK-AIR ID: UKA00630) each of which had data capture greater than 85% for 2022. In previous years we have used data from the Burton-on-Trent Horninglow site (Defra UK-AIR ID: UKA00652) for annualisation purposes. However, as the data capture at this location was less than the required 85% in 2022 it could not be used and Derby St Alkmund's Way (Defra UK-AIR ID: UKA00630) was used instead. The annualisation tool calculated an average annualisation factor of 1.12 for location GR1 which was used to adjust the raw data simple annual mean at this location.

Table C.1 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Nottingham Centre	Annualisation Factor Leicester University	Annualisation Factor Derby St Alkmund's Way	Annualisation Factor <Site 4 Name>	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
GR1	1.10	1.13	1.12		1.12	17.6	19.7

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2023 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.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Rushcliffe Borough Council have applied a national bias adjustment factor of **0.83** to the 2022 monitoring data. This was derived from the national database of bias factors (Database_Diffusion_Tube_Bias_Factors_v03_23-FINAL) for Gradko tubes, 20% TEA in water and based on 27 studies. A summary of bias adjustment factors used by Rushcliffe

Borough Council over the past five years is presented in Table C.2. Rushcliffe Borough Council does not currently have any co-location sites and therefore a local factor could not be calculated.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	National	03/23	0.83
2021	National	03/22	0.84
2020	National	03/21 v2	0.81
2019	National	03/20	0.93
2018	National	03/19	0.93

NO_2 Fall-off with Distance from the Road

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

No diffusion tube NO_2 monitoring locations within Rushcliffe Borough Council required distance correction during 2022.

QA/QC of Automatic Monitoring

The NO_2 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 (e.g. 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 e.g. 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 using the AURN methodology and reported for each of the two continuous monitors. The data presented in this ASR has been ratified.

Historic and live data for Rushcliffe Borough Council is available to view via the UK AIR website.

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 NO_2 annual data capture for the continuous monitor located in AQMA No 1 Trent Bridge was 99% and 88.9% for the continuous monitor located in AQMA No1/2011 Stragglethorpe Road.

NO_2 Fall-off with Distance from the Road

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

No automatic NO_2 monitoring locations within Rushcliffe Borough Council required distance correction during 2022.

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

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

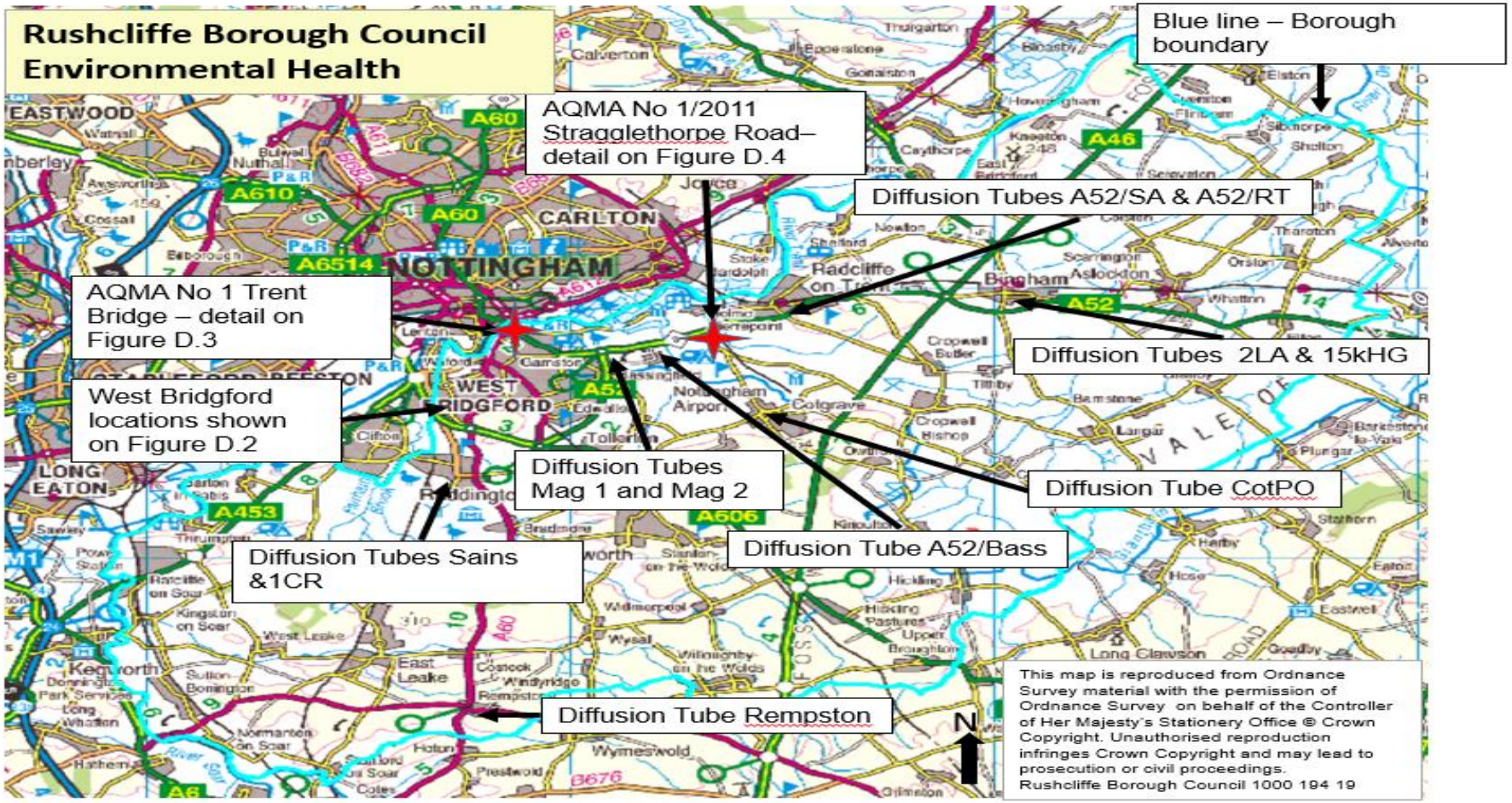


Figure D.2 – Map Showing the diffusion tube network across West Bridgford

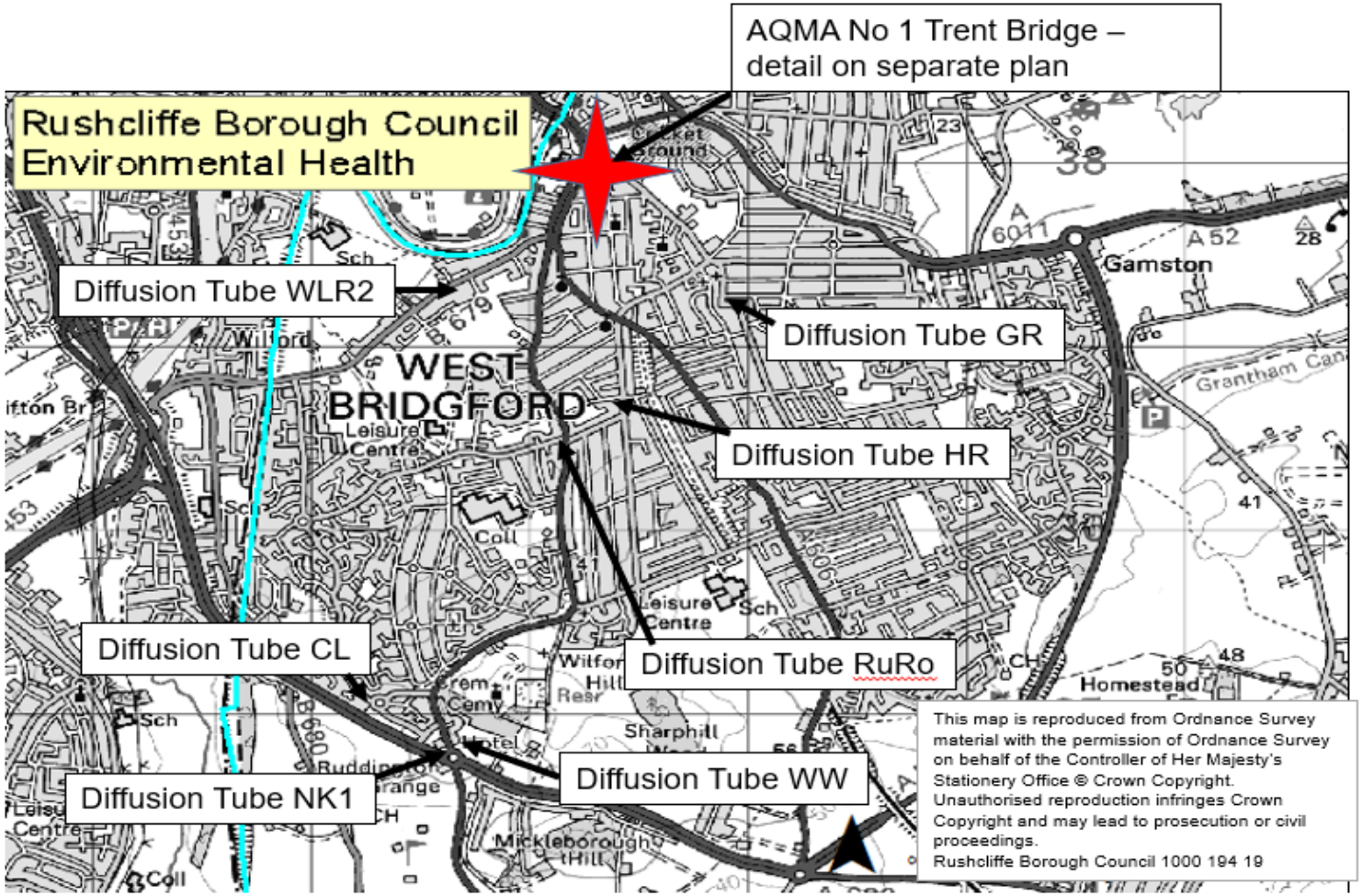


Figure D.3 – Map Showing Location of AQMA No 1 Trent Bridge and continuous monitor and diffusion tube locations

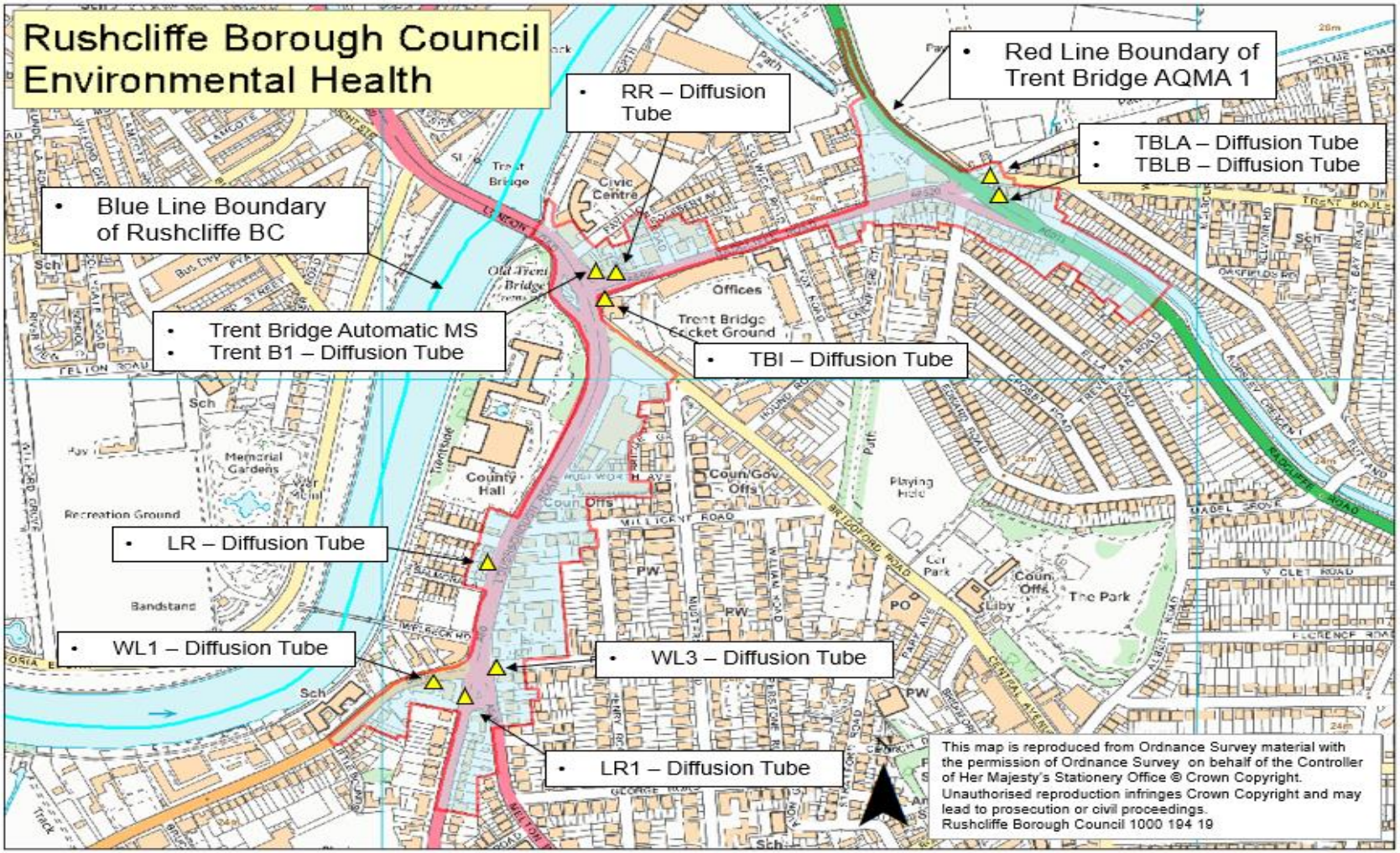
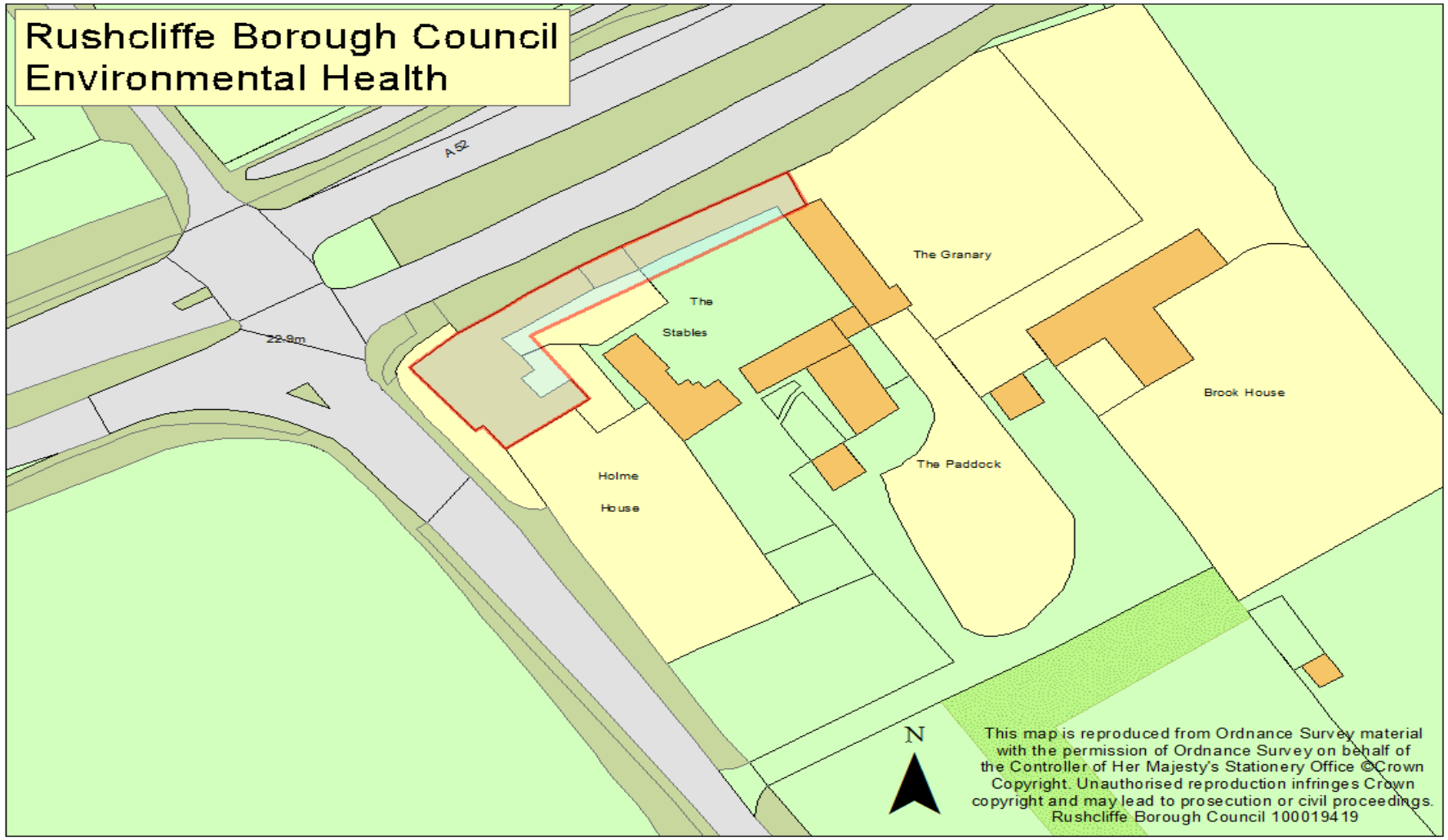


Figure D.4 – Map of AQMA No 1/2011 Stragglethorpe Road showing continuous monitor and diffusion tube locations



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[20]

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

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

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
ATP	Active Travel Fund
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 (NOx), sulphur dioxide (SO_2), ozone (O_3), carbon monoxide (CO) and particles (PM_{10}, $PM_{2.5}$).
BSIP	Bus Service Implementation Plans
D2N2	Local Enterprise Network area covering Derby, Derbyshire, Nottingham and Nottinghamshire
(D2N2) LEAP	D2N2 Local Energy Area Plan
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EMAQN	East Midlands Air Quality Network
EU	European Union
FDMS	Filter Dynamics Measurement System
HVO	Hydrogenated Vegetable Oil
LAQM	Local Air Quality Management
LEVI	Local Electric Vehicle Infrastructure (OZEV) - Fund supports local authorities in England to plan and deliver chargepoint infrastructure for residents without off-street parking
LPG	Liquified Petroleum Gas
LTP	Local Transport Plan
NCC	Nottinghamshire County Council
NCiC	Nottingham City Council

Abbreviation	Description
NEPWG	Nottinghamshire Environmental Protection Working Group
NH	National Highways
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
OHID	Office for Health Improvement and Disparities
OZEV	Office for Zero Emission Vehicles
PHE	Public Health England (now replaced with Office for Health Improvement and Disparities (OHID) and UK Health Security Agency (UKHSA))
PHOF	Public Health Outcomes Framework
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
REGO	Renewable Energy Guarantee of Origin
SO_2	Sulphur Dioxide
UKHSA	United Kingdom Health Security Agency (formerly known as Public Health England)
ULEV	Ultra Low Emissions Vehicles
ZEBRA	Zero Emission Bus Regional Areas

References

- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
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- Copeland B (2021) A comparison of gas and electric cremator emissions in the UK. A dissertation submitted to the School of Energy, Construction and Environment, Faculty of Engineering, Environment and Computing, Coventry University in partial fulfilment of the requirements for the degree of Geography BSc (Hons)