Lichfield District Council

2024 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: 12 June 2024

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Executive Summary: Air Quality in Our Area

Air Quality in Lichfield District Council

Breathing in polluted air affects our health and costs the NHS and our society billions of pounds each year. Air pollution is recognised as a contributing factor in the onset of heart disease and cancer and can cause a range of health impacts, including effects on lung function, exacerbation of asthma, increases in hospital admissions and mortality. In the UK, it is estimated that the reduction in healthy life expectancy caused by air pollution is equivalent to 29,000 to 43,000 deaths a year[1].

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Additionally, people living in less affluent areas are most exposed to dangerous levels of air pollution[2].

Table ES 1 provides a brief explanation of the key pollutants relevant to Local Air Quality Management and the kind of activities they might arise from.

Table ES 1 - Description of Key Pollutants

Pollutant	Description
Nitrogen Dioxide (NO_2)	Nitrogen dioxide is a gas which is generally emitted from high-temperature combustion processes such as road transport or energy generation.
Sulphur Dioxide (SO_2)	Sulphur dioxide (SO_2) is a corrosive gas which is predominantly produced from the combustion of coal or crude oil.
Particulate Matter (PM_{10} and $PM_{2.5}$)	Particulate matter is everything in the air that is not a gas. Particles can come from natural sources such as pollen, as well as human made sources such as smoke from fires, emissions from industry and dust from tyres and brakes. PM_{10} refers to particles under 10 micrometres. Fine particulate matter or $PM_{2.5}$ are particles under 2.5 micrometres.

[1] UK Health Security Agency. Chemical Hazards and Poisons Report, Issue 28, 2022.

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

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[3] sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term targets for fine particulate matter ($PM_{2.5}$), the pollutant of most harmful to human health. The national Air Quality Strategy[4] provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

The Road to Zero[5] details the Government's approach to reduce exhaust emissions from road transport through a number of mechanisms, in balance with the needs of the local community. This is extremely important given that cars are the most popular mode of personal travel and the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Lichfield currently has two AQMAs in its area. As the roads within both AQMAs are strategic roads under the jurisdiction of National Highways, Lichfield District Council has no direct control over any intervention measures and is therefore heavily reliant on National Highways and other relevant bodiessuch as Midlands Connect to implement the proposed measures within the Action Plan.

Lichfield DC adopted an Air Quality Action Plan in 2019 to address the specific issues relating to air quality in the AQMAs and more widely across the district.

See https://www.lichfielddc.gov.uk/downloads/file/1469/air-quality-action-plan-august-2019

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

[4] Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

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

Most of the measures within the final Action Plan were targeted at improving traffic flows within the two AQMAs through partnership working with National Highways and Midlands Connect. Partnership working had commenced late in 2019 with both organisations regarding measures targeted primarily at the A5 corridor that includes the Muckley Corner AQMA. A study of a 53 mile long section of the A5 corridor between the M6 and M1 was conducted by Midlands Connect, to establish the strategic and economic rationale of transport improvements on the corridor. A number of options for junction improvements within the Muckley Corner AQMA as well as Wall Island were considered but unfortunately were not taken forward as the central section of the A5 corridor (Hinkley to Tamworth), which lies outside of the jurisdiction of Lichfield District Council, was identified as the priority for investment. However, future interventions which will benefit the AQMA have not been ruled out.

Lichfield District Council also made improvements to the information available to the public on its air quality web pages early in 2020. Information on ways residents and businesses can make their own contribution to improving air quality in the district has also been added

Conclusions and Priorities

In 2023, there were no reported exceedances of the relevant NO_2 AQS objectives at areas of relevant exposure. Whilst there have been an increase in concentrations from the lows recorded in 2020 that were the effect of reduced traffic volumes during the COVID-19 pandemic, levels since then have remained significantly lower than those recorded up to 2019. Indeed, for 3 consecutive years recorded and/or levels adjusted for receptor locations have been consistently 10% below NO_2 AQS objectives with no sign of this trend being reversed.

As a consequence, and in accordance with DEFRA LAQM document FAQ 142 - Three or more years of compliance with air quality objectives | LAQM (defra.gov.uk), Lichfield DC is proposing to revoke both of its AQMAs. If this action is supported, Lichfield DC will redirect its efforts to an Air Quality Strategy, mapping across existing measures from the current Air Quality Action Plan and including a new focus on measures to contribute to the reduction of $PM_{2.5}$. The authority would continue to use their passive monitoring network to inform the strategy and help determine whether there are any new identifiable areas of concern.

Local Engagement and How to get Involved

Due to the main source of air pollution within Lichfield District Council being from transport sources, the easiest way for the public to get involved in aiding air quality improvements within the area would be to look at alternative modes of travel. The following are suggested alternatives to private travel that would contribute to improving air quality within the District:

Think Before You Drive

- Avoid vehicle idling and/or use of air conditioning running continuously. By switching your engine off you can save fuel, money and improve local air quality
- Consider leaving the car at home one day a week.
- Walk or cycle – From choosing to walk or cycle for your journey the number of vehicles is reduced and there is the added benefit of keeping fit and healthy. In addition, many of the cycle routes are off-road meaning you are not in close proximity to emissions from road traffic sources. Information on cycle routes within the Lichfield area is currently available on Staffordshire County Council's website at the following link, https://www.staffordshire.gov.uk/Transport/cycling/Documents/Cycling-in-Lichfield-including-Burntwood-Issue-5.pdf;

Lichfield District Council endorses the Staffordshire Air Aware website set up by Staffordshire County Council, which provides more detail on reducing reliance on personal vehicle use. This can be viewed at https://www.staffordshire.gov.uk/DoingOurBit/Get-Inspired/Clean-green-and-safe/Air-aware/Air-aware.aspx.

- Hold meetings by Conference Call by phone, Microsoft Teams or Skype rather than driving to meetings. This reduces fuel, vehicle maintenance and other travel costs, and increases productivity through reduction in hours lost through unnecessary travel.
- Facilitate Flexible Working Arrangements for staff to work remotely from home or hubs closer to home for one or more days a week thus removing or reducing commuter journeys. This reduces congestion which has beneficial impacts for delivery times, reduced business costs and thus economic benefits. Additionally, it provides social benefits through improved work-life balance for employees and helps to improve local air quality and reduced emergency vehicle response times.
- Switch Fleet to Low or Zero Emission Vehicles: Eligible businesses, charities, and public sector organisations with off street parking for staff or vehicles fleets can apply

for vouchers to redeem costs of electric vehicle charge-points. There is an approved charge points list and a list of authorised installers.

https://www.gov.uk/government/collections/government-grants-for-low-emission-vehicles#workplace-charging-scheme

- If you must drive consider fuel efficient driving advice, known as 'Smarter Driving Tips', which ultimately will save you on fuel costs and reduce your emissions. Several websites promote such advice including:

https://energysavingtrust.org.uk/advice/ecodriving/

- Avoid vehicle idling and/or use of air conditioning running continuously. By switching your engine off you can save fuel, money and improve local air quality
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https://energysavingtrust.org.uk/advice/ecodriving/

https://www.theaa.com/driving-advice/fuels-environment/drive-smart

https://www.vehicle-certification-agency.gov.uk/fcb/smarter-driving-tips.asp

Energy Efficiency

Improving the energy efficiency of your home / school / workplace will help reduce energy bills, as well as reducing emissions associated with power generation. The Energy Savings Trust (EST) which is a non-profit organisation, funded by the government and private sector can provide independent and impartial advice to help consumers in lowering emissions and cut their energy bills. For further information, visit the EST website at https://www.energysavingtrust.org.uk/

Around The Home

- Use water-based or low solvent paints, glues, varnishes and wood preservatives, look for brands with a low VOC content.
- Have your central heating system checked regularly to avoid risking exposure to toxic carbon monoxide.
- Smoke Control Areas have been declared covering the settlements of Lichfield, Burntwood, Armitage / Handsacre and Fazeley at the eastern district boundary with Tamworth Borough Council. In a Smoke Control Area you need to make sure that any appliance is exempt or is included in the list of authorised fuels. Defra keeps a list of approved appliances and authorised fuels that are permitted for use in smoke control areas at https://smokecontrol.defra.gov.uk/appliances.php?country=england. Ready to use wood bought from a Woodsure Certified Supplier will offer the following benefits:

- Dry, ready to burn wood/logs & briquettes make any appliance more efficient.
- Burning dry wood instead of wet wood is part of the solution to reducing the impact on our environment.
- Burning wet wood increases emissions and the impact on air quality. Any appliance and chimney system will suffer from smoke produced from wet wood, which increases maintenance and repair requirements, making it harder for chimney sweeps to keep systems in safe, effective condition.
- Burning waste and treated wood (e.g., old furniture) can emit harmful fumes.

Other Considerations

- When planning days out or journeys to work, check the air pollution forecast at https://uk-air.defra.gov.uk/forecasting/
- Be energy efficient - make sure your house is well insulated and use energy efficient appliances https://www.energysavingtrust.org.uk/home-energy-efficiency
- Refrain from having bonfires or barbecues when air pollution levels are high. Furthermore, due to the COVID-19 pandemic, Lichfield District Council would discourage bonfires as they could impact upon the ability of other residents in the local area who may be isolating at home to recover from COVID-19 or residents with existing cardiovascular/respiratory conditions who may be more susceptible to infection.
- Never burn household waste, especially plastics, rubber and treated timber.
- Lichfield District Council's annual air quality reports are accessible from https://www.lichfielddc.gov.uk/downloads/download/47/air-quality-monitoring-reports.

Global Action Plan, a charity that is working for a green and thriving planet have for the first time provided a hub called the Clean Air Hub, that brings together public accessible information on air pollution all in one place. Whether you want to learn more about what air pollution is, how it affects your health, what you can do to protect yourself from it and the action you can take to tackle it, then the collection of information, resources and expert advice on the Clean Air Hub will help and inspire you to get informed and involved. The Clean Air Hub can be accessed from the following web link; https://www.cleanairday.org.uk/pages/category/clean-air-hub.

Local Responsibilities and Commitment

This ASR was prepared by the Finance, Regulation & Enforcement Services Department of Lichfield District Council with the support and agreement of the following officers:

Phil Kershaw

Jack Twomey

This ASR has not been signed off by a Director of Public Health.

If you have any comments on this ASR, please send them to Phil Kershaw

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Annual Status Report (ASR) 2024 - Air Quality: Endorsement from the Director of Health & Care, Staffordshire County Council.

Staffordshire County Council (SCC) is committed to working with partners to ensure that Staffordshire will be a place where improved health and wellbeing is experienced by all. Poor air quality has a negative impact on public health, with potentially serious consequences for individuals, families, and communities. Identifying problem areas and ensuring that actions are taken to improve air quality forms an important element in protecting the health and wellbeing of Staffordshire residents. Improving air quality is often a complex issue, presenting a multi-agency challenge – so it is essential that all agencies work together effectively to deliver improvements where they are needed.

As Director of Health and Care across Staffordshire I endorse this Annual Status Report which sets out the position in all the Local Authorities across Staffordshire and Stoke-on-Trent focusing on human made pollution with particulate matter.

The Air Aware project (phase 2) ran until March 2023 with Defra funding, however The Air Aware project continues with joint funding from SCC Public Health and Connectivity Teams to March 2025. The project delivers behaviour change to increase active travel, decrease car use, and raise awareness of air quality issues through five elements. These are business and school engagement, communications and campaigns, electric vehicles, and air quality monitoring in targeted locations. Campaigns include Anti-Idling, walking and cycle activities and Clean Air Day. These have been countywide engaging a large number of businesses and schools. The programme focuses on reducing levels of NO and PM, which are monitored at key locations.

A number of the Staffordshire Authorities are currently involved in implementing measures to reduce levels of N02 within their areas, which are detailed elsewhere in their ASR. Since the update of the Environment Act 2021 there is now a statutory duty imposed on Local Authorities in England to reduce PM2.5, a number of the measures are complementary with those being undertaken to improve Air Quality. A mapping exercise completed by the Staffordshire Air Quality Forum members details the measures currently in place which are considered to have an impact in reducing PM2.5 within the County.

Post Covid the Staffordshire and Stoke-on-Trent (SOT) Air Quality Forum has recommenced meeting on a quarterly basis. This forum involves all the Districts and Boroughs and both SCC and SOT and is chaired on a rotating basis across the Districts and Borough's.

In addition, Levelling up Fund 2 Schemes will improve a number of major roads around the county, reduce journey times, put greener, cleaner buses on main roads, improve walking and cycling routes and reduce the impact of housing and commercial developments. They will benefit East Staffordshire, Cannock Chase, and Stafford Borough. Total package cost circa £20m.

Finally, it's worth mentioning both Climate Change and The Local Transport Plan 4 (LTP4). SCC have signed up to the Climate Emergency and since signing up have reduced its Carbon footprint by 50%. We are now also now working towards LTP4, with

our Local Authority partners. LTP4 will come into effect in 2025 and will have a positive effect on Air Quality over the coming years

Dr Richard Harling

Director of Health and Care
Staffordshire County Council
[June 2024]

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Figures

Tables

1 Local Air Quality Management

This report provides an overview of air quality in Lichfield District Council during 2023. 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 Lichfield District 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– Air Quality Objectives in England.

2 Actions to Improve Air Quality

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 Lichfield District Council can be found in Table 2.1 below. The table presents a description of the two AQMAs that are currently designated within Lichfield District Council's boundaries. Appendix D: Maps of Monitoring Locations and AQMAs shows location maps of the AQMAs and also the air quality monitoring locations in relation to the AQMAs. The air quality objectives pertinent to the current AQMA designations are as follows:

- NO_2 annual mean

In both of the Lichfield District AQMAs, measured levels and/or those adjusted for distance to receptor locations have reduced significantly since 2019 and are consistently 10% or more below NO_2 AQS action levels.

In their assessment of the Annual Status Report in 2023, DEFRA identified that AQMA no. 2 should be revoked as it was approaching 5 continuous years of levels consistently below the NO_2 AQS action levels and, in our opinion, trends identified at the A5 Muckley Corner AQMA no.1 also justify a revocation.

We therefore propose to revoke both the A5 Muckley Corner AQMA no.1 and AQMA no.2 (see monitoring/additional section).

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
A5 Muckley Corner AQMA no.1	01/08/2008	NO_2 Annual Mean	An area encompassing the Muckley Corner Roundabout on the A5 along with fourteen surrounding buildings.	Yes	51 µg/m^3	33 µg/m^3	5	Air Quality Action Plan for AQMA 1 & AQMA 2 – Final (09/08/2019)	https://www.lichfielddc.gov.uk/downloads/file/1469/air-quality-action-plan-august-2019
AQMA no. 2	01/08/2016	NO_2 Annual Mean	A38 from the junction of A5127 Streethay north to Alrewas.	Yes	35.7 µg/m^3	29.5 µg/m^3	4	Air Quality Action Plan for AQMA 1 & AQMA 2 – Final (09/08/2019)	https://www.lichfielddc.gov.uk/downloads/file/1469/air-quality-action-plan-august-2019

☒ **Lichfield District Council confirm the information on UK-Air regarding their AQMA(s) is up to date.**

☒ **Lichfield District Council confirm that all current AQAPs have been submitted to Defra.**

2.1 Progress and Impact of Measures to address Air Quality in Lichfield District Council

Defra's appraisal of last year's ASR concluded that the report was well structured, detailed, and provided the information specified in the Guidance.

The following comments were noted:

- A national bias adjustment factor (i.e., 0.86) was used. A screenshot of the tool was added to the report, which was welcomed. Table B.1 refers to a bias adjustment factor of **0.76** and not **0.86** (page 32).
    - The bias factor for the 2023 ASR has been checked to ensure correct data has been used. See the QA/QC section of this report for more details.
- The Council should start considering the revocation of AQMA No.2 which is now four years compliant with AQO. A detailed update needs to be provided in next year's ASR.
    - The Council has provided evidence in this ASR to support the revocation of both of the AQMAs in its district.
- LCD's priorities for the upcoming year include establishing new cycle links to connect recent developments with the existing cycle network, enhancing EV accessibility within the Lichfield District and surrounding areas, and revising the current Lichfield District Council Organisational Carbon Reduction Plan. Additionally, there is a goal to produce a new plan before the end of 2023. These priorities are deemed appropriate.
    - A new Organisational Carbon Reduction Plan has been drafted. Publication has been delayed but it is hoped to do so before October 2024.
- On page 35, the ASR is incorrectly labelled as '2022 ASR' instead of '2023 ASR'.
    - The comment was noted.
- In 2022, LDC advanced its public engagement efforts, which included several initiatives. They established relationships with the local active transport charity, Lichfield Re:Cycle, to further promote active transportation. Additionally, collaborations between local businesses and charities were formed to host events highlighting the benefits of active transport. LDC also actively promoted the Public

EV Charging Toolkit. This toolkit is designed to encourage residents in the Staffordshire region to transition to EV ownership, supported by comprehensive documentation and guidance, as part of the Lichfield District Council LAQM Annual Status Report 2023.

- Comment has been noted. The Toolkit is one of the ongoing measures which is likely to be carried over into a new Air Quality Strategy should the revocation of both AQMAs be agreed.

Lichfield District Council has taken forward a number of direct measures during the current reporting year of 2023 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2. 2 – Progress on Measures to Improve Air Quality. 12 measures are included within Table 2. 2, with the type of measure and the progress Lichfield District Council have made during the reporting year of 2023 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 their respective Action Plans 2019 Action Plan

Lichfield District Council's priorities for the coming year are:

- Lichfield District Redevelopment – The transport strategies outlined in the Lichfield District Council Infrastructure Delivery Plan available at https://www.lichfielddc.gov.uk/evidence-base/infrastructure propose to improve pedestrian safety, provide new cycle links connecting new developments to the existing cycle network, improve bus connectivity and frequency of services, and construction of a new bus interchange facility and public realm improvements in the main retail areas. Thus, improving air quality by aiming to reduce concentrations and subsequent prevention and revocation of any air quality exceedance areas. Development is planned in phases with construction expected to continue into 2024 and onwards;

- Organisational Carbon Reduction Plan Updates – It is acknowledged that the existing Lichfield District Council Organisational Carbon Reduction Plan is currently in draft form which is expected to be finalised and available before the end of 2024 and

- Subject to approval of its proposal to revoke both AQMAs in its district, to draft an Air Quality Strategy to replace the existing Action Plan which will switch the focus to reduction of PM 2.5 in accordance with the updated National Strategy.

Table 2. 2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	Increase the volume of through traffic using M6 Toll	Traffic Management	UTC, Congestion management, traffic reduction	2019	TBC	Lichfield District Council Environmental Health, National Highways, MidlandsConnect	Defra andLA	No	-	TBC	Planning	TBC after quantitative appraisal	Reduction in HGV % in AQMAs	Work is ongoing with Midlands Connects. There are no immediate plans for this, but the measure has not been ruled out	-
2	Upgrading Trunk A-Roads to Expressways	Traffic Management	UTC, Congestion management, traffic reduction	2019	TBC	Lichfield District Council Environmental Health, National Highways, MidlandsConnect	N/A	No	-	TBC	Amended	TBC after quantitative appraisal	Reduction in traffic congestion	Regular discussions with National Highways / Midlands Connects since June 2019. The A5corridor had previously been identified as priority for congestion control, but the central section which lies outside of the Lichfield District has been prioritised for transport intervention measures. Junction improvements at Muckley Corner had been considered but as yet are not being prioritised.	Subject to commitment from National Highways to deliver – this measure may never happen but it included as Lichfield DC is committed to maintain pressure for it to happen depending on the ongoing results of air quality monitoring
3	Pollution abatement equipment for HGVs	Vehicle Fleet Efficiency	Vehicle Retrofitting programmes	2019	2025	Lichfield District Council Environmental Health, OLEV	OLEV or other Defra Funds	Yes (if available)	Partialor FullTBC	£100k - £500k	Planning	Reducing emissions contribution from HGVs TBC	Retrofit vehicles	Planning phase	Consider OLEV or AQ grant application funding
4	Replacing older vehicles	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake oflow emission vehicles	2019	Ongoing	Lichfield District Council Environmental Health & Licensing, OLEV	OLEV or other Defra Funds	Yes (if available)	Partialor FullTBC	£100k - £500k	Planning	Reducing emissions from all council owned vehicles TBC	Vehicles replaced (in addition to normal fleet turnover)	Planning phase	Consider OLEV or AQ grant application funding
5	Travel planning amongst Council employees	Promoting Travel Alternatives	Workplace Travel Planning	2019	2021	Lichfield District Council	Internal Lichfield District Council Funds	No	-	< £10k	Discontinued & replaced with Measure No. 11	-	Reducing emissions from Council employees	Coming back under the climate change remit via a separate team	-
6	Education Initiatives inc. website information updates	Public Information	Other	2019	2020	Lichfield District Council Environmental Health	Internal Lichfield District Council Funds	No	-	< £10k	Completed	Incremental through public awareness	Public Awareness	Completed early in 2020 although regular updates will be carried out moving forward	None to date
7	Staffordshire Air Quality Forum	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide Strategies to reduceemissions and improve air quality	2019	Ongoing	County-wide	Staffordshire Authorities	No	-	< £10k	Planning	-	Full LA engagement across the group + Regular Meetings	Ongoing	Engagement reduced during the pandemic due to restrictions & resource constraints
8	Use the planning regime to minimise impact of new developments on AQMAs	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2019	Was 2021 now 2022	Lichfield District Council / Staffordshire AQForum	Staffordshire Authorities	No	-	< £10k	Planning	Reducing emissions contribution and restricting impact on AQMAs	Supplementary Planning Guidance implemented	Discussions have already taken place and a general template to the guidance is in draft stages	-
9	Inspect under the Environmental Permit regime and enforce	Environmental Permits	Introduction/ increase of environment charges through permit systems and	2019	Ongoing	Lichfield District Council Environmental Health	Internal funds generated through	No	-	< £10k	Implementation	Installations adhering to permits and enforcement/penalties for breaches	Installations adhering to permits and enforcement/penalties for breaches	Permits inspected	-

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
	legislation to reduce combustion processes		economic instruments				permitting regime								
10	Air quality monitoring	Public Information	Other	2019	Ongoing	Lichfield District Council Environmental Health	-	No	-	< £10k	Implementation	Will enable any changes in pollution levels to be identified	Monitoring locations and On-time submittal of ASRs	Monitoring to continue both inside and outside of AQMAs	Possibly liaise with Defra regarding need for additional monitoring and/or AURN funding. Consider continuous monitoring and AQ grant application if available or needed.
11 (Replaces Measure 5)	Homeworking	Promoting Travel Alternatives	Encourage / Facilitate home-working	2021	2022	Lichfield District Council employees	Internal Funds	No	-	< £10k	Implementation	Minimal but shows the Council can lead by example	Reducing emissions from Council employees	Internal building works to reduce number of workstations hence number of staff already commenced late 2021	-
12	Increased provision of EV charging infrastructure	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2021	TBC	Lichfield District Council Planning Policy & Environmental Health	TBC Through scoping	Unknown at present	-	TBC through scoping	Early Planning	Incremental	Reduction in pollutant levels in vicinity of council car parks	Lichfield District Council has started to review its car park strategy for the District in pursuit of increasing the provision of EV charging infrastructure	Funding

2.2 $PM_{2.5}$ – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy[6], local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter ($PM_{2.5}$)). There is clear evidence that $PM_{2.5}$ (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

The current Defra 2021 background maps for Lichfield District Council (2018 based) show that all background concentrations of $PM_{2.5}$ are far below the recommended 2021 annual mean AQS objective for $PM_{2.5}$ of 20 µg/m³. The highest concentration is predicted to be 15.3 ug/m^3 within the 1km x 1km grid square with the centroid grid reference of 406500 306500. This is an area located on Watling Street (A5).

The Department of Health's Public Health Outcomes Framework[7] has a number of public health indicators that are used focus public health action, identify areas of health inequality and concern, and monitor the differences in health impacts across regions in the UK. This framework includes an indicator "D01- Fraction of Mortality Attributable to Particulate Air Pollution" which is calculated using background annual average $PM_{2.5}$ concentrations, modelled at a 1km^2 resolution based on measured concentrations from the AURN. Lichfield has a 5.1% fraction of mortality calculated for 2021, which is below both the average for England overall (5.5), and the East Midlands Region (5.6%). The 2021 data is available via the Fingertips Public Health Outcomes Framework website.

[6] Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

[7] Public Health Outcomes Framework: D01- Fraction of Mortality Attributable to Particulate Air Pollution

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

This section sets out the monitoring undertaken within 2023 by Lichfield District Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2019 and 2023 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Lichfield District Council currently does not undertake automatic (continuous) monitoring within its area of jurisdiction.

3.1.2 Non-Automatic Monitoring Sites

Lichfield District Council undertook non- automatic (i.e., passive) monitoring of NO_2 at 30 sites during 2023. Table A1 in Appendix A presents the details of the non-automatic sites.

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

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 A2 in Appendix A compares 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 2023 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; one monitoring location at MUC – 3 met the criteria for distance correction to be applied.

All passive monitoring locations within Lichfield recorded annual mean NO_2 concentrations below the 40µg/m^3 NO_2 AQS objective in 2023. Following the bias adjustment and annualisation where required, the maximum reported concentration in 2023 was 38.2 µg/m^3 at diffusion tube monitoring location MUC - 3, located on Muckley Corner A461 Southbound, once distance corrected, reduces to 33 µg/m^3. This monitoring station reports the maximum concentration in the AQMA and across the rest of the monitoring locations across the district consistently throughout the time period between 2017 – 2023, but it shows an overall decline from 2017 – 2023 in NO_2 concentrations, with levels complying with NO_2 AQS objective from 2020 – 2021 onwards.

3.2.2 Particulate Matter (PM_{10})

PM_{10} emissions are not monitored by Lichfield DC.

3.2.3 Particulate Matter ($PM_{2.5}$)

$PM_{2.5}$ emissions are not monitored by Lichfield DC.

3.2.4 Sulphur Dioxide (SO_2)

SO_2 emissions are not monitored by Lichfield DC.

Appendix A: Monitoring Results

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

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)		Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
LT - 1	Lichfield Town - St John St	Roadside	411792	309161		NO_2	No	N/A	N/A	No	2.0
LT - 2	Lichfield Town Trent Valley Road (2 Lime Grove)	Roadside	412782	309774		NO_2	No	1.3	0.9	No	2.0
LT - 3	Lichfield Town Trent Valley Road (No. 101)	Roadside	412991	309869		NO_2	No	6.2	2.9	No	2.0
LT - 4	Lichfield Town Trent Valley Road (No. 155)	Roadside	413183	309945		NO_2	No	9.0	2.5	No	2.0
LT - 5	Lichfield Town Beacon Street (No. 48)	Roadside	411273	309902		NO_2	No	2.3	1.1	No	2.0
LT - 6	Lichfield Town - Beacon Street (No. 14)	Roadside	411358	309785		NO_2	No	0.2	1.6	No	2.0
LT - 7	Lichfield Town - Upper St John Street (No. 96)	Roadside	411892	308937		NO_2	No	1.4	0.5	No	2.0
LT - 8	Lichfield Town - Upper St John Street (No. 127)	Roadside	411951	308839		NO_2	No	0.2	1.2	No	2.0

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)
LT - 9	71 Walsall Road, Lichfield	Roadside	410898	309085		NO_2	No	5.3	1.5	No	2.5
MUC - 1A	Muckley Corner Hotel First Floor	Roadside	408164	306513		NO_2	Yes - AQMA No.1	0.0	5.0	No	7.0
MUC - 1B	Muckley Corner Hotel First Floor	Roadside	408164	306513		NO_2	Yes - AQMA No.1	0.0	5.0	No	7.0
MUC - 1C	Muckley Corner Hotel First Floor	Roadside	408164	306513		NO_2	Yes - AQMA No.1	9.0	5.0	No	7.0
MUC - 1	Muckley Corner Hotel Ground Floor	Roadside	408164	306513		NO_2	Yes - AQMA No.1	10.0	5.0	No	2.0
MUC - 2	Muckley Corner A5 Westbound	Roadside	408165	306487		NO_2	Yes - AQMA No.1	2.0	4.0	No	2.0
MUC - 3	Muckley Corner A461 Southbound	Roadside	408097	306468		NO_2	Yes - AQMA No.1	5.0	2.0	No	2.0
MUC - 4	Muckley Corner A5 Westbound	Roadside	408029	306501		NO_2	Yes - AQMA No.1	5.0	2.0	No	2.0
MUC - 5	Muckley Corner A5 Eastbound	Roadside	408030	306516		NO_2	Yes - AQMA No.1	9.0	1.0	No	2.0
MUC - 6	Muckley Corner A461 Southbound	Roadside	408161	306556		NO_2	Yes - AQMA No.1	10.0	5.0	No	2.0

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)
A38 - 1	Alrewas	Roadside	417101	314180		NO_2	Yes - AQMA No.2	0.0	6.0	No	2.0
A38 - 2	Fradley	Roadside	416295	313186		NO_2	Yes - AQMA No.2	10.0	6.9	No	2.0
A38-2A	Fradley	Roadside	416290	313175		NO_2	Yes - AQMA No.2	0.0	15.0	No	2.0
A38 - 4 (X)	Canwell	Roadside	413978	300834		NO_2	No	35.0	10.0	No	2.0
A38 - 4A	Canwell	Roadside	413989	300869		NO_2	No	10.0	25.0	No	2.0
A38 - 5A	Canwell	Roadside	413950	300574		NO_2	No	<200	4.0	No	2.0
A38 - 6A	Canwell	Roadside	413961	300539		NO_2	No	6.0	1.0	No	2.0
A5 - 1	A5 West	Roadside	407208	306513		NO_2	No	6.0	2.0	No	2.0
A5 - 1A	Muckley Corner Westbound	Roadside	407895	306516		NO_2	No	29.0	1.4	No	2.0
A5 - 2B	A5 Wall Lane	Roadside	408667	306500		NO_2	No	0.1	2.3	No	2.0
ARM1	A513 Rugeley Road, Armitage	Roadside	406343	316482		NO_2	No	127.0	N/A	No	2.0
FAZE	A40691 Coleshill Road (No. 38)	Roadside	420442	301806		NO_2	No	42.0	N/A	No	2.0
B	Burntwood	Urban Background	405086	309344		NO_2	No	N/A	N/A	No	2.0

Notes:

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

(2) N/A if not applicable.

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

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
LT - 1	411792	309161	Roadside	100	100	36.3	25.6	26.5	27	23.5
LT - 2	412782	309774	Roadside	92	92	36.2	21.9	20.5	20.7	19
LT - 3	412991	309869	Roadside	83	83	29.3	23	26.9	25	21
LT - 4	413183	309945	Roadside	100	100	31.5	20.5	24.3	23.1	21.2
LT - 5	411273	309902	Roadside	100	100	29.5	18	19.8	21.7	20.6
LT - 6	411358	309785	Roadside	83	83	34.9	23	25.1	24.9	24
LT - 7	411892	308937	Roadside	100	100	29.1	23	22	26.1	22.2
LT - 8	411951	308839	Roadside	100	100	42.1	28.9	24.1	25.8	24.1
LT - 9	410898	309085	Roadside	50	50	-	-	21.9	20.9	24.6
MUC -1 A,B,C	408164	306513	Roadside	92	92	42.4	30.5	33.1	31.6	29.3
MUC - 1	408164	306513	Roadside	100	100	41.5	26.3	33.2	31.1	29.4
MUC - 2	408165	306487	Roadside	92	92	34.6	23.7	27.9	27	26.9
MUC - 3	408097	306468	Roadside	100	100	45.9	33.5	39.8	40.5	38.2

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 2023 (%) [2]	2019	2020	2021	2022	2023
MUC - 4	408029	306501	Roadside	100	100	33.5	25.8	34.9	31.8	30
MUC - 5	408030	306516	Roadside	92	92	38.6	28.5	33.3	30	31.4
MUC - 6	408161	306556	Roadside	100	100	29.7	23.2	27.2	27	25.3
A38 - 1	417101	314180	Roadside	100	100	25.8	24.8	27.2	25	20.6
A38 - 2	416295	313186	Roadside	100	100	28.6	21.2	24.8	22.3	20.2
A38-2A	416290	313175	Roadside	100	100	35.3	25.2	28.8	27.3	19.8
A38 - 4	413978	300834	Roadside	83	83	25.1	22.2	31.4	32.3	29.5
A38 - 4A	413989	300869	Roadside	92	92	39.8	21.7	34.2	29	28.1
A38 - 5A	413950	300574	Roadside	83	83	26.7	21.9	25.9	25.1	26.3
A38 - 6A	413961	300539	Roadside	100	100	27.2	17.8	20.4	22.1	20.4
A5 - 1	407208	306513	Roadside	100	100	34	23.9	24	23.9	20.4
A5 - 1A	407895	306516	Roadside	83	83	27.6	24.4	28.7	26.6	28.6
A5 - 2B	408667	306500	Roadside	100	100	29.6	23.7	25.8	28.9	27.1
ARM1	406343	316482	Roadside	100	100	18.7	21.8	26	23.4	21.5

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 2023 (%) (2)	2019	2020	2021	2022	2023
FAZE	420442	301806	Roadside	100	100	39.6	26.3	32	30.8	30.7
B	405086	309344	Urban Background	100	100	15.4	13.6	14.4	13.8	12.9

☒ **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 NO2 Concentrations – Muckley Corner AQMA

Figure A.1 presents NO_2 annual mean concentrations for sites MUC-1 to MUC-6 between years 2019 to 2023, not adjusted for distance to the nearest relevant receptor. There are no exceedances of the annual mean objective in 2023 and there is a general trend of reduction experienced across the sites. Site MUC 3 has results consistently higher than others in the AQMA and across Lichfield DC's other sites but is still below the annual mean objective when adjusted for distance to the nearest receptor.

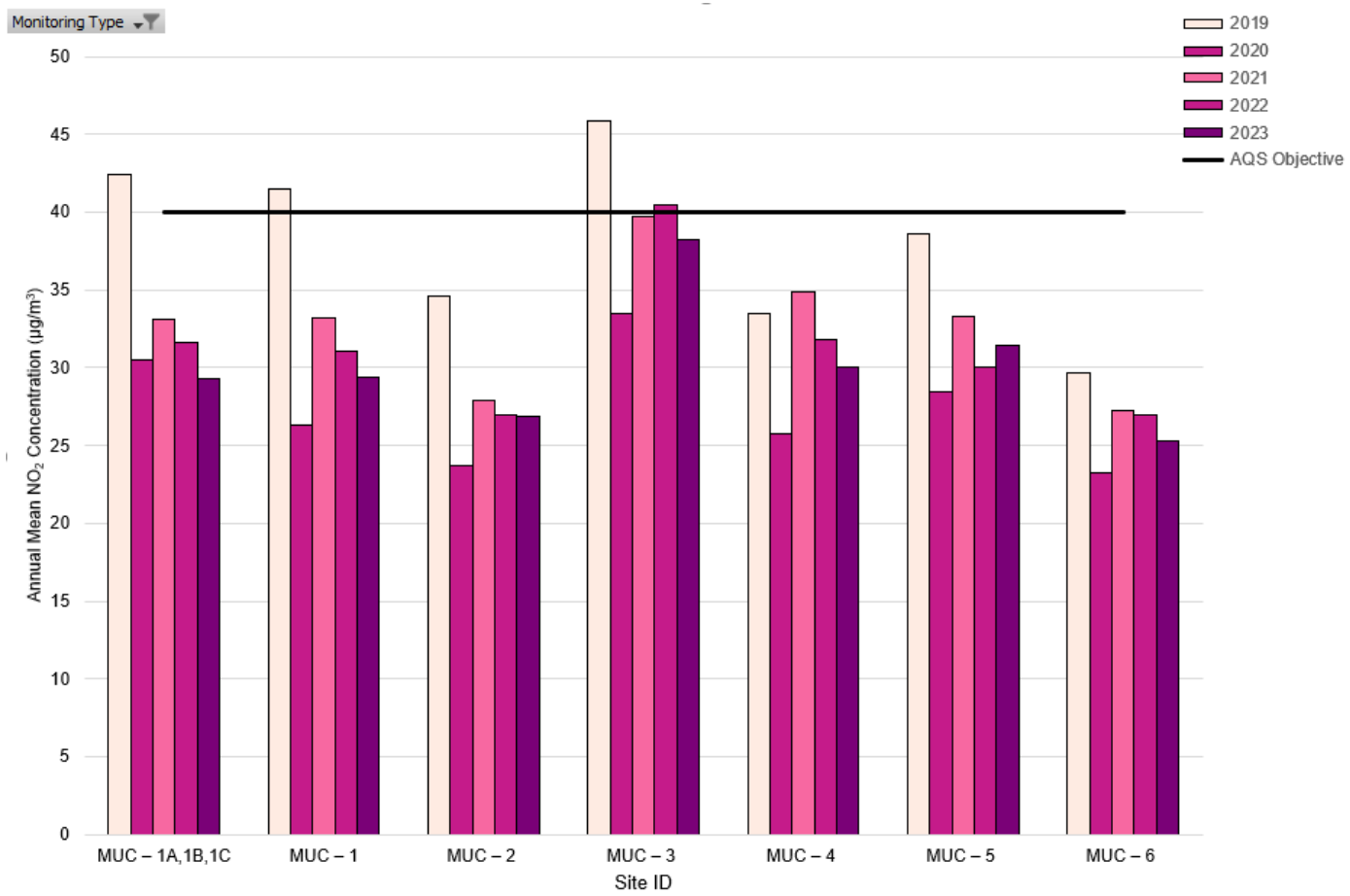


Figure A 2 - Trends in Annual Mean NO2 Concentrations – A38 AQMA

Figure A.1 presents NO_2 annual mean concentrations for sites A38 – 1 to A38 - MUC-6A between years 2019 to 2023, not adjusted for distance to the nearest relevant receptor. There are no exceedances of the annual mean objective in 2023 and there is a general trend of reduction experienced across the sites. This AQMA meets the criteria for mandatory revocation in accordance with GUIDANCE.

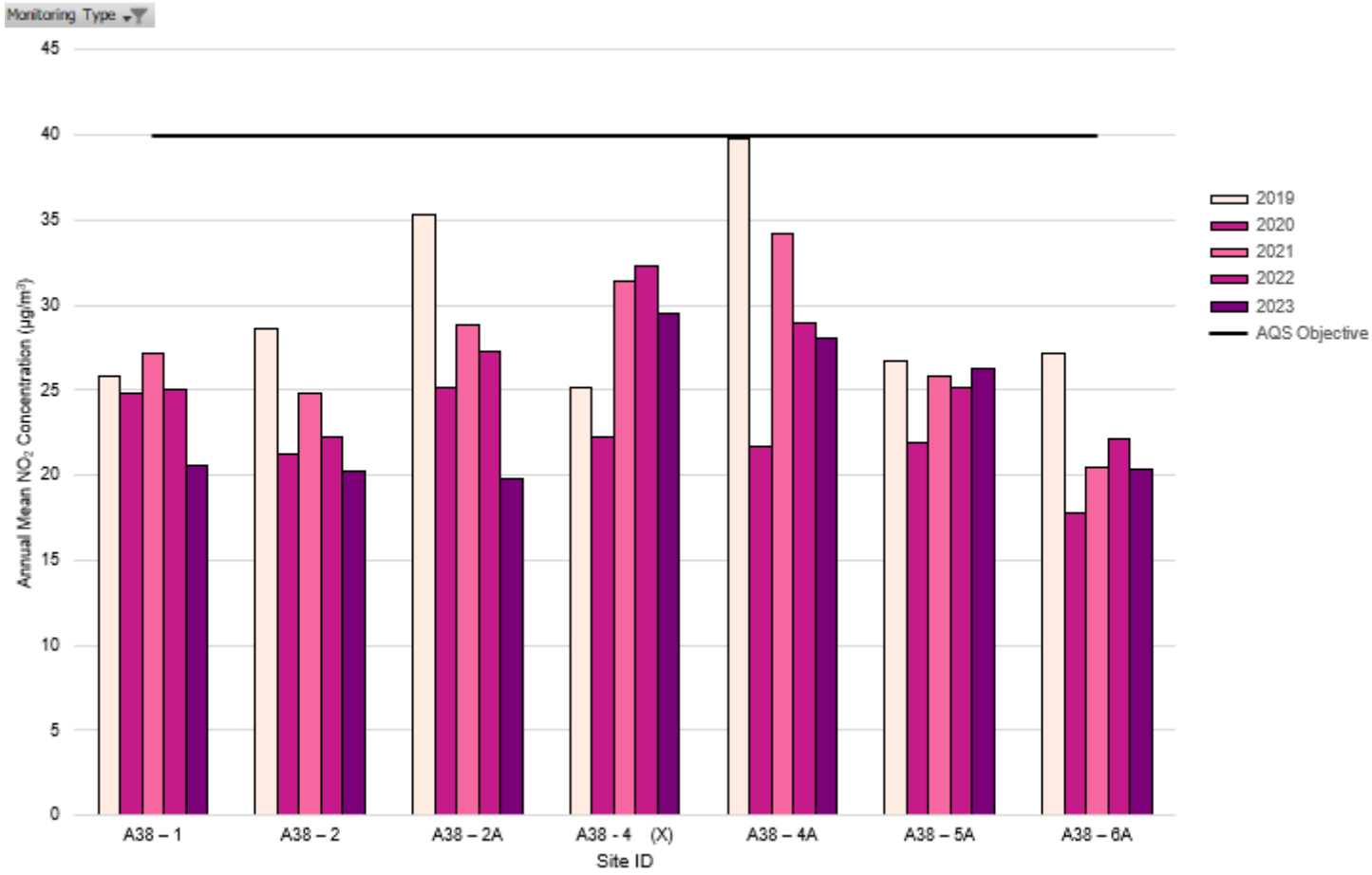
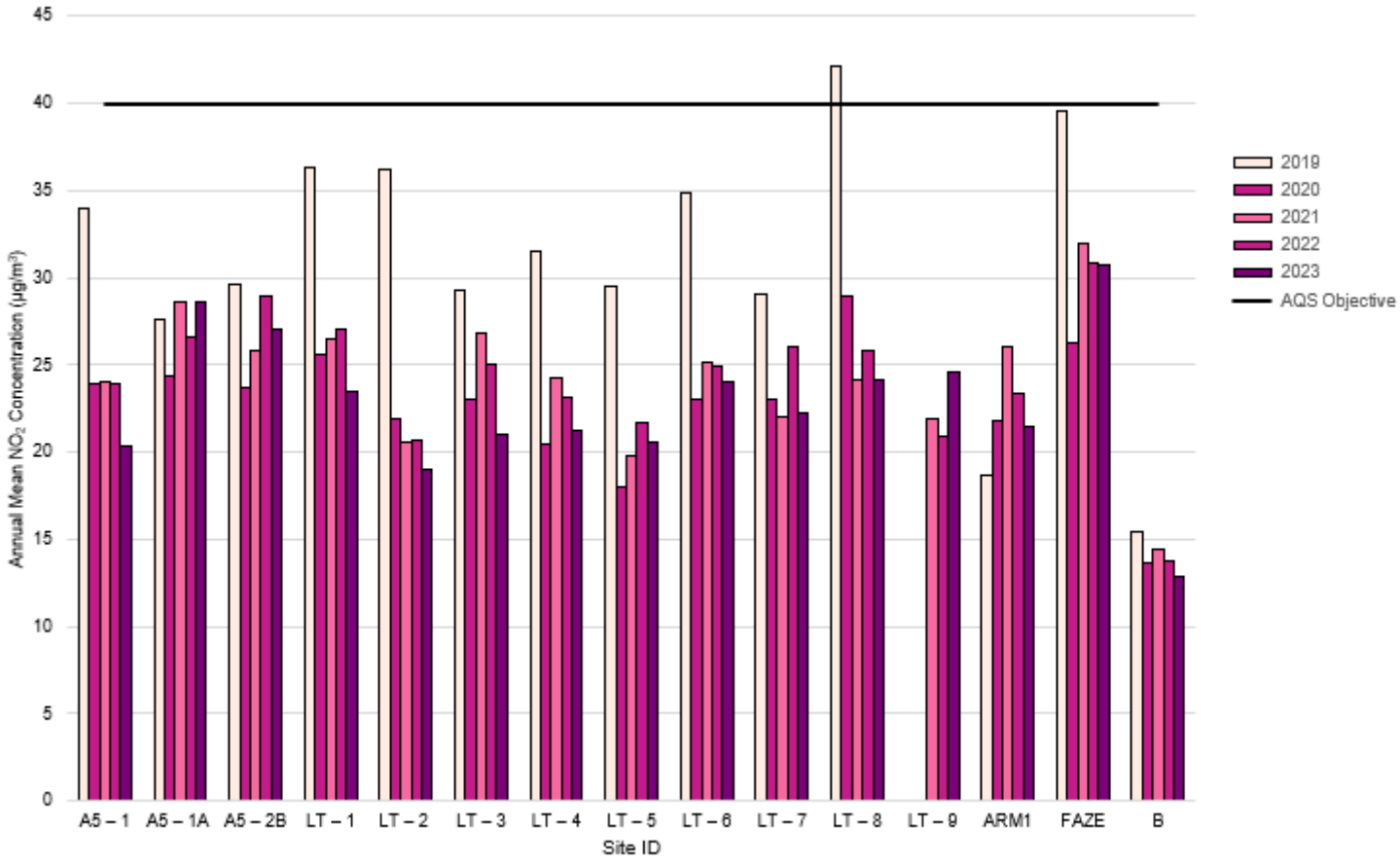


Figure A 3– Trends in Annual Mean NO2 Concentrations – Non-AQMA Monitoring Locations

Figure A.1 presents NO_2 annual mean concentrations for all sites not in AQMAs between years 2019 to 2023, not adjusted for distance to the nearest relevant receptor. There are no exceedances of the annual mean objective in 2023 and there is a general trend of reduction experienced across the sites.



Appendix B: Full Monthly Diffusion Tube Results for 2023

Table B. 1– NO2 2023 Diffusion Tube Results (µg/m3)

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 (0.86)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
LT - 1	411792	309161	30.4	33.2	29.6	26	26.8	27.2	22	28.4	29.9	1.8	46.5	26.5	27.4	23.5	-	
LT - 2	412782	309774	28.2	26.4	21.3	19.6	16.6	17.1	I/S	18.6	19.7	25.5	27.8	21.7	22.0	19	-	
LT - 3	412991	309869	30.2	31.6	26.9	28.6	25.9	25.9	17.5	26.9	< 1.2	2.1	I/S	28.3	24.4	21	-	
LT - 4	413183	309945	27.1	30.5	24.8	22.9	20.1	19.7	16.8	22.4	23.5	27.5	34.6	25.6	24.6	21.2	-	
LT - 5	411273	309902	26	27.4	25	22.8	23.1	21.8	14.6	23.9	22.9	26.8	32.9	20.5	24.0	20.6	-	
LT - 6	411358	309785	I/S	30.7	I/S	34.1	24.3	24.5	20.5	26.6	28.7	32	31.8	25.4	27.9	24	-	
LT - 7	411892	308937	25	29.3	28.4	27.5	24.9	23.6	15.5	23.1	26.5	29.6	32.9	23.2	25.8	22.2	-	
LT - 8	411951	308839	31.5	33.6	28.3	26.1	23.3	23.2	21	26.2	27.4	28.9	35.9	31	28.0	24.1	-	
LT - 9	410898	309085	I/S	I/S	24	23.2	I/S	I/S	I/S	30.8	I/S	~~1.6~~	~~67.2~~	25.1	28.7	22.4	-	Outliers to Oct and Nov data disregarded. Data anuualised (factor 0.91)
MUC 1A	408164	306513	31.8	36	31.6	I/S	36.6	40.1	26.8	35.6	22.4	36.8	36.4	26.8	32.8	28.2	-	
MUC -1B	408164	306513	24.6	32.2	33.1	35.7	38.1	40	26.9	37.4	37.9	41.5	I/S	27.4	34.1	29.3	-	
MUC -1C	408164	306513	29.3	34.4	31.5	I/S	41.5	46.7	26.2	36.1	35.7	37.7	41.9	27.6	35.3	30.4	-	

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 (0.86)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
MUC - 1	408164	306513	31.6	36.1	32	37.2	36.4	41.6	25.2	36	35.9	35.8	35.8	26.4	34.2	29.4	-	
MUC - 2	408165	306487	29.8	33.6	27.6	32.4	34.3	33.6	I/S	45.7	29.6	34.4	18.5	24.1	31.2	26.9	-	
MUC - 3	408097	306468	43.7	47.4	45.3	43	47.4	43.4	36.6	46.4	50	46.1	44.9	38.5	44.4	38.2	33.0	Only site in LDC area where measured level exceeds 36µg/m3
MUC - 4	408029	306501	31.4	37.4	33.6	34.3	43.9	39.1	23.3	34.1	37.4	37.5	38.6	27.7	34.9	30	-	
MUC - 5	408030	306516	37.5	39.7	31.7	33	I/S	32.6	35.1	37.6	42.8	37.6	40.7	33.5	36.5	31.4	-	
MUC - 6	408161	306556	31.4	32	29.1	24.7	22.1	24.4	27.7	29.8	34.5	30.9	38.1	28.2	29.4	25.3	-	
A38 - 1	417101	314180	29.2	34.5	21.9	18.5	18.1	19.5	20.2	21.6	24.7	24.3	28.5	26.2	23.9	20.6	-	
A38 - 2	416295	313186	23.8	29.3	22.5	21.4	17.8	20.3	12.5	25.6	24.6	25.4	31.6	27.1	23.5	20.2	-	
A38-2A	416290	313175	28.3	33.6	25.7	23	20.1	20.4	19	19.2	21.7	24.2	20.2	20.6	23.0	19.8	-	
A38 - 4	413978	300834	37.4	40	33.7	I/S	I/S	35.9	28.3	31.9	37.8	35.5	32.4	30.3	34.3	29.5	-	
A38 - 4A	413989	300869	35.1	35.9	32.5	31.5	34.5	31.8	I/S	30.4	33.6	29.6	34.1	30.2	32.7	28.1	-	
A38 - 5A	413950	300574	34.7	37.1	27	< 1.2	38.2	I/S	24.7	25.5	30.6	27.7	33.1	27.7	30.6	26.3	-	

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 (0.86)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
A38 - 6A	413961	300539	31.2	32.7	23.4	18.7	19	15.1	18.4	20.6	25	23.4	30.6	26.7	23.7	20.4	-	
A5 - 1	407208	306513	24.1	28	21.4	21.6	18.2	21	21.9	21.5	30.1	1.3	51	24.3	23.7	20.4	-	
A5 - 1A	407895	306516	31.7	35.3	23.4	24.9	23.6	26.8	I/S	46.1	36.2	< 1.2	57.7	27.4	33.3	28.6	-	
A5 - 2B	408667	306500	32	35.6	30.7	32.3	34.9	36.3	23.6	29.6	31.3	35.2	33.4	23.5	31.5	27.1	-	
ARM 1	406343	316482	27	26.3	23.1	21.8	18.8	23.6	23.2	26	23.9	29.7	32.3	23.7	25.0	21.5	-	
FAZE	420442	301806	41.4	43.4	35.6	33.1	30.8	31.5	30.3	32.3	36.8	35.8	42.6	34.1	35.6	30.7	-	
B	405086	309344	20.1	22.1	14	11.7	8.3	9.1	10.8	11.3	15.5	17.6	20.7	19.3	15.0	12.9	-	

☒ **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.**

☒ **Lichfield District Council confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**.

Notes:

Any exceedances of the NO_2 annual mean objective of 40µg/m^3 are conventionally 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

C.1 Distance Correction

Distance correction has been applied to the measured concentrations in the Muckley Corner AQMA using the diffusion tube data processing/ NO_2 fall off with distance calculator as discussed in Chapter 7 of Technical Guidance LAQM.TG22.

Figure C 1 below is extracted from the calculator and shows the relevant data inputs and the predicted level at the receptor location.

Figure C 1 Output from LAQM Distance Correction Calculator

Enter data into the pink cells

Site Name/ID	Distance (m)		NO_2 Annual Mean Concentration ($\mu g/m^3$)			Comment
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor	
MUC- 2 2023	5.0	9.0	13.0	26.9	24.5	
MUC- 2 2022	5.0	9.0	13.2	31.6	28.4	
MUC- 2 2021	5.0	9.0	13.9	25.0	23.1	
MUC- 2 2020	5.0	9.0	11.5	25.0	22.6	
MUC-3 2023	5.0	10.0	13.0	38.2	33.0	
MUC-3 2022	5.0	10.0	13.2	40.5	34.9	
MUC-3 2021	5.0	10.0	13.9	38.1	33.1	
MUC-3 2020	5.0	10.0	11.5	41.7	35.5	

C 2 Quality Assurance/Quality Control (QA/QC)

Figure C 2 is below is of the summary received from the laboratory supplying/analysing the NO_2 tubes used by Lichfield DC.

Figure C 2 - QC Results April 2024

Staffordshire County Council
Staffordshire Highways Laboratory

NO_2 diffusion tube analysis QC results – April 2024 Summary

AIR PT Scheme (LGC)

Results for each round are classified on z-scores for each tube as SATISFACTORY (≤2), QUESTIONABLE (between 2 and <3) and UNSATISFACTORY (>3).

For each round 2 sets of tubes are analysed by different members of staff to aid with QC and training.

PT Rounds during 2023

- Round 55 – Feb 2023. 100% satisfactory results.
- Round 56 – July 2023. 100% satisfactory results.
- Round 58 – Aug 2023. 100% satisfactory results.
- Round 59 – Oct 2023. 100% satisfactory results.

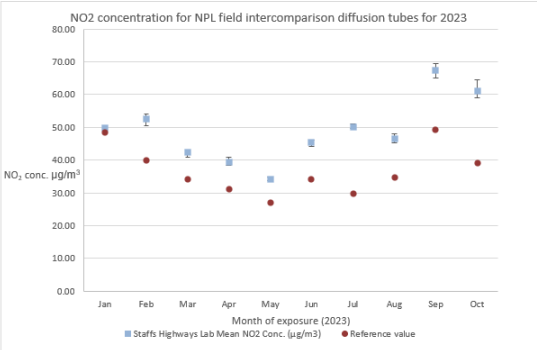
A summary of our z-score results can be found in the table below.

PT Round	Technician	z-scores	Performance
55 – Feb 2023	1	0.19, 0.00, -1.16, -1.45	100% SATISFACTORY
	2	-0.19, -1.31, -1.71, -1.73	
56 – July 2023	1	0.21, 0.11, 0.00, 0.30	100% SATISFACTORY
	2	-0.64, -0.16, -1.59, 0.15	
58 – Aug 2023	1	-0.12, -0.12, -0.19, -0.97	100% SATISFACTORY
	2	-0.37, -0.12, -0.86, -1.34	
59 – Oct 2023	1	0.42, 0.25, 0.34, 0.34	100% SATISFACTORY
	2	0.08, -0.59, -0.61, -0.14	

For more information on the AIR PT Scheme and older results see the Defra website:
https://laqm.defra.gov.uk/air-quality/air-quality-assessment/qa-qc-framework/

Field Intercomparison (NPL)

Our performance for all results of 2023 received so far (Jan-Oct 2023) was classified as 'GOOD' (CoV <20). The chart below shows our results (blue squares), compared to the reference value (orange dots) for each month.



Bias factor

The bias adjustment factor spreadsheet on the Defra website was updated in March 2024. The overall bias factor for Staffordshire Highways Laboratory for 2023 (including the Field Intercomparison result and all the co-location results from participating local authorities, total of 11 studies) was 0.86.

For the most up to date information on bias factors see the Defra website:
https://laqm.defra.gov.uk/air-quality/air-quality-assessment/national-bias/

C 3 New or Changed Sources Identified Within Lichfield District Council During 2023

Lichfield District Council has not identified any new sources relating to air quality within the reporting year of 2023.

C 4 Additional Air Quality Works Undertaken by Lichfield District Council During 2023

Lichfield District Council has not completed any additional works within the reporting year of 2023.

C5 QA/QC of Diffusion Tube Monitoring

Lichfield District Council's diffusion tubes in 2023 were supplied and analysed by Staffordshire Scientific Services/ Staffordshire Highways Laboratory, using the 20% Triethanolamine (TEA) in water preparation method. Staffordshire Scientific Services/ Staffordshire Highways Laboratory is UKAS accredited, participating in the AIR-PT Scheme for NO_2 tube analysis and the Annual Field Inter-Comparison Exercise. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO_2 concentrations reported are of a high calibre. The lab follows the procedures set out in the Harmonisation Practical Guidance. In the AIR PT intercomparison scheme for comparing spiked Nitrogen Dioxide diffusion tubes.

Local authority co-location studies which use tubes supplied by Staffordshire Scientific Services/ Staffordshire Highways Laboratory with the 20% TEA in water preparation method in 2023, with all 13 studies rated as 'good', as shown by the precision summary results. This precision reflects the laboratory's performance and consistency in preparing and analysing the tubes, as well as the subsequent handling of the tubes in the field. Tubes are considered to have a "good" precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more monitoring periods during a year is less than 20%.

Monitoring in 2023 throughout Lichfield District was completed in adherence with the 2022 Diffusion Tube Monitoring Calendar, whereby all changeovers throughout the monitoring year were completed in line with Defra guidance. As such, there is a degree of certainty surrounding the monitoring results provided.

Diffusion Tube Annualisation

One diffusion tube monitoring location within Lichfield District Council recorded data capture of less than 75%. The tool at https://laqm.defra.gov.uk/air-quality/air-quality-assessment/diffusion-tube-data-processing-tool/ was used to complete annualisation using data from two local continuous monitoring sites.

Table C. 1– Annualisation Summary (concentrations presented in µg/m3)

Site ID	Annualisation Factor Walsall Woodlands	Annualisation Factor Telford	Annualisation Factor	Annualisation Factor	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
LT-9	0.9142	0.8971	-	-	0.9056	28.7	26.1

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.

Lichfield District Council have applied a national bias adjustment factor of 0.86 to the 2023 monitoring data. A summary of bias adjustment factors used by Lichfield District Council over the past five years is presented in Table C. 2 below.

Table C. 2– Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	National	03/24	0.86 (11 studies)
2022	National	06/23	0.86 (13 studies)
2021	National	03/23	0.87 (12 studies)
2020	National	09/21	0.85 (15 studies)
2019	National	03/19	0.93 (19 studies)

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

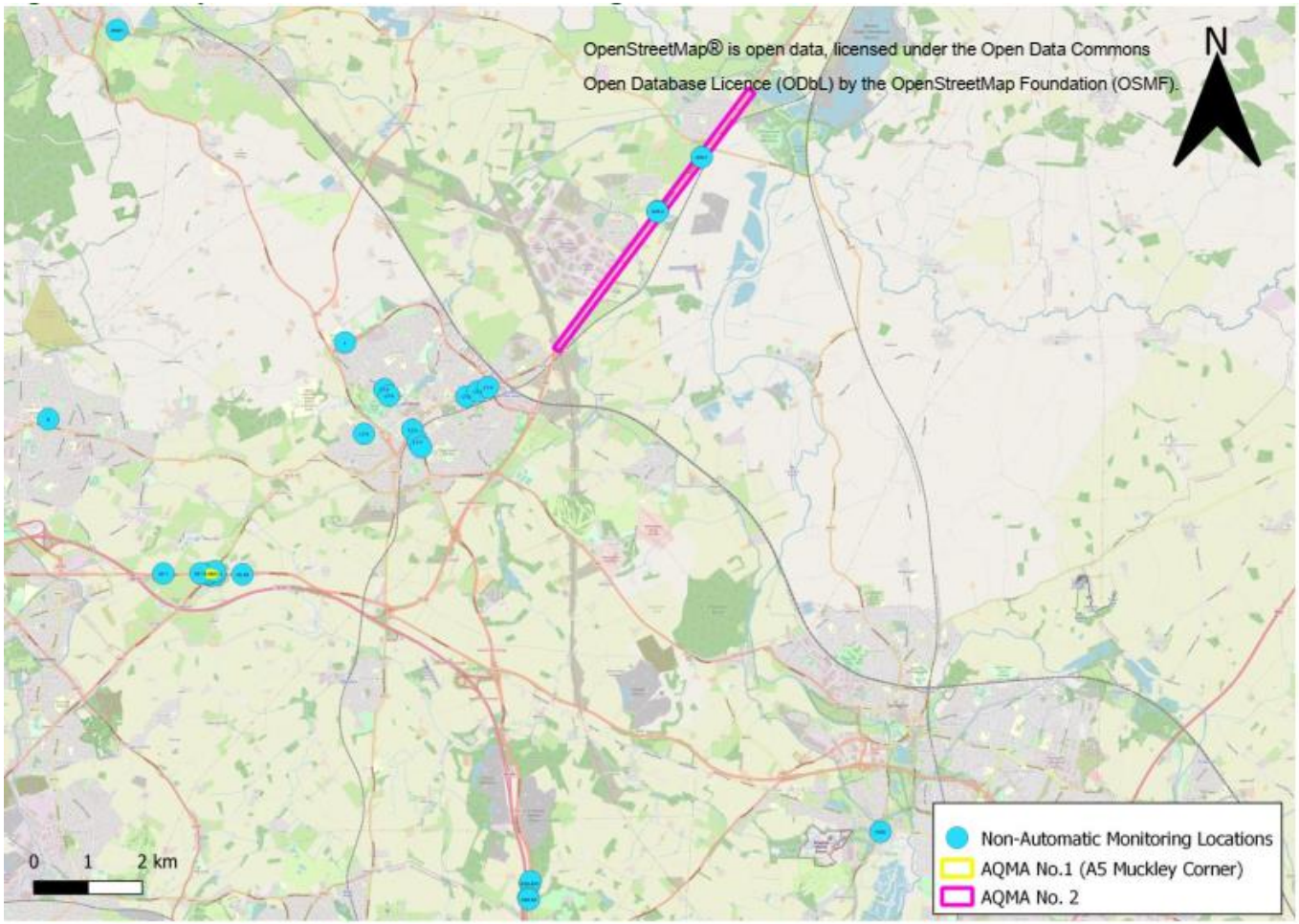
For distance correction of NO_2 monitoring the NO_2 Fall-Off with Distance Calculator has been used to complete the calculations

Table C. 3– Non-Automatic NO2 Fall off With Distance Calculations (concentrations presented in µg/m3).

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
MUC-3	5	10	38.2	13	33.0	

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

Figure D 1- Map of All Non-Automatic Monitoring Locations



NOTE:

- Triplicate Site IDs MUC-1A, MUC-1B, and MUC-1C will only show label MUC-1A;
- Figure D.1 shows Site IDs LT-5 and LT-6, LT-7 and LT-8, A38-2 and A38-2A, A38-6A and A38-5A, A38-4A and A38-4(X), and MUC-1, MUC-2, MUC-3, MUC-4, MUC-5 and MUC-6 overlapping due to close locational proximity.

Figure D 2- Map of Non-Automatic Monitoring Locations-Lichfield

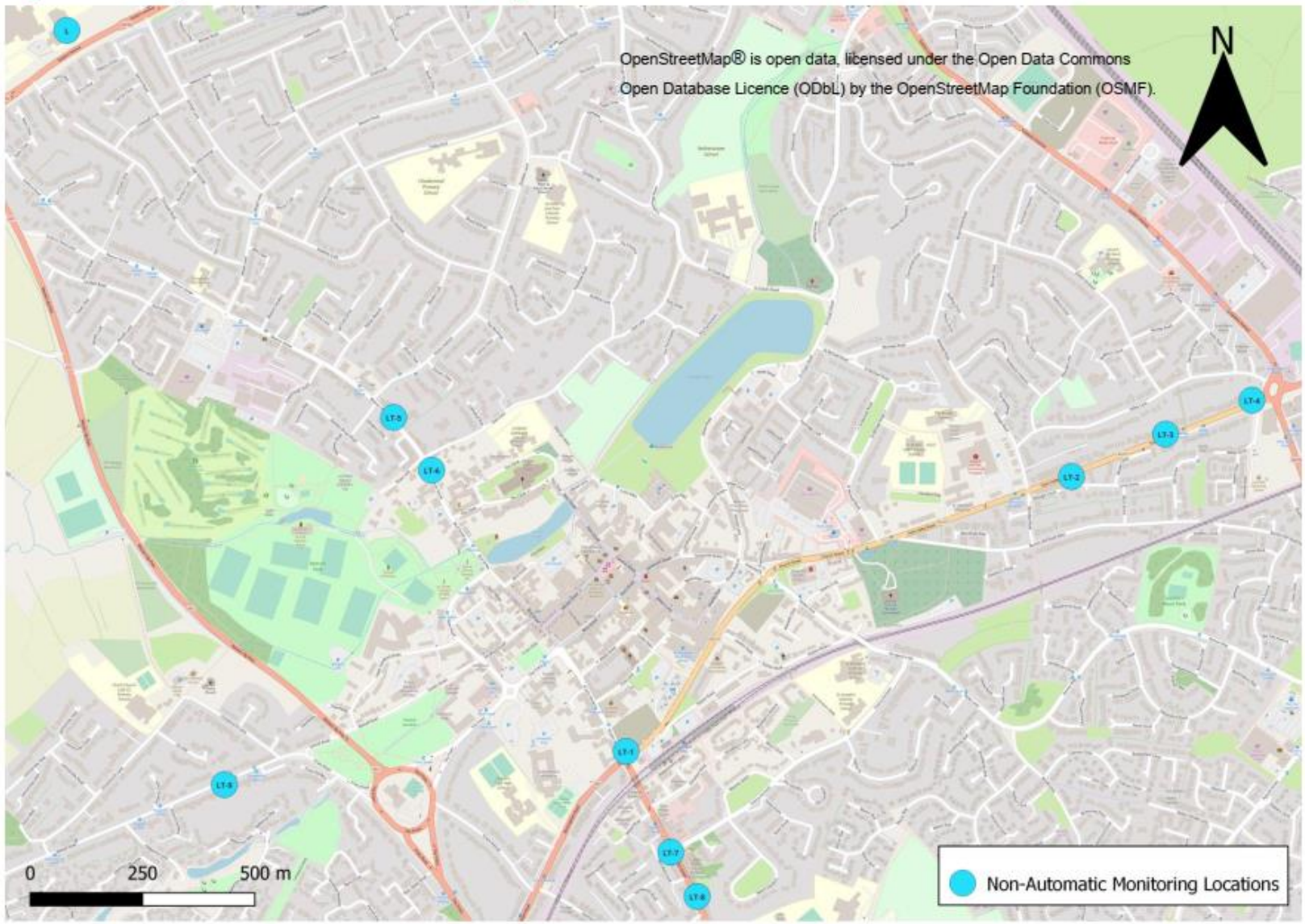


Figure D 3- Map of Non-Automatic Monitoring Locations-Burntwood

Figure D 4- Map of Non-Automatic Monitoring Locations-A38

Figure D 5- Map of Non-Automatic Monitoring Locations-Fazeley

Figure D 6- Map of Non-Automatic Monitoring Locations-A5 Muckley Corner

Figure D 7- Map of Non-Automatic Monitoring Locations-Fradley

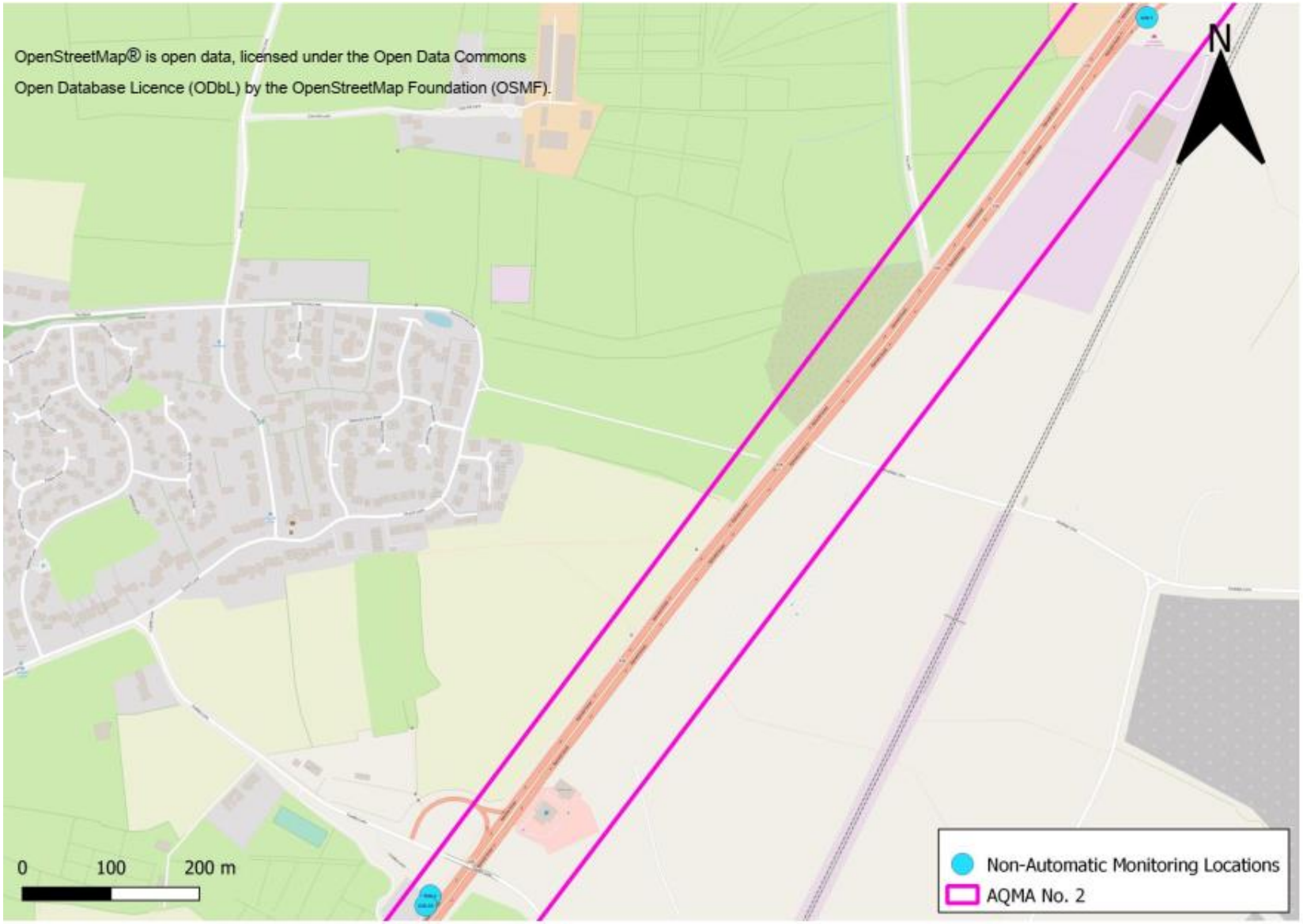
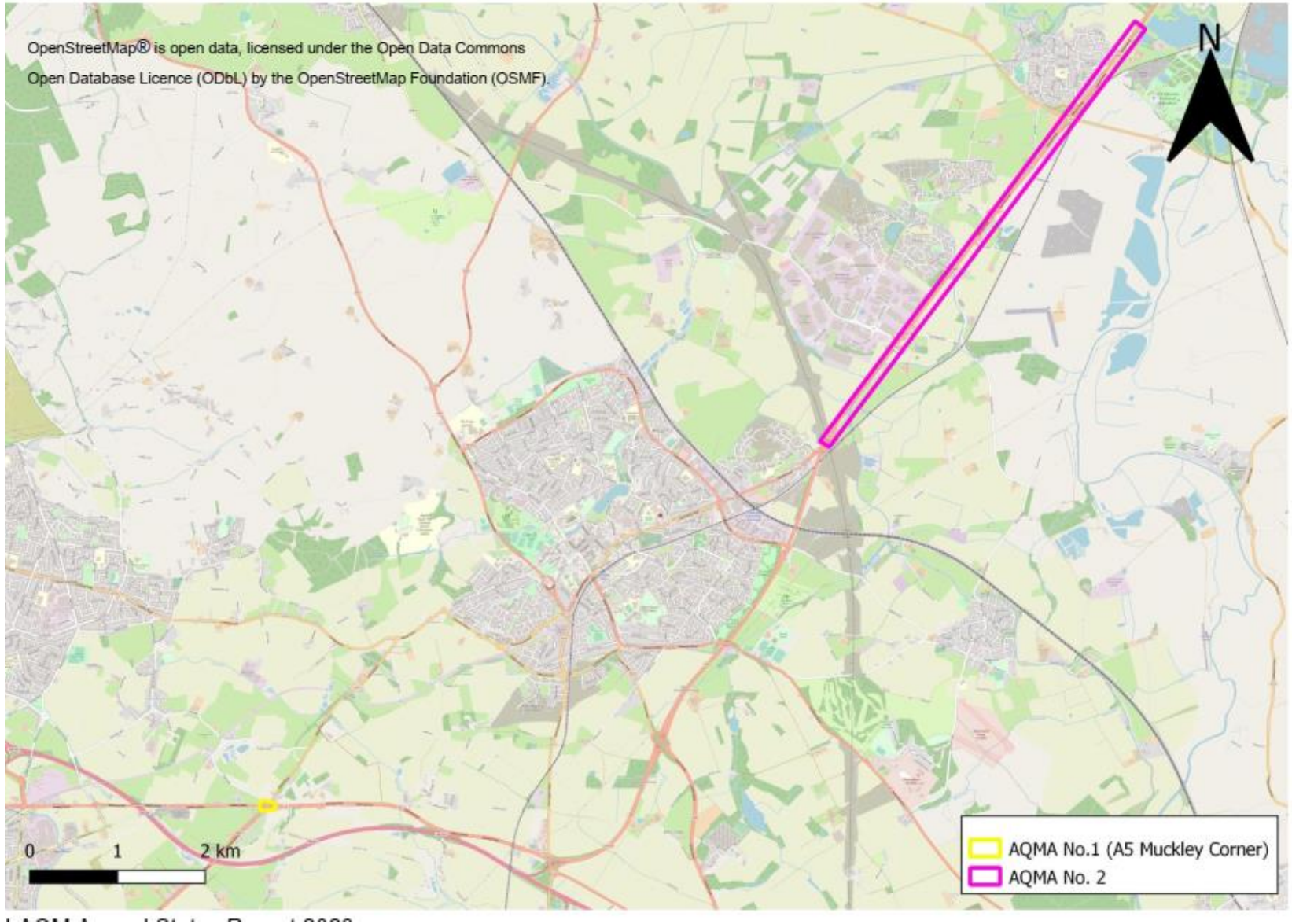


Figure D 8- Map of Non-Automatic Monitoring Locations-Brereton

Figure D 9-Map of Lichfield DC Air Quality Management Areas (AQMAs)



Appendix E: Summary of Air Quality Objectives in England

Table E. 1– Air Quality Objectives in England

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

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
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

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.
- Local Air Quality Management Policy Guidance LAQM.PG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Chemical hazards and poisons report: Issue 28. June 2022. Published by UK Health Security Agency
- Air Quality Strategy – Framework for Local Authority Delivery. August 2023. Published by Defra.