2021 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Date: June, 2021

Information	North West Leicestershire District Council Details
Local Authority Officer	Gareth Rees
Department	Environmental Protection Community Services
Address	North West Leicestershire District Council, Council Offices, Whitwick Road, Coalville, Leicestershire, LE67 3FJ
Telephone	01530 454545
E-mail	Environmental.protection@nwleicestershire.gov.uk
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Executive Summary: Air Quality in Our Area

Air Quality in North West Leicestershire

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas[1,2].

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy[5] sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero[6] sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

In this reporting year, the Action Plan covering the AQMA in Castle Donington has been drafted (and submitted to Defra alongside this ASR). Actions have been developed that both address the nitrogen dioxide air quality objective exceedance on Bondgate in Castle

[1] Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017
[2] Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[3] Defra. Air quality appraisal: damage cost guidance, July 2020
[4] Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018
[5] Defra. Clean Air Strategy, 2019
[6] DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

Donington, and more strategic issues to try and reduce emissions of both nitrogen dioxide and $PM_{2.5}$ across the district in order to improve health in a more equitable way. The measures have been considered under seven broad topics:

- Castle Donington Relief Road and related traffic management measures;
- Promotion of Behaviour Change away from Single Occupancy Private Vehicle Use;
- Promotion of the Use of Alternatively Fuelled Vehicles;
- Supporting Actions in the Zero Carbon Road Map Action Plan;
- Developing Planning Policies to Support Better Air Quality;
- Supporting and Collaborating with Leicestershire County Council on wider Public Health projects; and
- Controlling Domestic Emissions.

The Castle Donington Relief Road opened in February 2020, and is part of a £7.76 million investment into the Castle Donington area provided jointly by Redrow Homes and Miller Homes. This investment includes over £1.5m towards new bus services, bus stops and passes, alongside a £330,000 commitment to improving traffic calming measures in Castle Donington. It is anticipated that this measure, which will take vehicles out of the area of exceedance in Castle Donington and reduce congestion, will provide enough improvement in concentrations of nitrogen dioxide to achieve the air quality objective in Castle Donington. The outcomes of this measure will be monitored both using traffic counts, and nitrogen dioxide diffusion tubes, and will be evaluated when there is enough long-term data collected during periods of representative traffic flow.

Conclusions and Priorities

The ASR concludes that

- there are no new areas likely to be exceeding air quality objectives

In 2021 the council plans to

- undeclare Coalville AQMA
- undeclare Derby Road/London Road, Kegworth AQMA
- Develop, publish and implement AQMA action plan

Local Engagement and How to get Involved

The main contributions that our community can make to improving air quality are around minimising emissions from traffic and other sources and limiting exposure at times of poor air quality. Specifically that means avoiding unnecessary car use for short journeys, utilising public transport where possible, buying and maintaining low emissions vehicles and being linked in to the national alert system for predicted episodes of poor air quality.

The public can get further information on Air Quality from the following websites

- North West Leicestershire District Council Air quality website http://www.nwleics.gov.uk/pages/air_quality
- DEFRAs UK-AIR: Air information Resource website https://uk-air.defra.gov.uk/
- DEFRAs Local Air Quality Management (LAQM) Support website http://laqm.defra.gov.uk/
- Environmental Protection UK Air Pollution website http://www.environmental-protection.org.uk/policy-areas/air-quality/about-air-pollution/

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1 Local Air Quality Management

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

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

A summary of AQMAs declared by North West Leicestershire District Council can be found in Table 2.1. The table presents a description of the 4 AQMAs that are currently designated within North West Leicestershire District Council Appendix D: Map(s) of Monitoring Locations and AQMAs, provides maps of 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;

We propose to revoke Coalville and Kegworth AQMAs (see monitoring section and Appendix C2).

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
Kegworth	26/07/2004	NO_2 Annual Mean	Busy trunk road fronted by residential properties	NO	44 µg.m^{-3}	18.4 µg.m^{-3}		
Castle Donington	09/01/2008	NO_2 Annual Mean	An area encompassing the High Street and Bondgate area of Castle Donnington.	NO	47.8µg.m^{-3}	30 µg.m^{-3}		
Coalville	09/01/2008	NO_2 Annual Mean	An area encompassing parts of Stephenson Way, Broom Leys Road in Coalville.	NO	48 µg.m^{-3}	27.6 µg.m^{-3}		
Copt oak	30/07/2009	NO_2 Annual Mean	An area of the village of Copt Oak that lies within the boundaries of NW Leicestershire District Council.	YES	44 µg.m^{-3}	39 µg.m^{-3}		

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

☒ **North West Leicestershire District Council confirm that all current AQAPs have been submitted to Defra.**

2.2 Progress and Impact of Measures to address Air Quality in North West Leicestershire District Council

Defra's appraisal of last year's ASR concluded

1. Concentrations have now been added to the revised 2020 ASR
    - This has been added to the report in Table 2.1
2. There is currently no record of any AQAPs having been completed on the RSW (Report Submission Website) and no new AQAPs can be seen on the Council's website. One of the priorities from the appraisal of the 2019 ASR was to develop a new AQAP. This continues to be a priority. If the Council need guidance on this, please contact the LAQM Helpdesk.
    - The council has commissioned Air Quality Consultants to draft an Air Quality Action Plan
    - The council intend to undeclare the Coalville and Kegworth AQMAs
    - The council is attempting to improve monitoring in the Copt Oak AQMA to confirm if the AQMA actually exists as this is still unclear
    - An AQAP for Castle Donington has been submitted to DEFRA with this ASR. This also covers the broader air quality improvements being sought by the Council in collaboration with other stakeholders. An AQAP will be required for Copt Oak if data substantiates an air quality issue.
3. This has been addressed by the Council and an explanation has been provided in the revised 2020 ASR.
    - The 2020 ASR was revised to address this comment
4. The Council has provided further discussion in their revised 2020 ASR.
    - The 2020 ASR was revised to address this comment
5. This has been addressed.
    - The 2020 ASR was revised to address this comment
6. It can be seen that the National Bias adjustment factor has been used in the ASR however there is no supporting evidence provided in the Appendix or in any of the additional files provided. The only evidence of an adjustment factor is in the additional file 'NWLDC-ASR-2020 - appendix C2 ', however this again refers to a local bias adjustment calculation for Marylebone Road which is not within the Council's jurisdiction. When the national bias adjustment factor is checked for when the ASR was submitted (May 2020) the Gradko

50% TEA acetone factor is correct as 0.87. The inclusion of the Marylebone file is misleading and the Council are advised to only present evidence for the relevant bias adjustment factor.

- The file included is part of Gradkos QA/QC document on precision and is included in their precision calculation spreadsheet. As stated in the report we used the National Bias Adjustment factor.

7. Distance correction calculations are encouraged to be included in future ASRs.

- The Diffusion Tube Data Processing Tool has been included as appendix C1

North West Leicestershire has taken forward a number of direct measures during the current reporting year of 2021 in pursuit of improving local air quality. Initially, a review of air quality delivery was undertaken, which included a review of the AQMAs in relation to whether there were still exceedances of the relevant air quality objectives. The review of concluded with the recommendations set out in Table 2.2.

Table 2.2 – North West Leicestershire AQMAs

No	Name	Objective	Year Declared	Description	Recommendation
1	Kegworth	NO_2 annual mean	2004	Busy trunk road fronted by residential properties	Based on monitored data it is recommended that AQMA 1 is revoked in the next ASR.
2	Castle Donington	NO_2 annual mean	2008	An area encompassing the High Street and Bondgate area of Castle Donington.	AQMA 2 should be retained and an Air Quality Action Plan (AQAP) produced to reduce concentrations within Castle Donington
3	Coalville	NO_2 annual mean/ NO_2 1-hour mean	2008 (annual)/ 2012 (Hourly)	An area encompassing parts of Stephenson Way, Broom Leys Road and Bardon Road in Coalville.	Based on monitored data it is recommended that AQMA 3 is revoked in the next ASR.
4	Copt Oak	NO_2 annual mean	2009	An area of the village of Copt Oak that lies within the boundaries of NWLDC.	If feasible, it is recommended that a diffusion tube is installed on the facade of the property closest to the M1 with a view to revoking this AQMA

As can be seen from Table 2.2 it is recommended that AQMAs 1 and 3 should be revoked, and a diffusion tube installed in AQMA 4 on the property closest to the M1 with a view to demonstrating that the AQMA can be revoked. It is only AQMA 2 (Castle Donington) where a clear exceedance of the annual mean nitrogen dioxide air quality objective was measured in 2019.

In this reporting year, the Action Plan covering the AQMA in Castle Donington has been drafted (and submitted to Defra alongside this ASR). The process of drafting the Action Plan provided the opportunity to build on ongoing collaborative working, both within North West Leicestershire District and at County level with public health, transport, planning and climate change colleagues. Actions have been developed that both address the nitrogen dioxide air quality objective exceedance on Bondgate in Castle Donington, and more strategic issues to try and reduce emissions of both nitrogen dioxide and $PM_{2.5}$ across the district in order to improve health in a more equitable way. The measures have been considered under seven broad topics:

- Castle Donington Relief Road and related traffic management measures
- Promotion of Behaviour Change away from Single Occupancy Private Vehicle Use
- Promotion of the Use of Alternatively Fuelled Vehicles
- Supporting Actions in the Zero Carbon Road Map Action Plan
- Developing Planning Policies to Support Better Air Quality
- Supporting and Collaborating with Leicestershire County Council on wider Public Health projects
- Controlling Domestic Emissions

Even though the action plan has not yet been formally adopted, progress is being made and the details of the measures, and current progress, are set out in Table 2.3~~Table 2.2~~. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.3~~Table 2.2~~. The Castle Donington Relief Road opened in February 2020, and is part of a £7.76 million investment into the Castle Donington area provided jointly by Redrow Homes and Miller Homes. This investment includes over £1.5m towards new bus services, bus stops and passes, alongside a £330,000 commitment to improving traffic calming measures in Castle Donington. It is anticipated that this measure, which will take vehicles out of the area of exceedance in Castle Donington and reduce congestion, will provide enough improvement in concentrations of nitrogen dioxide to achieve the air quality objective in Castle Donington. The traffic calming measures have not yet been implemented, but Leicestershire County Council is in discussion with Castle Donington Parish Council about the precise nature of the scheme.

North West Leicestershire District Council expects the following measures to be undertaken over the course of the next reporting year:

- Implementation of traffic management measures by Leicestershire County Council within Castle Donington (to complement the Relief Road);
- Leicestershire County Council to adopt the Local Cycling and Walking Infrastructure Plan (providing the framework to apply for further funding for measure 2 in the AQAP);
- Continued expansion of the Electric Vehicle charging infrastructure across the district;
- Ongoing collaboration with planning colleagues both in relation to planning applications, and also the update of Local Plan policies and associated guidance; and
- Attendance by Environmental Protection officers at ongoing health partnership meetings with contribution to future projects on air quality.

Our priorities are to ensure that the air quality objectives are met in Castle Donington, largely through the relief road, which is already in place, and associated measures, some of which are still to be implemented, and also to reduce emissions more generally across the district through collaborative working with other policy areas such as County transport, public health, planning and work underway to tackle the Climate Emergency declared in North West Leicestershire. We will ensure that air quality is considered within the review of the Local Plan, within transport schemes and within other policy areas which are looking to reduce vehicle use, either by encouraging active travel, by reducing travel demand, encouraging freight onto different modes, or increase the use of non-diesel and petrol vehicles. By taking this more strategic approach, air quality and the associated health outcomes should improve more generally across the district.

The principal challenges and barriers to implementation that North West Leicestershire District Council anticipates facing are in terms of resourcing, mainly in staff time, and also in implementing projects, for example in increasing the numbers of EV charging points, or undertaking behavioural change projects.

North West Leicestershire District Council anticipates that the measures stated above and in Table 2.3 will achieve compliance in 2021 within the Castle Donington AQMA.

North West Leicestershure will also facilitate regular meetings between stakeholders to monitor progress against the AQAP delivery.

Whilst the measures stated above and in Table 2.3 should achieve compliance, North West Leicestershire District Council will continue with wider collaborative measures to

reduce emissions across the district, thus improving the health of the population of North West Leicestershire.

Table 2.3 – 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	Castle Donington Relief Road and supporting traffic management measures in Castle Donington	Traffic Management	Strategic Highway Improvements	2020	Completed February 2020 for relief road, 2021 for measure as a whole	NWLDC	Consortium of Developers	No	Fully funded	£7.76 million in total	Mainly implemented	Reductions large enough to achieve the annual mean NO_2 at all relevant monitoring locations	Traffic flows on Bondgate in Castle Donington, and resulting nitrogen dioxide concentrations	Road built and open. Traffic light rephasing complete. Post scheme monitoring still to be undertaken (delays due to impacts on traffic from Covid restrictions)	Traffic calming measures still to be implemented
2	Promote Behaviour Change away from Single Occupancy Private Vehicle Use	Promoting Travel Alternatives	Encourage/ facilitate home working, intensive active travel campaign & infrastructure, Personalised Travel Planning, Promotion of Cycling, Promotion of Walking, School Travel Plans, Workplace Travel Planning	Ongoing group of measures	Ongoing for the measure as a whole, late 2021 for LCC Local Cycling and Walking Infrastructure Plan	NWLDC	Transforming Cities Fund, DfT, LCC	No	Partially funded	Lots of different schemes, difficult to estimate overall cost	Being Implemented	n/a – strategic measure which will also assist in achievement of air quality objective in AQMA	Monitoring strategy for LTP includes	Ongoing work with schools mainly, and travel plans through planning system. Local Cycling and Walking Infrastructure plan being drafted	Largely implemented by LCC. Restricted by resourcing.
3	Promote the use of Alternatively Fuelled Vehicles	Promoting Low Emission Transport	Priority Parking for LEVs, procuring alternative refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging, taxi emission incentives, taxi licensing conditions	Ongoing group of measures	Ongoing with Zero Carbon Road map	LCC and NWLDC	Office for Low Emission Vehicles (OLEV), Energy Savings Trust (EST), neighbouring local authorities	No	Partially funded	Lots of different schemes, difficult to estimate overall cost	Being Implemented	n/a – strategic measure which will also assist in achievement of air quality objective in AQMA	Proportion of alternatively fuelled vehicles in the fleet on Leicestershire's roads	EV charging points increasing in NWL as funding will allow, ultra low emission buses on Skylink route	
4	Support Actions in the Zero Carbon Road Map Action Plan	Wide range of measures spanning a number of categories	Wide range of measures spanning a number of categories	2019	Ongoing with Zero Carbon Road map	NWLDC	Office for Low Emission Vehicles (OLEV), Energy Savings Trust (EST), NWLDC	No	Partially funded	Lots of different schemes, difficult to estimate overall cost	Being Implemented	n/a – strategic measure which will also assist in achievement of air quality objective in AQMA	Wide range of measures, therefore range of KPIs, which will be driven by Climate Emergency work	EV infrastructure, work on some council properties, some housing stock changed to air source heat pumps	
5	Develop Planning Policies to Support Better Air Quality	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance, Low emission strategy, other policy, regional groups	2021	2023	NWLDC	Mainly from existing budgets. Planning system could generate funding through s106 contributions from developers.	No	Funded (collaborative working)	Unknown, but mainly staff time	Planning Phase: Initial discussions held	n/a – strategic measure which will also assist in achievement of air quality objective in AQMA	Broader Policy in Local Plan, SPD on Air Quality	Discussions between EH and planning on review of Local Plan	
6	Support and collaborate with LCC on wider Public Health projects	Policy Guidance and Development Control	Regional Groups Co-ordinating programmes to develop Area wide strategies to reduce emissions and improve air quality	Ongoing	n/a	NWLDC	Funding through public health, internal budgets for staff time	No	Funded (collaborative working)	No specific budget, as ongoing collaborative work	Being Implemented	n/a – strategic measure which will also assist in achievement of air quality objective in AQMA	n/a as no specific projects identified as yet	Ongoing Health Partnership meetings with the districts, boroughs and Public Health Leicestershire.	Non statutory function will require additional resources to implement
7	Control Domestic Emissions	Promoting Low Emission Plant	Regulations for fuel quality for stationary and mobile sources	2021	n/a	LCC and NWLDC	Mainly from existing budgets.	No	No funding for information campaigns	No specific budget	Planning Phase	n/a – strategic measure which will also assist in achievement of air quality objective in AQMA	Level of solid fuel burning	Some council housing stock changed to air source heat pumps	Very difficult to quantify any change without detailed survey work

North West Leicestershire District Council expects the following measures to be completed over the course of the next reporting year:

- Publish the Air Quality Action Plan
- Revoke the Coalville and Kegworth AQMA's

North West Leicestershire District Council's priorities for the coming year are

- Publish and implement the Air Quality Action Plan
- Revoke the Coalville and Kegworth AQMA's
- Continue the collaborative work with stakeholders

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

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

The Public Health Outcomes Framework (PHOF) (https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/) is a Department of Health data tool for England, intended to focus public health action on increasing healthy life expectancy and reducing differences in life expectancy between communities. The tool uses indicators to assess improvements. Recognising the significant impact that poor air quality can have on health, the PHOF includes an indicator relating to fine particulate matter ($PM_{2.5}$) (indicator D01 Fraction of mortality attributable to particulate air pollution) .

The indicator in the PHOF reports the estimates fraction of all-cause adult mortality attributable to anthropogenic particulate air pollution (measured as fine particulate matter).

Based on the latest available figures the position in North West Leicestershire district can be compared to the situation across the rest of England, East Midlands and nearby districts. North West Leicestershire has:

- attributable deaths on par with Oadby And Wigston; and Hinckley and Bosworth;
- attributable deaths lower than Blaby; and Charnwood

$PM_{2.5}$ background air quality data published by DEFRA for 2020 shows the district has background concentrations between 7.5 µg/m^3 and 11.36 µg/m^3 with a mean of 8.2 µg/m^3.

Many of the measures within the AQAP are designed to target $PM_{2.5}$ as well as NO_2. In particular, measure 2 aims to promote behaviour change away from single occupancy vehicle use, encouraging active travel and hence reducing traffic related $PM_{2.5}$. The promotion of electric vehicles will reduce tailpipe emissions of $PM_{2.5}$, but it is acknowledged that emissions from brake and tyre wear will remain, and in some cases increase. Collaborative projects with public health and ongoing work with planning colleagues will both directly address $PM_{2.5}$ in the longer term, and moves to reduce solid fuel burning will directly impact $PM_{2.5}$ rather than NO_2.

Ongoing work in collaboration with public health staff at Leicestershire County Council is being undertaken through the Joint Strategic Needs Assessment (JSNA) and associated action plan. Within the JSNA there is a chapter on air quality and health. The chapter recognises that by its nature, air quality cannot be controlled by geographical boundaries or by a single individual alone. Instead, collective, systematic efforts are required to reduce air pollution and its harmful effects on health. The key recommendation is that the Leicestershire Air Quality and Health Partnership Steering Group should agree a plan to deliver joint actions to tackle poor air quality and related health issues.

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

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

The authority did not undertake any automatic monitoring during 2020.

3.1.2 Non-Automatic Monitoring Sites

North West Leicestershire undertook non- automatic (i.e. passive) monitoring of NO_2 at 35 sites during 2020. Table A.2 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 33%), 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 2020 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Error! Reference source not found.~~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.

Due to COVID restrictions monitoring in March and April were outside of the DEFRA published exposure dates. March was exposed for 6 weeks. April was exposed for 2 weeks

Diffusion tubes for January to March were supplied by Gradko using 50%TEA in Acetone

Diffusion tubes for April to December were supplied by Socotec (Didcote) unsing 50% TEA in Acetone.

The national bias adjustment factors for the 2 labs are

Analysed By[1]	Method To undo your selection, choose (All) from the pop-up list	Year 5 To undo your selection , choose (All)	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	50% TEA in acetone	2020	**0.82**
SOCOTEC Didcot	50% TEA in acetone	2020	**0.77**

To ensure that the worst case possibility is covered the authority has chosen to use the higher of the 2 Adjustment factors (0.82)

3.2.1.1 Kegworth AQMA

There are 7 diffusion tube locations within the AQMA and 1 location outside of the AQMA

Trends for diffusion Tubes located in and around the Kegworth AQMA are shown in Figure A-1 in **Error! Reference source not found.**~~Appendix A: Monitoring Results~~.

Concentrations at 46N and 48N exceeded the objective in 2013 and 2014, but have been consistently below the objective since 2014, as have concentrations at the remaining diffusion tube sites. The was also a reduction in concentrations at all sites between 2018 and 2019, which coincides with the opening of the Kegworth bypass at the end of 2018. It is recommended that, as these diffusion tube sites represent worst case locations and most are closer to the road than relevant receptors, this AQMA is revoked.

3.2.1.2 Castle donington AQMA

There are 3 diffusion tubes within the AQMA and 6 other nearby locations.

Trends for diffusion Tubes located in and around the Castle Donington AQMA are shown in Figure A-2 in **Error! Reference source not found.**~~Appendix A: Monitoring Results~~. All locations except 18N and 41Nhave been substantially below the annual mean air quality objective for Nitrogen dioxide and have been for the last 5 years.

A relief road was opened in 2020 which will have likely diverted traffic away from the AQMA.

,All locations in 2020 met the annual mean objective however this is likley a result of reduced traffic caused by COVID-19 some of the improvements may be a result of the relief road opening.

3.2.1.3 Coalville AQMA

There are 4 monitoring locations within the AQMA and 2 nearby locations

Trends for diffusion Tubes located in and around the Coalville AQMA are shown in Figure A-3 in **Error! Reference source not found.**~~Appendix A: Monitoring Results~~.

All monitoring locations have been below the objective since 2013 and are located closer to the road that relevant receptors so represent a worst case exposure.

3.2.1.4 Copt Oak AQMA

There is 1 diffusion tube locations within the AQMA and 2 locations outside of the AQMA

Trends for diffusion Tubes located in and around the Copt Oak AQMA are shown in Figure A-4**Error! Reference source not found.** in **Error! Reference source not found.**~~Appendix A: Monitoring Results~~.

All receptor locations were substantially lower than the air quality standard.

A location on the kerb of the M1 exceeded however there are no relevant receptors linked to this location.

3.2.1.5 Other Locations

There are 4 other monitoring locations in the district that were monitoried for the entire year.

Following the air quality review of the district the following monitoring locations were commissioned in April 2020 to address potential concerns.

- Whitwick Road, Coalville (63N)
- zebra crossing The Green, Whitwick (59N)
- lamppost outside 53 North Street, Whitwick (60N)
- lampost outside 53 Wood Street, Ashby (61N)
- lamppost 45 The Callis, Ashby (opposite Rowena Drive) (62N)

Trends for diffusion tubes located at other locations within the district are shown in Figure A-4 in **Error! Reference source not found.**~~Appendix A: Monitoring Results~~.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

No Automatic monitoring undertaken in 2020

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)
06N	Broomleys junction (1)	Roadside	443632	314026	NO2	Y Coalville	5.8	2.0	No	1.8
08N	End Cottage Copt Oak	Rural	448138	313012	NO2	N	0.0	0.0	No	1.8
12N	Aeropark	Other	444161	326355	NO2	N		0.0	No	1.8
14N	69 High St CD	Roadside	444216	326788	NO2	N	0.0	2.9	No	1.8
16N	crossroads CD	Roadside	444450	327233	NO2	Y Castle Donnington	7.5	1.0	No	1.8
17N	13 Bondgate CD	Roadside	444512	327335	NO2	Y Castle Donnington	2.0	2.5	No	1.8
18N	34 Bondgate CD	Roadside	444580	327411	NO2	Y Castle Donnington	0.0	2.3	No	1.8
19N	94 Bondgate CD	Roadside	444707	327603	NO2	Y Castle Donnington	0.8	1.4	No	1.8
20N	Derby Rd Kegworth (Benny's Hill)	Roadside	448523	326885	NO2	Y Kegworth	3.2	1.0	No	1.8
22N	Keg A6 2	Roadside	448817	326621	NO2	Y Kegworth	0.0	2.3	No	1.8
23N	120 whatton road kegworth	Suburban	448108	326305	NO2	N			No	1.8
31N	Sinope	Roadside	440167	315264	NO2	N	7.8	3.2	No	1.8

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)
32N	M1 Bridge Copt Oak	Other	448082	313100	NO2	N			No	1.8
39N	LW new M1	Other	446935	323744	NO2	N			No	1.8
40N	35 High Street castle donington	roadside	444323	326975	NO2	N	3.0	0.9	No	1.8
41N	18 High Street castle donington	roadside	444474	327171	NO2	N	4.0	1.0	No	1.8
43N	Direction Sign Bardon Rd/A511 RBT	roadside	443675	313642	NO2	Y Coalville	2.4	3.0	No	1.8
45N	outside corner farm copt oak	roadside	448119	312920	NO2	Y Copt Oak	27.0	4.3	No	1.8
46N	Kegworth PO Derby Road	roadside	448724	326702	NO2	Y Kegworth	0.0	1.3	No	1.8
47N	12 Derby Rd Kegworth	roadside	448639	326805	NO2	Y Kegworth	4.7	2.5	No	1.8
48N	28 london road kegworth	roadside	448792	326533	NO2	Y Kegworth	0.8	1.5	No	1.8
49N	10 central road hugglescote	roadside	442578	312871	NO2	N	4.1	2.5	No	1.8
50N	hugglescote cross roads	roadside	442562	312823	NO2	N	5.4	1.0	No	1.8
51N	40mph sign N of petrol station	roadside	448361	326997	NO2	Y Kegworth	9.6	3.2	No	1.8
52N	lamppost 65 Derby Road	roadside	448436	326931	NO2	Y Kegworth	5.9	2.5	No	1.8

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)
53N	20mph sign outside 10 greenhilll road	roadside	448436	326931	NO2	N	5.9	2.5	No	1.8
54N	parking restrictions sign adj drive 12 & 20 park lane	roadside	444331	327257	NO2	N	8.8	2.0	No	1.8
56N	lampost adjacent 27 Broomleys road	roadside	443649	314040	NO2	N	1.8	1.2	No	1.8
57N	lamppost outside 21 broomleys road	Roadside	443630	314028	NO2	Y Coalville	4.7	3.0	No	1.8
58N	cycle route sign outside 34 broomleys road	Roadside	443634	313996	NO2	Y Coalville	12.0	5.0	No	1.8
59N	zebra crossing the green whitwick	Roadside	442754	317177	NO2	N	0.5	0.5	No	1.8
60N	lamppost outside 53north street whitwick	Roadside	443366	316277	NO2	N	0.0	1.0	No	1.8
61N	lampost outside 53 wood street ashby	Roadside	436194	316958	NO2	N	1.0	1.0	No	1.8
62N	lamppost 45 the callis, ashby (oposite rowena drive)	Roadside	435587	317204	NO2	N	4.0	0.5	No	1.8
63N	Whitwick Road Coalville	Roadside	442800	314466	NO2	N	0.0	2.4	No	1.8

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)

No automatic monitoring undertaken

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 2020 (%) (2)	2016	2017	2018	2019	2020
06N	443632	314026	Roadside	91.7%	93.7	35.53	**36.16**	34.05	32.47	25.3
08N	448138	313012	Rural	100.0%	100.0	25.85	24.79	**23.39**	22.37	16.9
12N	444161	326355	Other	83.3%	84.6	19.01	18.48	19.14	18.86	13.4
14N	444216	326788	Roadside	100.0%	100.0	22.96	22.16	23.93	20.68	16.1
16N	444450	327233	Roadside	83.3%	82.7	34.19	34.39	35.86	31.51	21.5
17N	444512	327335	Roadside	100.0%	100.0	31.07	32.42	36.97	30.88	20.7
18N	444580	327411	Roadside	100.0%	100.0	**49.77**	**47.81**	**51.93**	**42.05**	29.8
19N	444707	327603	Roadside	100.0%	100.0	32.56	28.59	30.67	27.29	19.7
20N	448523	326885	Roadside	91.7%	92.3	29.13	29.91	25.37	21.81	16.5
22N	448817	326621	Roadside	100.0%	100.0	33.5	29.23	28.43	23.35	17.6
23N	448108	326305	Suburban	100.0%	100.0	20.84	20.54	19.81	20.49	16.0
31N	440167	315264	Roadside	100.0%	100.0	30.75	27.61	22.31	22.62	17.2
32N	448082	313100	Other	100.0%	100.0	**55.02**	**58.09**	**59.47**	**53.91**	39.3

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
39N	446935	323744	Other	100.0%	100.0	27.28	19.76	24.38	20.91	16.3
40N	444323	326975	roadside	83.3%	82.7	23.51	34.8	25.72	22.94	14.8
41N	444474	327171	roadside	100.0%	100.0	**38.43**	**39.85**	**42.67**	**36.16**	24.1
43N	443675	313642	roadside	100.0%	100.0	29.09	28.72	28.76	25.84	23.2
45N	448119	312920	roadside	100.0%	100.0	33.51	31.29	30.71	26.66	23.0
46N	448724	326702	roadside	100.0%	100.0	**36.72**	31.95	31.59	24.56	17.6
47N	448639	326805	roadside	100.0%	100.0	35.73	34.44	29.58	24.5	18.5
48N	448792	326533	roadside	100.0%	100.0	35.19	33.56	34.07	26.29	18.0
49N	442578	312871	roadside	100.0%	100.0	34.39	33.66	36.52	30.94	24.5
50N	442562	312823	roadside	100.0%	100.0	35.06	**36.97**	33.06	33.22	29.2
51N	448361	326997	roadside	100.0%	100.0	30.67	32.66	26.46	22.4	18.3
52N	448436	326931	roadside	100.0%	100.0	32.16	32.12	28.85	23.29	18.1
53N	448436	326931	roadside	100.0%	100.0	21.87	22.48	21.89	19.79	16.1
54N	444331	327257	roadside	91.7%	90.7	22.82	23.69	27.39	24.74	20.0

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
56N	443649	314040	roadside	100.0%	100.0	35.88	35.74	36.58	34.23	26.7
57N	443630	314028	Roadside	100.0%	100.0				32.02	27.3
58N	443634	313996	Roadside	100.0%	100.0				23.08	21.3
59N	442754	317177	Roadside	88.9%	64.0					17.7
60N	443366	316277	Roadside	100.0%	73.4					24.4
61N	436194	316958	Roadside	77.8%	61.5					31.9
62N	435587	317204	Roadside	77.8%	53.8					16.9
63N	442800	314466	Roadside	100.0%	73.4					18.9

☒ **Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.TG16**

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

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

Notes:

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

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

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

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

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

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

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

Figure A.1 – Kegworth Trends in Annual Mean NO_2 Concentrations

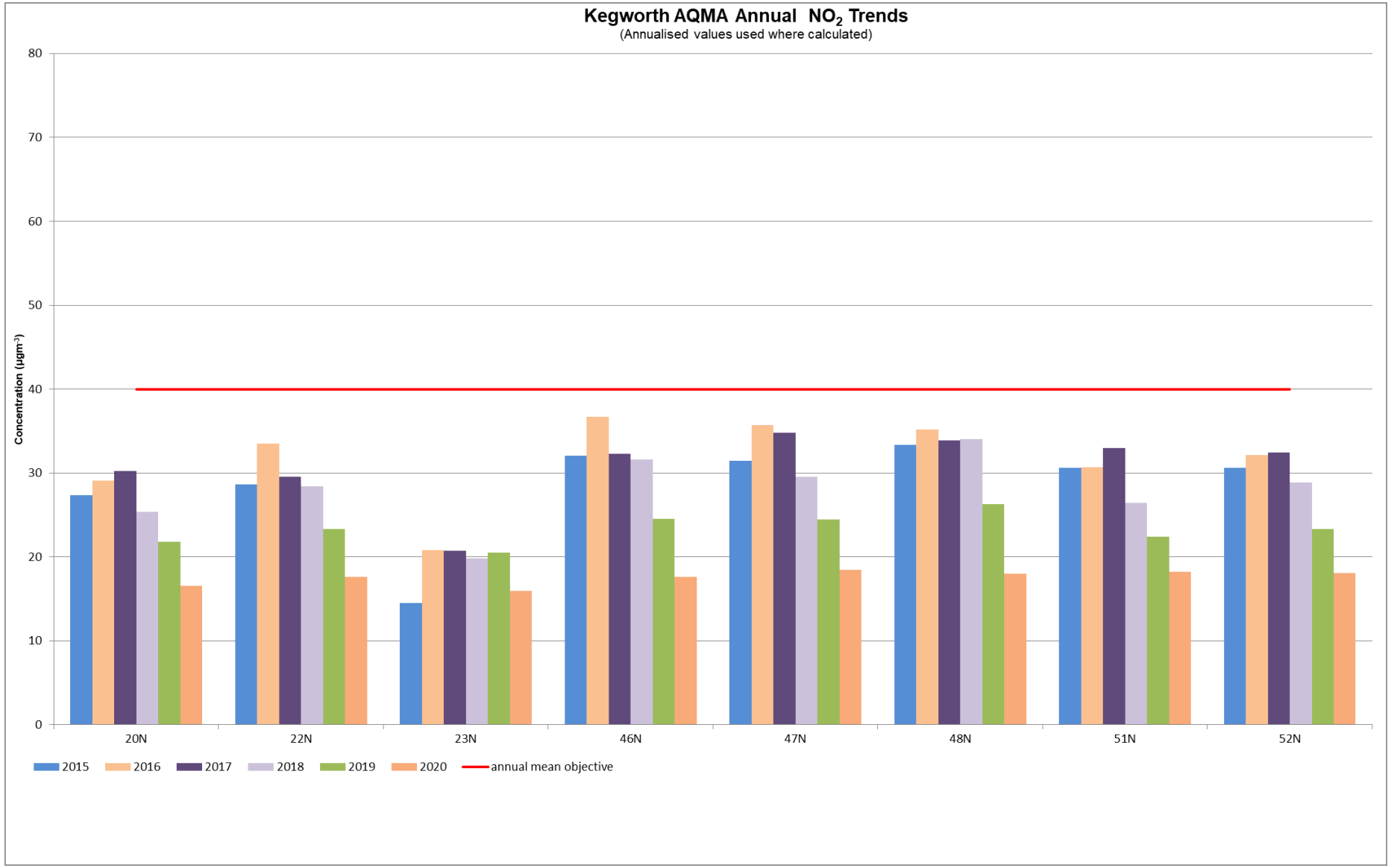


Figure A.2 – Castle Donington Trends in Annual Mean NO_2 Concentrations

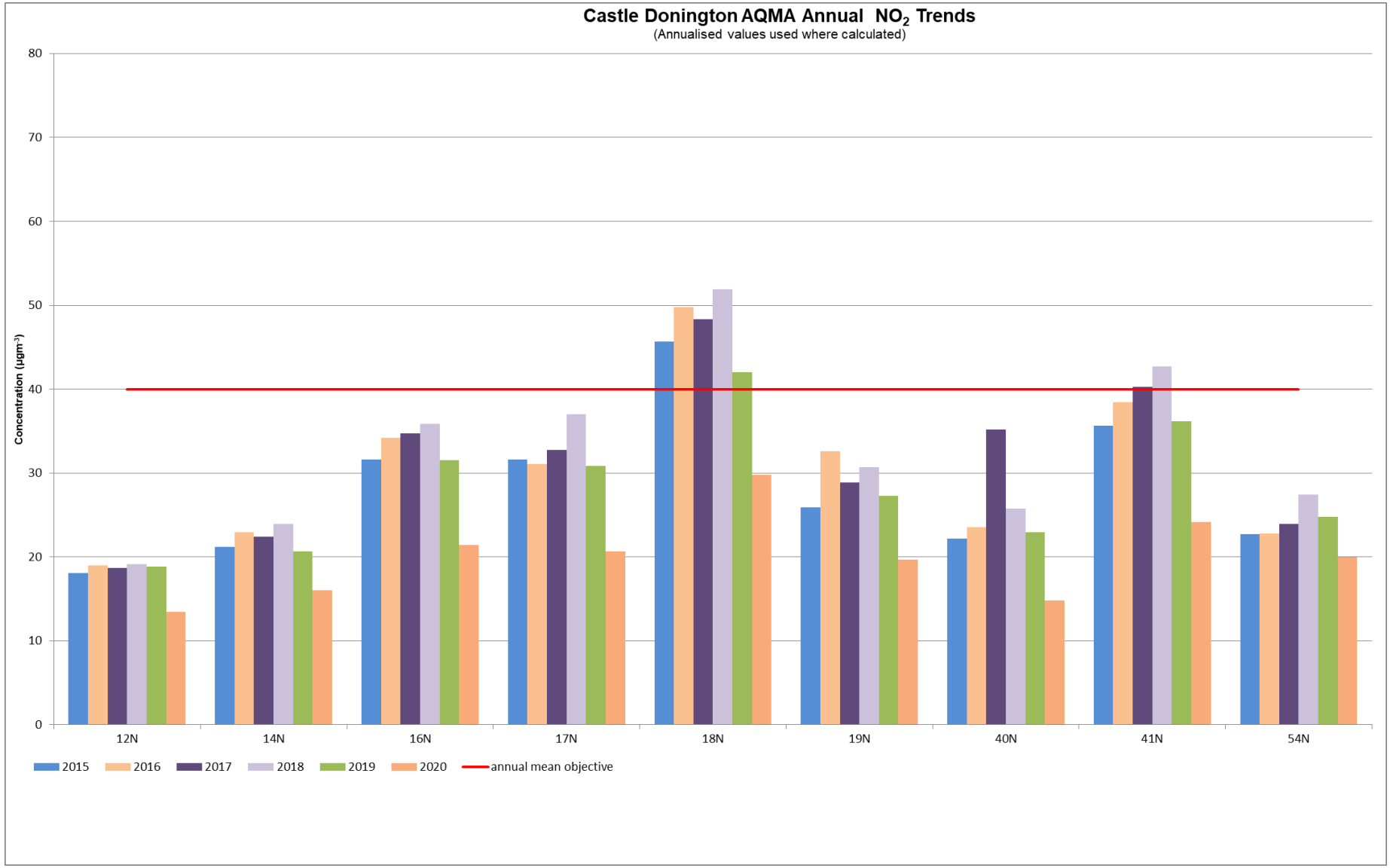


Figure A.3 – Coalville Trends in Annual Mean NO_2 Concentrations

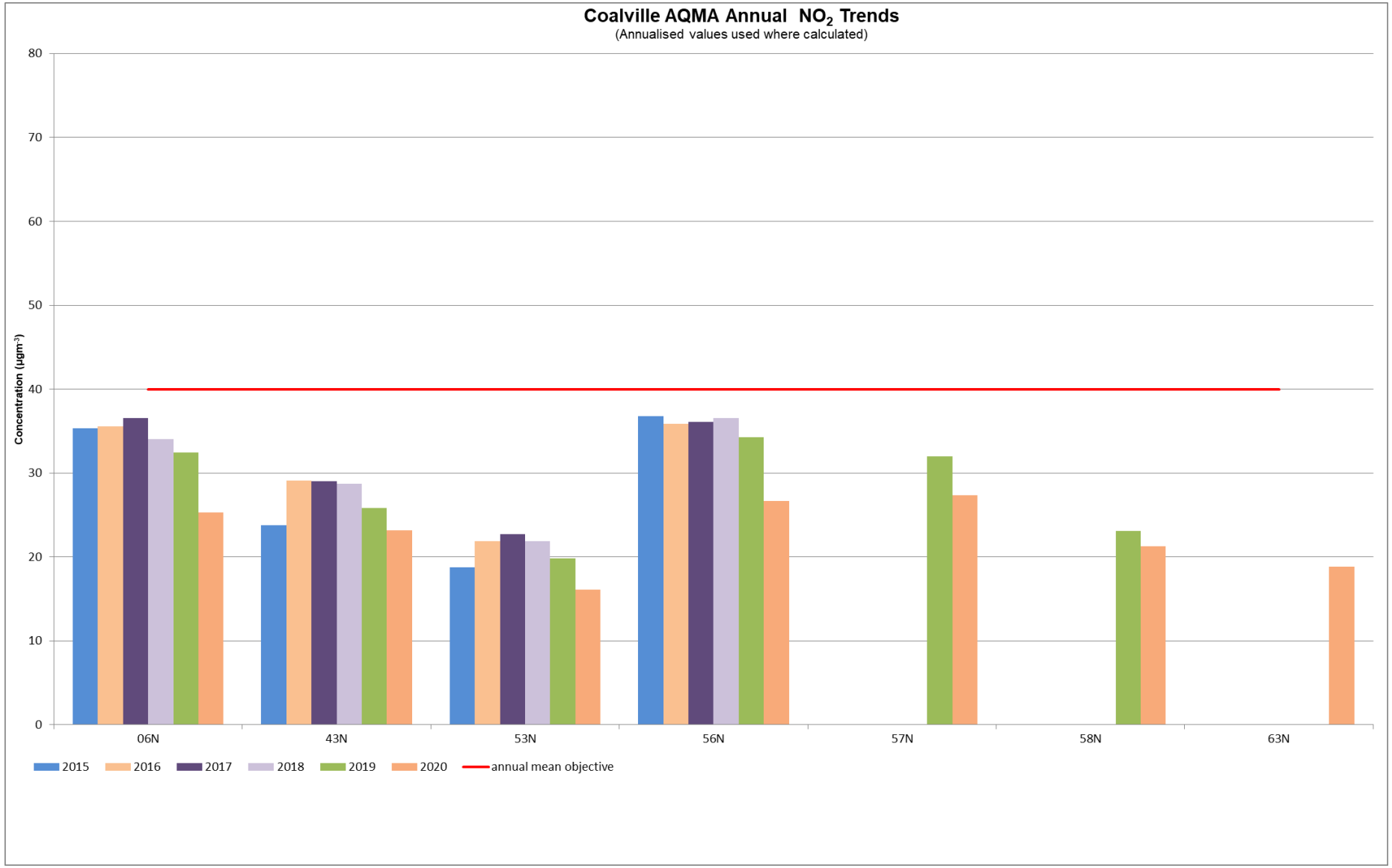


Figure A.4 – Copt Oak Trends in Annual Mean NO_2 Concentrations

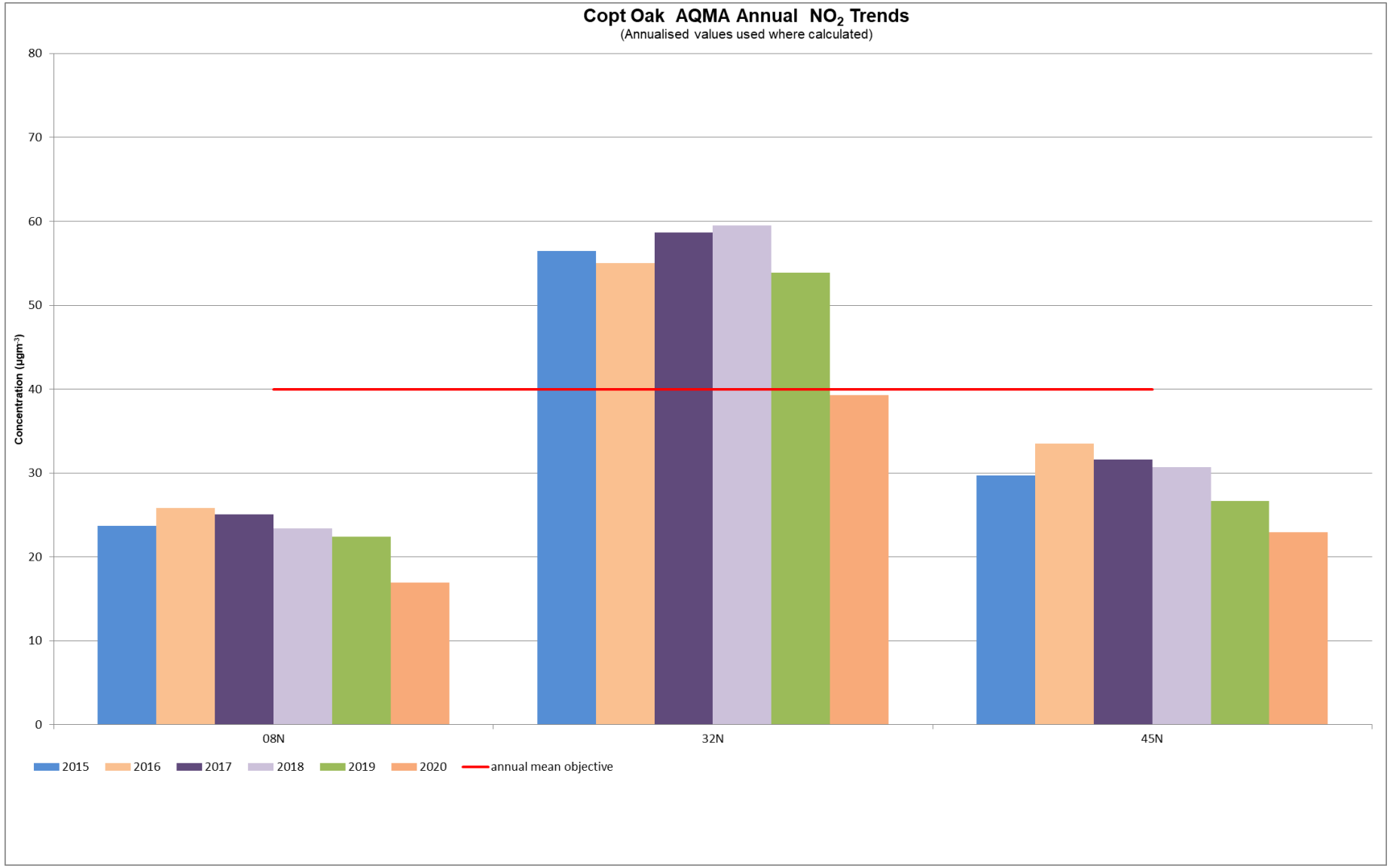
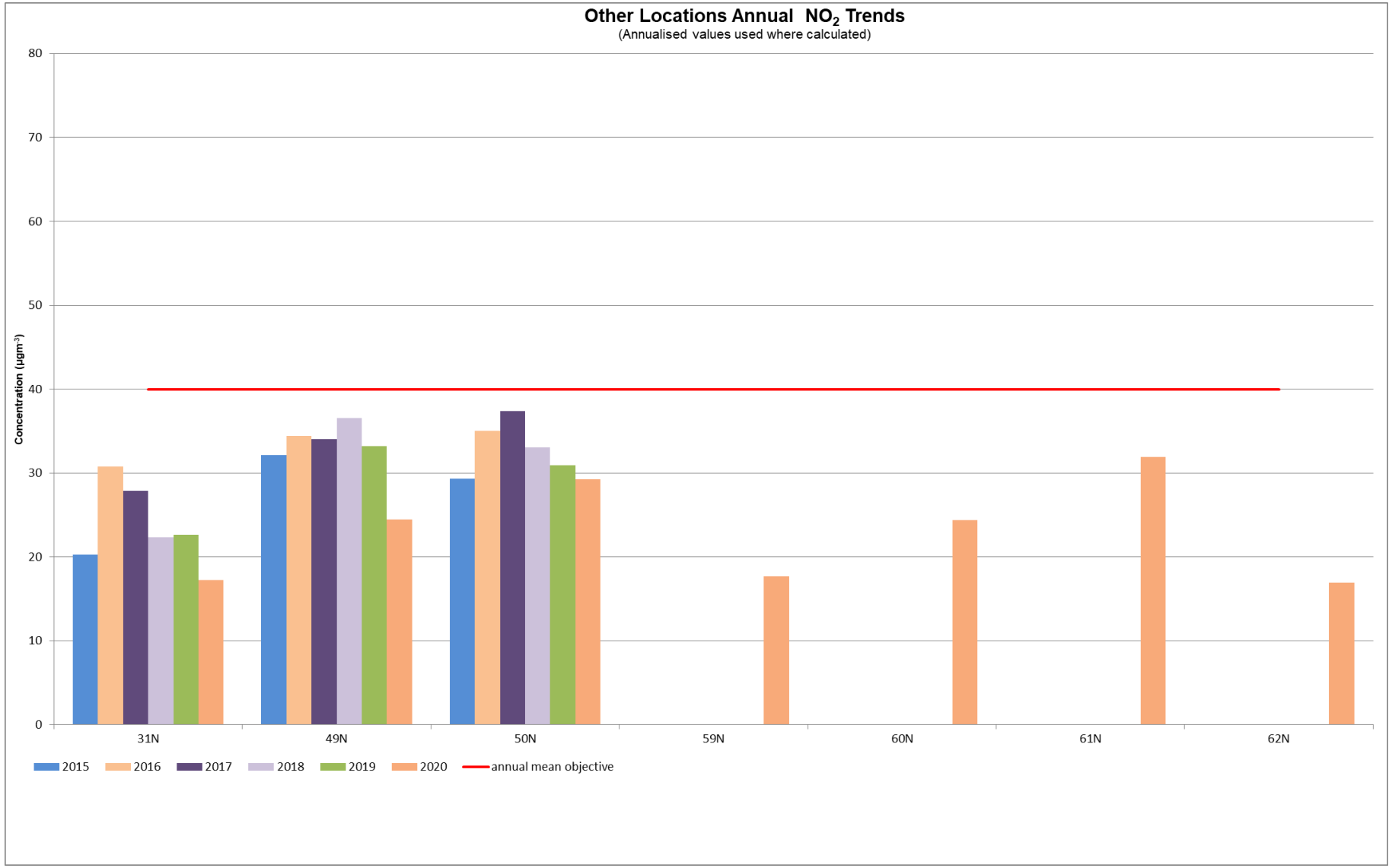


Figure A.5 – Other Locations Trends in Annual Mean NO_2 Concentrations



Appendix B: Full Monthly Diffusion Tube Results for 2020

Table B.1 – NO_2 2020 Diffusion Tube Results ($\mu g/m^3$)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (x x)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
06N	443632	314026	41.7	34.3	25.4	21.5	25.3	25.8		29.9	21.9	37.4	29.1	42.9	30.8	25.3		
08N	448138	313012	24.9	24.3	17.4	14.4	13.4	14.1	16.4	16.0	31.6	22.2	28.9	24.0	20.6	16.9		
12N	444161	326355	19.9	17.1	12.2	14.0	9.0	4.3			21.3	17.9	27.2	23.8	16.4	13.4		
14N	444216	326788	21.2	17.6	14.5	14.3	13.7	16.2	12.4	15.9	39.8	19.9	25.1	23.6	19.6	16.1		
16N	444450	327233		28.6	23.5	20.3		26.6	24.4	20.3	23.5	29.1	30.7	31.7	26.2	21.5		
17N	444512	327335	35.9	28.1	22.1	21.5	16.8	21.4	21.2	22.5	24.1	28.8	32.4	27.8	25.2	20.7		
18N	444580	327411	55.0	44.9	34.0	32.9	27.7	38.2	30.6	21.0	22.9	36.9	52.0	40.4	36.3	29.8		
19N	444707	327603	34.3	22.1	19.5	18.9	16.0	20.4	16.6	22.6	24.1	22.5	35.6	34.1	24.0	19.7		
20N	448523	326885	26.7	25.2	15.0	12.5	13.8	14.2	16.9	15.0	35.6	20.4		25.9	20.2	16.5		
22N	448817	326621	30.8	28.7	18.3	12.6	15.3	13.7	18.7	17.3	21.6	24.6	31.8	23.3	21.5	17.6		
23N	448108	326305	27.6	19.9	15.1	10.5	12.7	12.9	15.0	14.4	16.9	25.6	31.7	28.7	19.5	16.0		
31N	440167	315264	29.7	23.2	17.3	14.1	17.4	17.8	16.3	18.9	19.6	20.7	32.2	23.7	21.0	17.2		
32N	448082	313100	62.5	56.0	20.8	30.6	36.4	51.6	47.9	53.9	32.3	63.6	65.6	51.7	47.9	39.3		
39N	446935	323744	24.6	22.0	17.5	9.3	13.7	15.6	20.0	16.5	32.4	11.6	28.3	25.5	19.8	16.3		
40N	444323	326975	29.1	19.4	16.9	16.4	13.3	13.1	13.2	17.1	18.7	23.2			18.1	14.8		
41N	444474	327171	40.8	32.9	25.9	21.5	23.4	30.3	26.0	28.6	23.5	30.0	34.5	32.9	29.4	24.1		
43N	443675	313642	29.3	24.8	22.2	21.9	17.7	23.1	18.7	25.5	60.5	25.6	35.7	34.4	28.3	23.2		

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (x.x)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
45N	448119	312920	32.7	31.2	37.8	16.1	17.1	25.7	21.9	25.8	21.2	30.7	34.0	32.9	28.0	23.0		
46N	448724	326702	29.9	21.3	17.0	16.2	15.7	10.2	18.5	20.8	20.2	26.2	34.5	27.9	21.5	17.6		
47N	448639	326805	29.9	24.2	17.8	13.7	14.2	14.2	16.4	16.2	39.3	24.3	30.8	28.7	22.5	18.5		
48N	448792	326533	30.8	25.0	15.8	11.4	17.6	21.5	19.7	18.0	23.6	25.5	20.5	30.1	22.0	18.0		
49N	442578	312871	35.0	32.9	25.7	18.9	22.1	13.3	23.1	32.2	34.6	34.5	42.7	40.0	29.8	24.5		
50N	442562	312823	44.4	45.1	30.2	25.3	26.4	32.8	34.4	31.1	35.8	43.3	36.3	39.9	35.6	29.2		
51N	448361	326997	33.1	22.9	18.0	14.4	14.6	16.3	19.1	15.1	20.6	27.0	33.7	31.0	22.3	18.3		
52N	448436	326931	31.7	24.5	17.3	14.4	13.5	14.3	19.3	16.6	22.7	24.4	33.4	32.3	22.1	18.1		
53N	448436	326931	21.8	18.5	15.7	15.6	14.1	16.2	13.8	15.5	25.4	20.1	31.7	26.6	19.6	16.1		
54N	444331	327257	27.7	16.2	17.0	17.0		22.8	15.2	28.4	39.3	22.7	33.0	25.9	24.4	20.0		
56N	443649	314040	43.5	39.3	25.0	21.0	25.3	27.5	30.6	29.9	29.1	35.8	43.8	37.8	32.5	26.7		
57N	443630	314028	33.0	31.4	28.6	46.1	31.2	33.3	28.8	36.6	13.8	36.5	43.3	42.2	33.3	27.3		
58N	443634	313996	25.5	19.3	20.1	19.0	20.3	22.6	15.9	39.5	34.6	19.5	46.9	26.3	25.9	21.3		
59N	442754	317177				15.7	13.2	15.5	10.6	15.1	20.8		32.3	29.7	19.4	17.7		
60N	443366	316277				28.8	25.5	29.1	22.0	31.0	22.3	32.1	34.1	39.4	29.8	24.4		
61N	436194	316958					22.2	26.1	25.2	26.1	20.5	76.6		39.7	34.5	31.9		
62N	435587	317204				14.8	12.0		12.4	16.0	23.4	21.3	30.1		18.8	16.9		
63N	442800	314466				17.0	16.6	18.0	16.6	19.3	25.3	24.7	34.0	32.4	23.0	18.9		

☒ **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 >33% in line with LAQM.TG16.**

☐ **Local bias adjustment factor used**

☒ **National bias adjustment factor used.**

☒ **Where applicable, data has been distance corrected for relevant exposure in the final column.**

☐ **North West Leicestershire District Council confirm that all 2020 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System (confirm by selecting in box).**

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 North West Leicestershire During 2020

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

Additional Air Quality Works Undertaken by North West Leicestershire District Council During 2020

The council commissioned Air Quality Consultants limited to undertake a review of the councils Air Quality work and write an AQAP. Refer to section 2.3 above for additional information.

QA/QC of Diffusion Tube Monitoring

January to March 2020 Diffusion tubes were supplied by Gradko using 50% TEA in acetone

April to December 2020 diffusion rubes were supplied by Socotec (Didcote) using 50% TEA in acetone

The diffusion tube monitoring calendar has been generally followed, however as a result of COVID-19 diffusion tube exposure during March and June was extended to 6 weeks and exposure during June and July has been shortened to 2 weeks.

Diffusion Tube Annualisation

The Diffusion tube data processing tool and identified 3 sites for annualisation. Results of the annualisation are presented in Table C.2

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2021 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

North West Leicestershire District Council have applied a national bias adjustment factor of 0.82 to the 2020 monitoring data. A summary of bias adjustment factors used North West Leicestershire District Council over the past five years is presented in Table C.1.

Table C.1 – Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2020	National	03/21	0.82
2019	National	03/20	0.87
2018	National	03/19	0.92
2017	National	03/18	0.97
2016	National	03/17	1.01

NO_2 Fall-off with Distance from the Road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure should be 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 North West Leicestershire required distance correction during 2020.

QA/QC of Automatic Monitoring

North West Leicestershire District Council did not undertake any automatic monitoring during 2020.

Table C.2 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Derby St Alkmund's Way	Annualisation Factor Leicester A594 Roadside	Annualisation Factor Leicester University	Annualisation Factor Nottingham Centre	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
59N	1.1485	1.0938	1.0911	1.1059	1.1098	19.4	21.6	
61N	1.1597	1.1098	1.1103	1.1338	1.1284	34.5	38.9	
62N	1.1484	1.0841	1.0492	1.0991	1.0952	18.8	20.6	

Table C.3 – Local Bias Adjustment Calculation

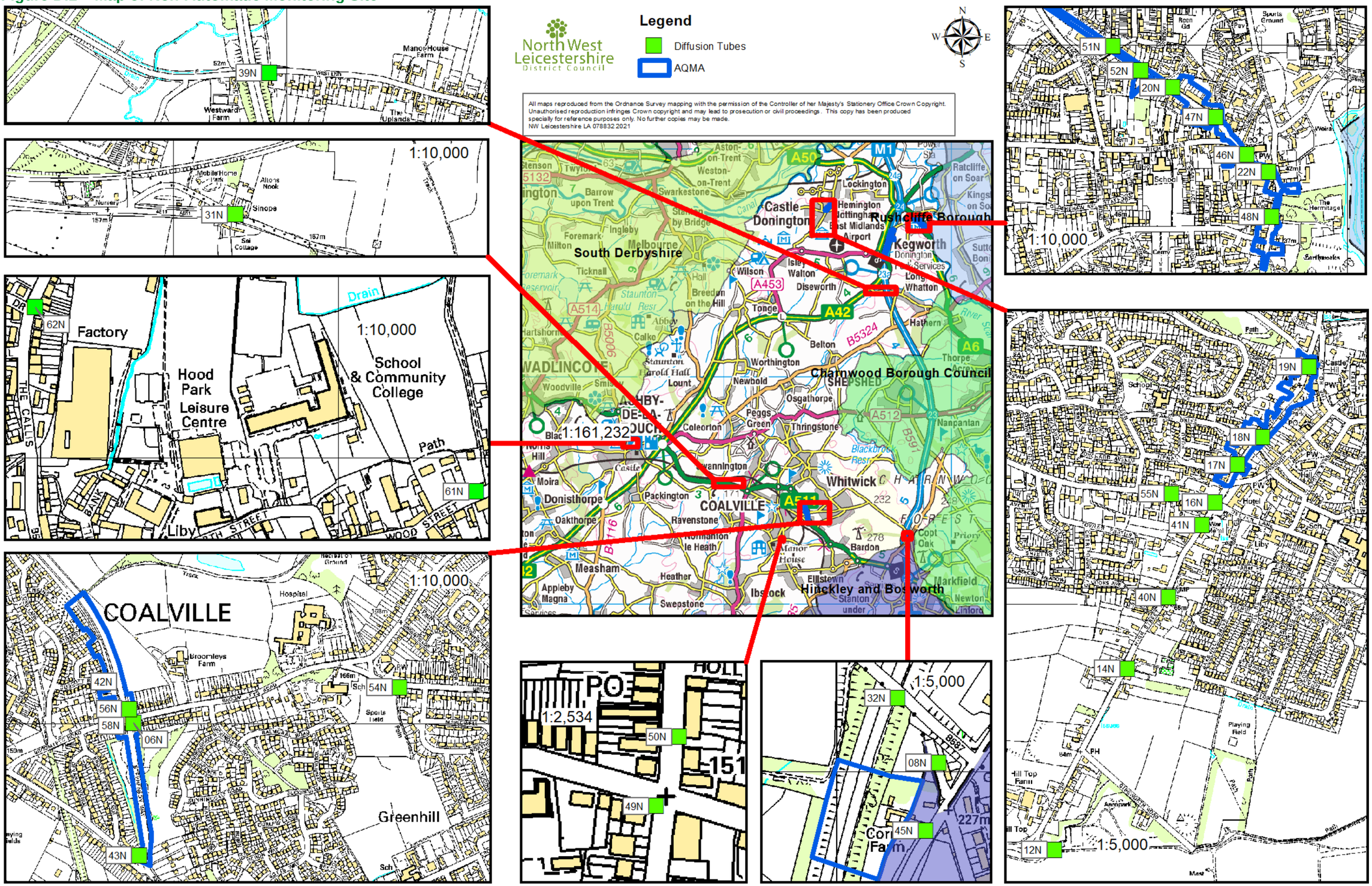
No local bias adjustment has been calculated

Table C.4 – NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

No fall off with distance calculations have been made

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

Figure D.1 – Map of Non-Automatic Monitoring Site



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[7]

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

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

Appendix F: Impact of COVID-19 upon LAQM

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

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

Despite the challenges that the pandemic has given rise to, the events of 2020 have also provided Local Authorities with an opportunity to quantify the air quality impacts associated with wide-scale and extreme intervention, most notably in relation to emissions of air pollutants arising from road traffic. The vast majority (>95%) of AQMAs declared within the UK are related to road traffic emissions, where attainment of the annual mean objective for nitrogen dioxide (NO_2) is considered unlikely. On 23rd March 2020, the UK Government released official guidance advising all members of public to stay at home, with work-related travel only permitted when absolutely necessary. During this initial national lockdown (and to a lesser extent other national and regional lockdowns that followed), marked reductions in vehicle traffic were observed; Department for Transport (DfT) data[8] suggests reductions in vehicle traffic of up to 70% were experienced across the UK by mid-April, relative to pre COVID-19 levels.

This reduction in travel in turn gave rise to a change of air pollutant emissions associated with road traffic, i.e. nitrous oxides (NO_x), and exhaust and non-exhaust particulates (PM). The Air Quality Expert Group (AQEG)[9] has estimated that during the initial lockdown period in 2020, within urbanised areas of the UK reductions in NO_2 annual mean concentrations were between 20 and 30% relative to pre-pandemic levels, which represents an absolute reduction of between 10 to 20µg/m^3 if expressed relative to annual

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

mean averages. During this period, changes in $PM_{2.5}$ concentrations were less marked than those of NO_2. $PM_{2.5}$ concentrations are affected by both local sources and the transport of pollution from wider regions, often from well beyond the UK. Through analysis of AURN monitoring data for 2018-2020, AQEG have detailed that $PM_{2.5}$ concentrations during the initial lockdown period are of the order 2 to 5µg/m^3 lower relative to those that would be expected under business-as-usual conditions.

As restrictions are gradually lifted, the challenge is to understand how these air quality improvements can benefit the long-term health of the population.

Impacts of COVID-19 on Air Quality within North West Leicestershire

Annual mean reductions of NO2 concentrations of between 20 and 35% were experienced at roadside diffusion tube monitoring sites during 2020 compared to the mean of 2015 - 2019 results. This equated to a 10 to 15% reduction in annual mean concentration relative to 2019. No monitoring sites within AQMA 1 have complied with the annual mean objective since declaration. The reduction in NO2 experienced within 2020 has allowed the Council to provide an evidence base in relation to the annual mean objective being achievable.

Opportunities Presented by COVID-19 upon LAQM within North West Leicestershire

No LAQM related opportunities have arisen as a consequence of COVID-19 within North West Leicestershire

Challenges and Constraints Imposed by COVID-19 upon LAQM within North West Leicestershire

During 2020, due to staff not undertaking visits as a result of Covid restrictions, 2 monitoring periods were longer that the DEFRA calendar (March and June) and 2 were shorter than the DEFRA calendar (April and July). The length of exposure was still within acceptable ranges (2 weeks and 6 weeks of exposure) therefore there is a small to non Impact caused.

Table F 1 – Impact Matrix

Category	Impact Rating: None	Impact Rating: Small	Impact Rating: Medium	Impact Rating: High
Passive Monitoring – Adherence to Changeover Dates	Defra diffusion tube exposure calendar adhered to	Tubes left out for two exposure periods	Tubes left out for three exposure periods	Tubes left out for more than three exposure periods

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 Highways England
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.TG16. April 2021. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- COVID-19: SUPPLEMENTARY GUIDANCE Local Air Quality Management reporting in 2021 Date: April 2021 Version: 1.0