



2022 Air Quality Annual Status Report (ASR)

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

Date: June, 2022

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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/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 ages³, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017⁴.

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 Strategy⁵ sets out the case for action, with goals to reduce exposure to harmful pollutants. The Road to Zero⁶ 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.

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

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

³ Defra. Air quality appraisal: damage cost guidance, July 2021

⁴ Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

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

The council procured a zephyr low-cost automatic monitor which was installed in the Castle Donington AQMA to investigate particulate matter within the AQMA.

North West Leicestershire District Council's Coalville Special Expenses Working Party authorised the procurement of 2 additional zephyr low cost monitors to be deployed within the working party's area.

During 2021, in line with the councils Zero Carbon Road Map Action Plan, the council has worked to expand its EV charging network and reduce emissions from the council's vehicle fleet.

Conclusions and Priorities

The ASR concludes that

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

In 2022 the council plans to

- 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 into 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
- DEFRA's UK-AIR: Air information Resource website
<https://uk-air.defra.gov.uk/>
- DEFRA's 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/>

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Protection Department of North West Leicestershire District Council with the support and agreement of the following officers and departments:

Environmental Protection, North West Leicestershire District Council

This ASR has been approved by:

Paul Sanders, Head of Community Services

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

A handwritten signature in black ink, appearing to read 'Mike Sandys', with a long horizontal stroke extending to the right.

Mike Sandys, Director of Public Health, Leicestershire County Council

If you have any comments on this ASR please send them to Environmental Protection North West Leicestershire District Council at:

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2 Local Air Quality Management

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

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

3 Actions to Improve Air Quality

3.1 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 3.1. The table presents a description of the 2 AQMAs that are currently designated within North West Leicestershire. 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:

- NO₂ annual mean;

Table 3.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by National Highways?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
Castle Donington	09/01/2008	NO2 Annual Mean	An area encompassing the High Street and Bondgate area of Castle Donington.	NO	47.83 $\mu\text{g.m}^{-3}$	39.67 $\mu\text{g.m}^{-3}$		
Copt oak	30/07/2009	NO2 Annual Mean	An area of the village of Copt Oak that lies within the boundaries of NW Leicestershire District Council.	YES	44 $\mu\text{g.m}^{-3}$	39 $\mu\text{g.m}^{-3}$		

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- North West Leicestershire District Council confirm the information on UK-Air regarding their AQMA(s) is up to date (confirm by selecting in box).
- North West Leicestershire District Council confirm that all current AQAPs have been submitted to Defra (confirm by selecting in box).

3.2 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. Good and accurate QA/QC procedures were applied. Calculations for bias adjustment were sufficient and annualisation was applied to site with low data capture.
2. Distance-correction was not required for most sites. However, there are sites (12N, 23N, 32N and 39N) that did not contain details in Table A.2 around how far the site is located from the kerb and from relevant exposure. These are essential in determining if concentration at specific locations are significant to warrant further investigation.
 - These locations are not roadside sites and are not subject to distance correction.
3. The Council has included discussion and review of each AQMA and monitoring strategy, informed due to the extensive monitoring network and also the additional tubes in place to provide data. This demonstrates the Council's proactive and dedicated approach to improving air quality across the area.
4. Council are pursuing the revocation of two of the four AQMAs (Coalville and Kegworth AQMAs). We are in agreement with this decision. If concentrations remain low, it may be appropriate to pursue the revocation of the third AQMA (Copt Oak) in the next reporting year. The AQMA (Castile Donington) has an AQAP being produced.
5. Comments from last year's ASR have been mentioned and addressed. This is welcomed, and we encourage this to continue in future ASRs.
6. The Public Health Outcomes Frameworks was mentioned. The Council have referred specifically to indicator D01, which is the fraction of mortality attributable to particulate air pollution, and this is encouraged.
7. Council have provided a map of the diffusion tube monitoring network; trends are displayed and discussed in the report, this is welcomed.
8. COVID-19 impacts have been discussed in Appendix F and we welcome the detailed information provided by the council surrounding impacts of the pandemic on air quality in the district.
9. Council have provided an audit from Air Quality Consultant on potential locations that may be exceeding objective values not covered by monitoring. We welcome the proactive approach taken by council.
10. Overall the report is detailed, concise and satisfies the criteria of relevant standards. The Council should continue their good and thorough work.

North West Leicestershire District Council has taken forward a number of direct measures during the current reporting year of 2021 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 3.2. 7 measures are included within Table 3.2, with the type of measure and the progress North West Leicestershire District Council have made during the reporting year of 2021 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 3.2.

North West Leicestershire District Council worked to implement these measures in partnership with the following stakeholders during 2021:

- 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.

The principal challenges and barriers to implementation that North West Leicestershire District Council anticipates facing are the priorities of partner organisations.

Progress on the following measures has been slower than expected due to the priorities of partner organisations and the priorities of private companies

- 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);

Whilst the measures stated above and in Table 3.2 will help to contribute towards compliance, North West Leicestershire District Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of Castle Donington AQMA .

Table 32 – 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

3.3 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.

North West Leicestershire District Council is taking the following measures to address PM_{2.5}:

- 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.
- Many of the measures within the AQAP are designed to target PM_{2.5} as well as NO₂. 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 NO₂.
- applied for a joint grant with Harborough District Council to increase the level of knowledge of PM_{2.5} and ultimately reduce PM_{2.5} emissions by changing behavioural attitudes to solid fuel burning.

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 2021 shows the district has background concentrations between 7.4 µg/m³ and 11.25 µg/m³ with a mean of 8.1 µg/m³.

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

This section sets out the monitoring undertaken within 2021 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 2017 and 2021 to allow monitoring trends to be identified and discussed.

4.1 Summary of Monitoring Undertaken

4.1.1 Automatic Monitoring Sites

North West Leicestershire District Council undertook automatic (continuous) monitoring at 1 sites during 2021. **Error! Reference source not found.** in Appendix A shows the details of the automatic monitoring sites..

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

4.1.2 Non-Automatic Monitoring Sites

North West Leicestershire District Council undertook non- automatic (i.e. passive) monitoring of NO₂ at 36 sites during 2021. **Error! Reference source not found.** 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.

4.2 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.

4.2.1 Nitrogen Dioxide (NO₂)

Error! Reference source not found. and **Error! Reference source not found.** in Appendix A compare the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40µg/m³. 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 2021 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in **Error! Reference source not found.** includes distance corrected values, only where relevant.

Error! Reference source not found. in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past five years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

Diffusion tubes for 2021 were supplied by Socotec (Didcote) using 50% TEA in Acetone, the national bias adjustment factor is 0.78

4.2.1.1 Castle Donington

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 **Error! Reference source not found.**.. All locations except 18N and 41N have 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 diffusion tube locations in 2021 met the annual mean objective however this is likely a result of reduced traffic caused by COVID-19 some of the improvements may be a result of the relief road opening.

North West Leicestershire District Council placed a 'Low cost Automatic monitor' called a zephyr within the Castle Donington AQMA from 4/8/2021 to 31/12/2021. The annualised

mean of $52\mu\text{g.m}^{-3}$, no exceedances of the $200\mu\text{g.m}^{-3}$ hourly mean were recorded and the 99.8th percentile of $118.9\mu\text{g.m}^{-3}$ is also significantly lower than $200\mu\text{g.m}^{-3}$

4.2.1.2 Copt Oak

There was 1 long term monitoring location within the Copt Oak AQMA however the location was not looking at the worst-case location and was relocated in April of 2021 to be between the receptor and the primary source. There are 2 monitoring locations outside of the AQMA

Trends for diffusion Tubes located in and around the Copt Oak AQMA are shown in **Error! Reference source not found.**

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

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

4.2.1.3 Kegworth

There are 8 diffusion tube monitoring locations in Kegworth.

Trends for diffusion Tubes located in and around the Kegworth AQMA are shown in **Error! Reference source not found.**

All concentrations in kegworth were below the air quality objective

4.2.1.4 Coalville

There are 6 monitoring locations in Coalville area.

Trends for diffusion Tubes located in and around the Coalville AQMA are shown in **Error! Reference source not found.**

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.

4.2.1.5 Other Locations

There are 8 other monitoring locations in the district that were monitored for the entire year.

Trends for diffusion tubes located at other locations within the district are shown in **Error! Reference source not found.**

4.2.2 Particulate Matter (PM₁₀)

Error! Reference source not found. in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past five years with the air quality objective of 40µg/m³.

Error! Reference source not found. in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past five years with the air quality objective of 50µg/m³, not to be exceeded more than 35 times per year.

No exceedences of the PM₁₀ objectives was recorded.

4.2.3 Particulate Matter (PM_{2.5})

Error! Reference source not found. in Appendix A presents the ratified and adjusted monitored PM_{2.5} annual mean concentrations for the past five years.

No exceedences of the Air Quality Standard was detected.

Appendix A: Monitoring Results

Table A. 1– Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
Z1	Zephyr Castle Donington	Roadside	444610	327448	NO2, O3, PM1, PM2.5, PM10	Yes Castle Donington	Zephyr	0	1.5	3

Notes:

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

(2) N/A if not applicable

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

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
06N	Broomleys junction (1)	Roadside	443632	314026	NO2		5.8	2.0	No	1.8
08N	End Cottage Copt Oak	Rural	448138	313012	NO2		0.0	0.0	No	1.8
12N	Aeropark	Other	444161	326355	NO2		0.0	0.0	No	1.8
14N	69 High St CD	Roadside	444216	326788	NO2	Castle Donington	0.0	2.9	No	1.8
16N	crossroads CD	Roadside	444450	327233	NO2	Castle Donington	7.5	1.0	No	1.8
17N	13 Bondgate CD	Roadside	444512	327335	NO2	Castle Donington	2.0	2.5	No	1.8
18N	34 Bondgate CD	Roadside	444580	327411	NO2	Castle Donington	0.0	2.3	No	1.8
19N	94 Bondgate CD	Roadside	444707	327603	NO2	Castle Donington	0.8	1.4	No	1.8
20N	Derby Rd Kegworth (Benny's Hill)	Roadside	448523	326885	NO2		3.2	1.0	No	1.8
22N	Keg A6 2	Roadside	448817	326621	NO2		0.0	2.3	No	1.8
23N	120 Whatton Road kegworth	Suburban	448108	326305	NO2		0.0	0.0	No	1.8
31N	Sinope	Roadside	440167	315264	NO2		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		0.0	0.0	No	1.8
39N	LW new M1	Other	446935	323744	NO2		0.0	0.0	No	1.8
40N	35 High Street Castle Donington	roadside	444323	326975	NO2		3.0	0.9	No	1.8
41N	18 High Street Castle Donington	roadside	444474	327171	NO2	Castle Donington	4.0	1.0	No	1.8
43N	Direction Sign Bardon Rd/A511 RBT	roadside	443675	313642	NO2		2.4	3.0	No	1.8
45N	outside Corner Farm Copt Oak	roadside	448119	312920	NO2	Copt Oak	27.0	4.3	No	1.8
46N	Kegworth PO Derby Road	roadside	448724	326702	NO2		0.0	1.3	No	1.8
47N	12 Derby Rd Kegworth	roadside	448639	326805	NO2		4.7	2.5	No	1.8
48N	28 London road Kegworth	roadside	448792	326533	NO2		0.8	1.5	No	1.8
49N	10 central road Hugglescote	roadside	442578	312871	NO2		4.1	2.5	No	1.8
50N	Hugglescote cross roads	roadside	442562	312823	NO2		5.4	1.0	No	1.8
51N	40mph sign N of petrol station	roadside	448361	326997	NO2		9.6	3.2	No	1.8
52N	lamppost 65 Derby Road	roadside	448436	326931	NO2		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 Greenhill Road	roadside	448436	326931	NO2		5.9	2.5	No	1.8
54N	parking restrictions sign adj drive 12 & 20 park lane	roadside	444331	327257	NO2		8.8	2.0	No	1.8
56N	lamppost adjacent 27 Broomleys road	roadside	443649	314040	NO2		1.8	1.2	No	1.8
57N	lamppost outside 21 Broomleys road	Roadside	443630	314028	NO2		4.7	3.0	No	1.8
58N	cycle route sign outside 34 Broomleys road	Roadside	443634	313996	NO2		12.0	5.0	No	1.8
59N	zebra crossing the green Whitwick	Roadside	442754	317177	NO2		0.5	0.5	No	1.8
60N	lamppost outside 53north street Whitwick	Roadside	443366	316277	NO2		0.0	1.0	No	1.8
61N	lamppost outside 53 wood street Ashby	Roadside	436194	316958	NO2		1.0	1.0	No	1.8
62N	lamppost 45 the Callis, Ashby (opposite Rowena Drive)	Roadside	435587	317204	NO2		4.0	0.5	No	1.8
63N	Whitwick Road Coalville	Roadside	442800	314466	NO2		0.0	2.4	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)
64N	m1 Corner Farm	Roadside	448050	312906	NO2	Copt Oak	6.4	30.0	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 NO₂ Monitoring Results: Automatic Monitoring (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
Z1	444610	327448	Roadside	90.42	37.16					52.9

CLICK HERE THEN PASTE COMPLETED DATA ROWS FROM ASR EXCEL TEMPLATE

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16 (confirm by selecting in box).

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

Notes:

The annual mean concentrations are presented as µg/m³.

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

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

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

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

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

Table A. 4 – Annual Mean 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 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
06N	443632	314026	Roadside	100.0	100.0	36.16	34.05	32.47	25.3	21.4
08N	448138	313012	Rural	92.3	92.3	24.79	23.39	22.37	16.9	18.8
12N	444161	326355	Other	100.0	100.0	18.48	19.14	18.86	13.4	13.0
14N	444216	326788	Roadside	100.0	100.0	22.16	23.93	20.68	16.1	14.8
16N	444450	327233	Roadside	100.0	100.0	34.39	35.86	31.51	21.5	22.8
17N	444512	327335	Roadside	100.0	100.0	32.42	36.97	30.88	20.7	21.3
18N	444580	327411	Roadside	100.0	100.0	47.81	51.93	42.05	29.8	34.2
19N	444707	327603	Roadside	100.0	100.0	28.59	30.67	27.29	19.7	19.4
20N	448523	326885	Roadside	84.9	84.9	29.91	25.37	21.81	16.5	16.4
22N	448817	326621	Roadside	100.0	100.0	29.23	28.43	23.35	17.6	17.8
23N	448108	326305	Suburban	100.0	100.0	20.54	19.81	20.49	16.0	15.2
31N	440167	315264	Roadside	100.0	100.0	27.61	22.31	22.62	17.2	18.9
32N	448082	313100	Other	100.0	100.0	58.09	59.47	53.91	39.3	39.9

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
39N	446935	323744	Other	100.0	100.0	19.76	24.38	20.91	16.3	16.4
40N	444323	326975	roadside	100.0	100.0	34.8	25.72	22.94	14.8	15.3
41N	444474	327171	roadside	100.0	100.0	39.85	42.67	36.16	24.1	24.1
43N	443675	313642	roadside	100.0	100.0	28.72	28.76	25.84	23.2	19.2
45N	448119	312920	roadside	100.0	23.1	31.29	30.71	26.66	23.0	21.2
46N	448724	326702	roadside	92.0	92.0	31.95	31.59	24.56	17.6	17.2
47N	448639	326805	roadside	100.0	100.0	34.44	29.58	24.5	18.5	17.6
48N	448792	326533	roadside	100.0	100.0	33.56	34.07	26.29	18.0	17.5
49N	442578	312871	roadside	100.0	100.0	33.66	36.52	30.94	24.5	25.5
50N	442562	312823	roadside	94.0	94.0	36.97	33.06	33.22	29.2	28.6
51N	448361	326997	roadside	100.0	100.0	32.66	26.46	22.4	18.3	18.3
52N	448436	326931	roadside	100.0	100.0	32.12	28.85	23.29	18.1	18.0
53N	448436	326931	roadside	100.0	100.0	22.48	21.89	19.79	16.1	15.6
54N	444331	327257	roadside	100.0	100.0	23.69	27.39	24.74	20.0	17.8

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
56N	443649	314040	roadside	100.0	100.0	35.74	36.58	34.23	26.7	22.7
57N	443630	314028	Roadside	100.0	100.0			32.02	27.3	27.8
58N	443634	313996	Roadside	100.0	100.0			23.08	21.3	23.2
59N	442754	317177	Roadside	92.6	92.6				17.7	15.9
60N	443366	316277	Roadside	100.0	100.0				24.4	26.4
61N	436194	316958	Roadside	92.3	92.3				31.9	25.9
62N	435587	317204	Roadside	82.4	82.4				16.9	15.6
63N	442800	314466	Roadside	100.0	100.0				18.9	18.5
64N	448050	312906	Roadside	100.0	76.9					21.1

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16 (confirm by selecting in box).

Diffusion tube data has been bias adjusted (confirm by selecting in box).

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 (confirm by selecting in box).

Notes:

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

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

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 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 – Castle Donington Trends in Annual Mean NO₂ Concentrations

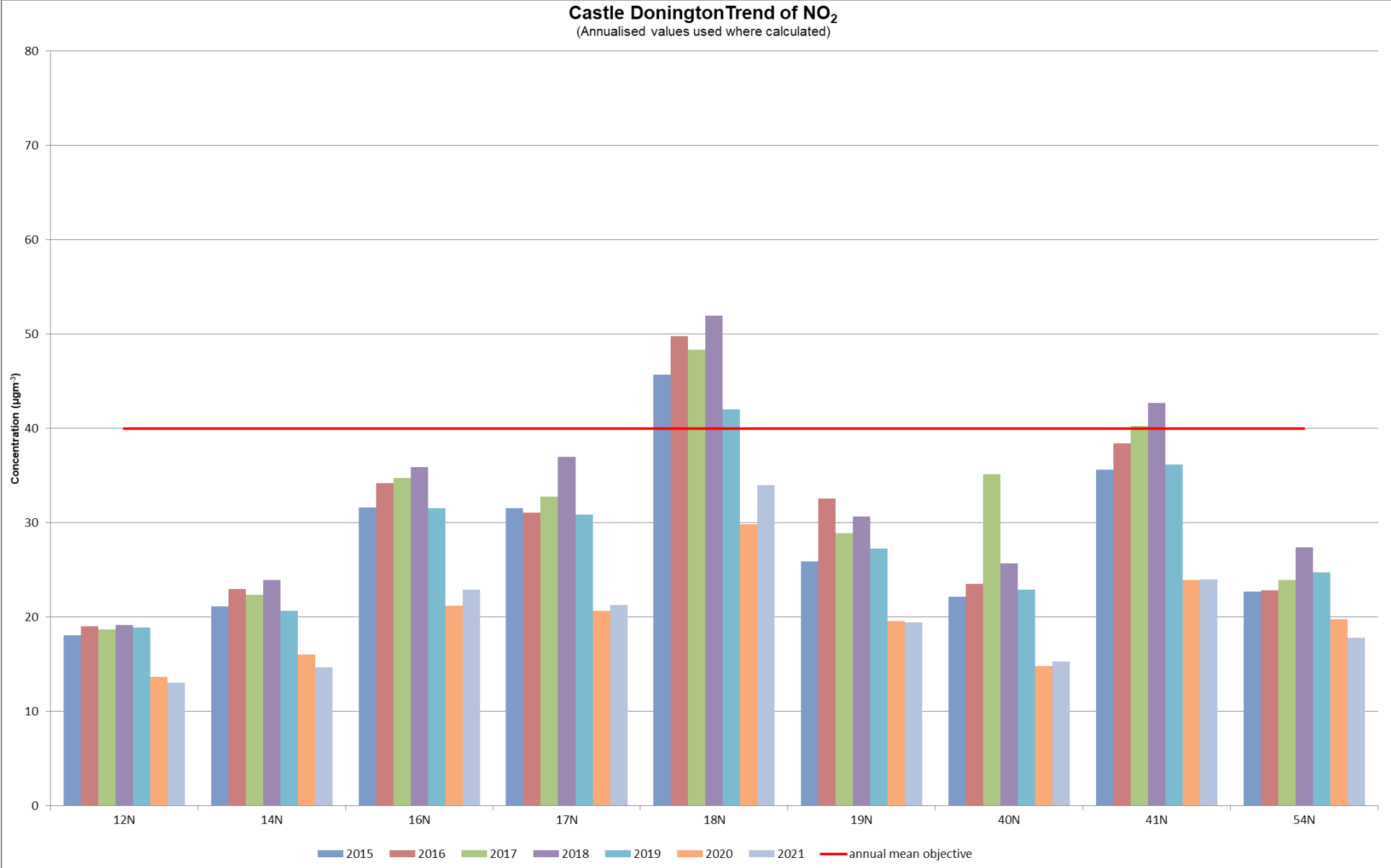


Figure A. 2 – Copt Oak Trends in Annual Mean NO₂ Concentrations

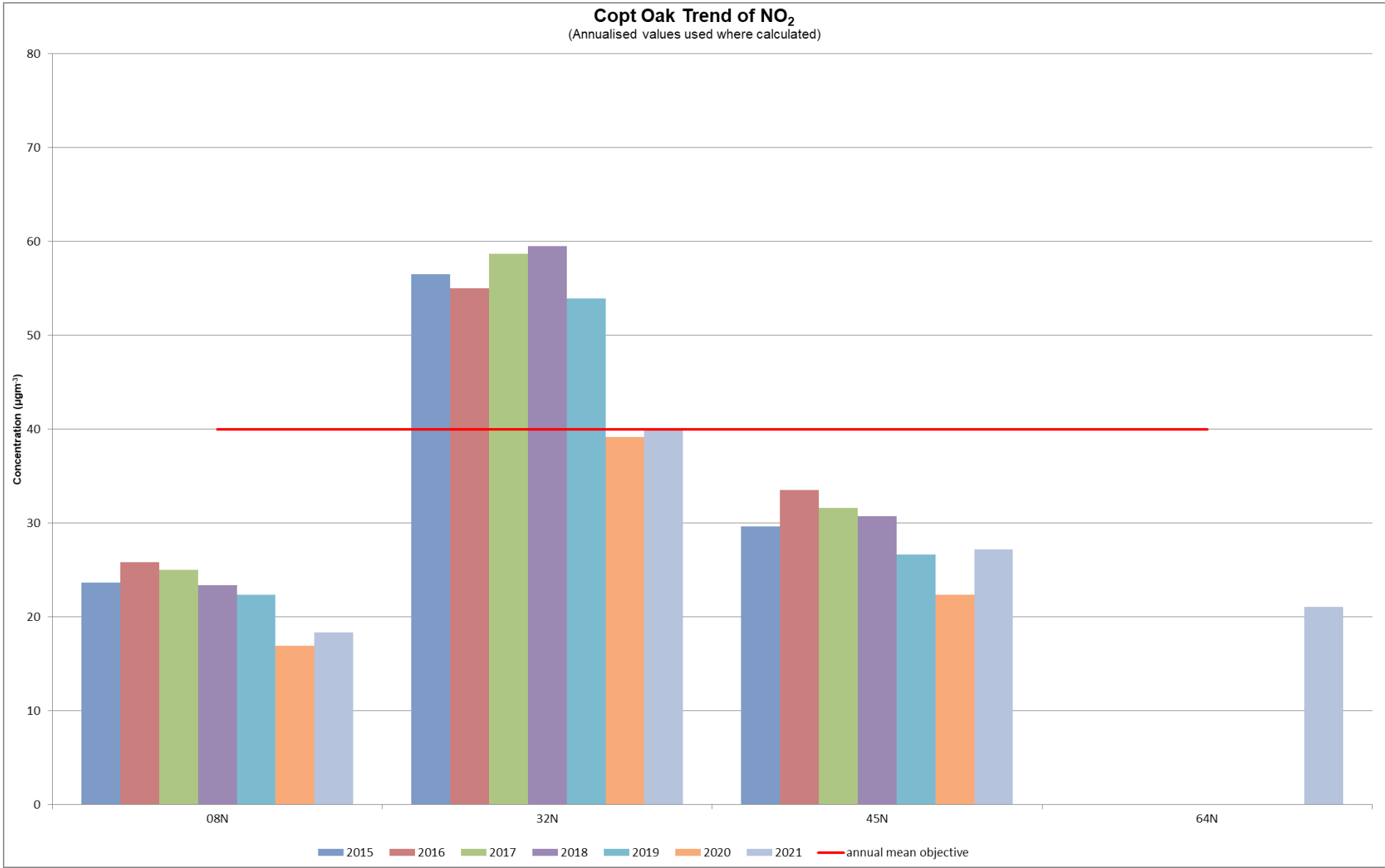


Figure A. 3 – Kegworth Trends in Annual Mean NO₂ Concentrations

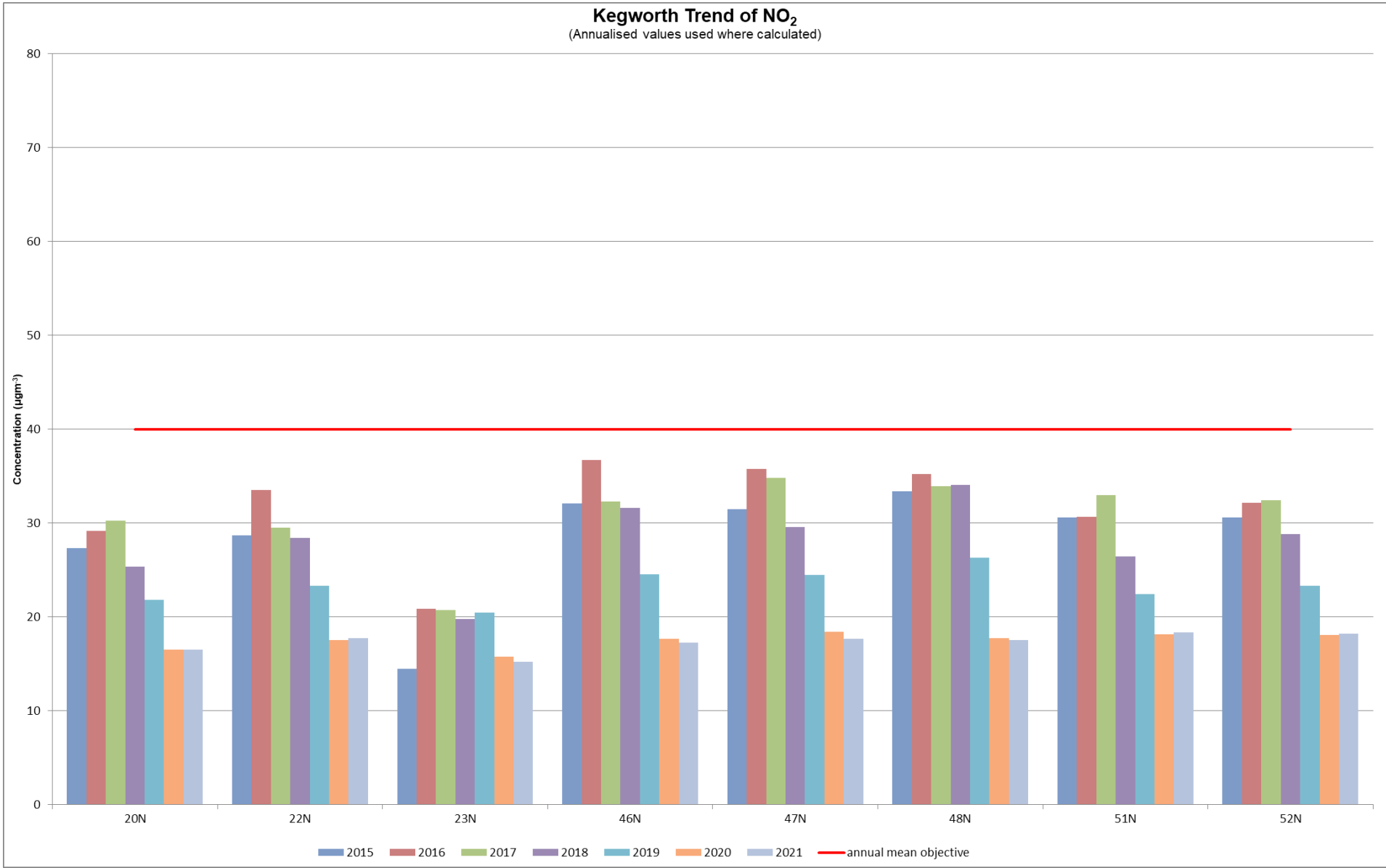


Figure A. 4 – Coalville Trends in Annual Mean NO₂ Concentrations

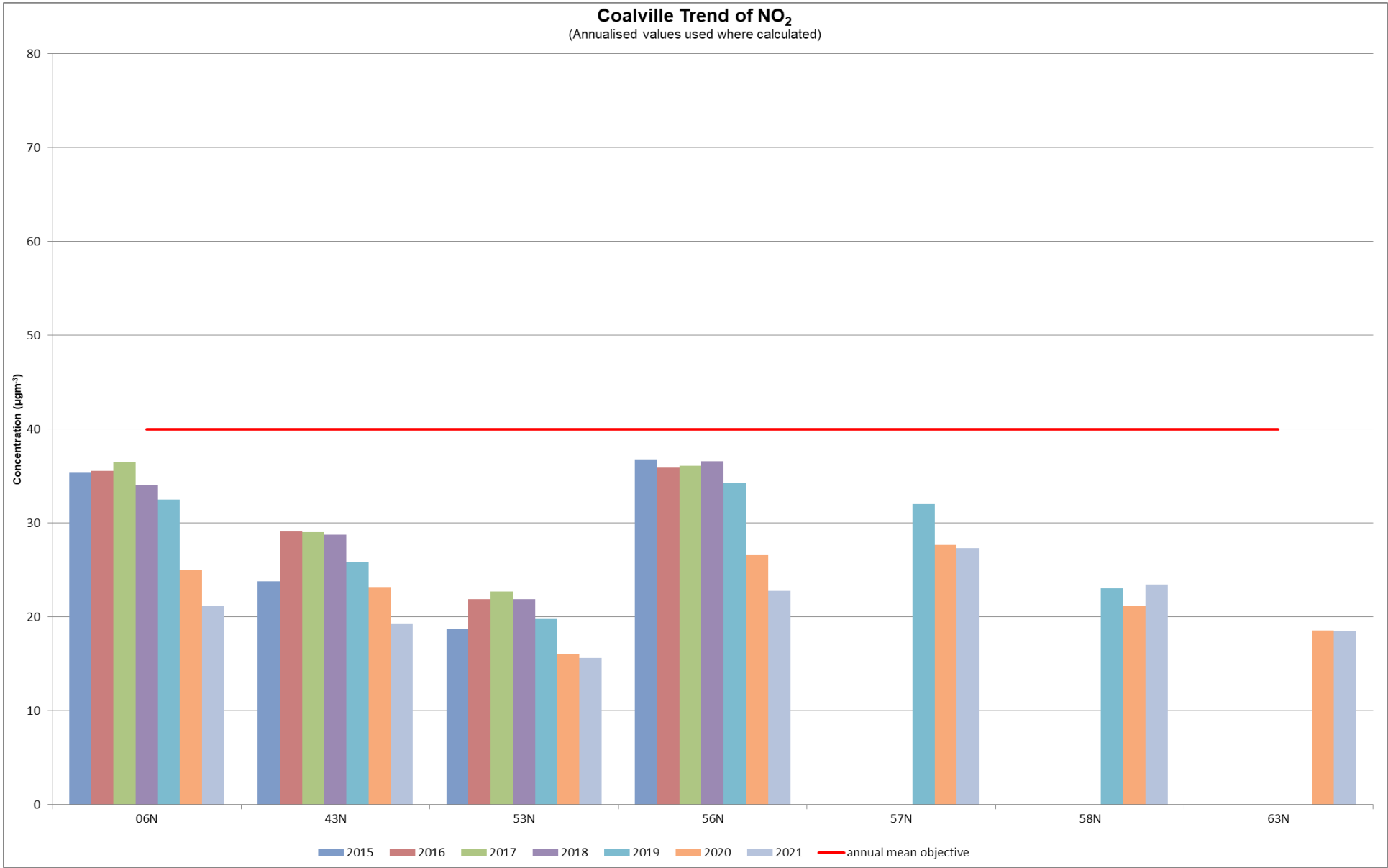


Figure A. 5 – Other Location Trends in Annual Mean NO₂ Concentrations

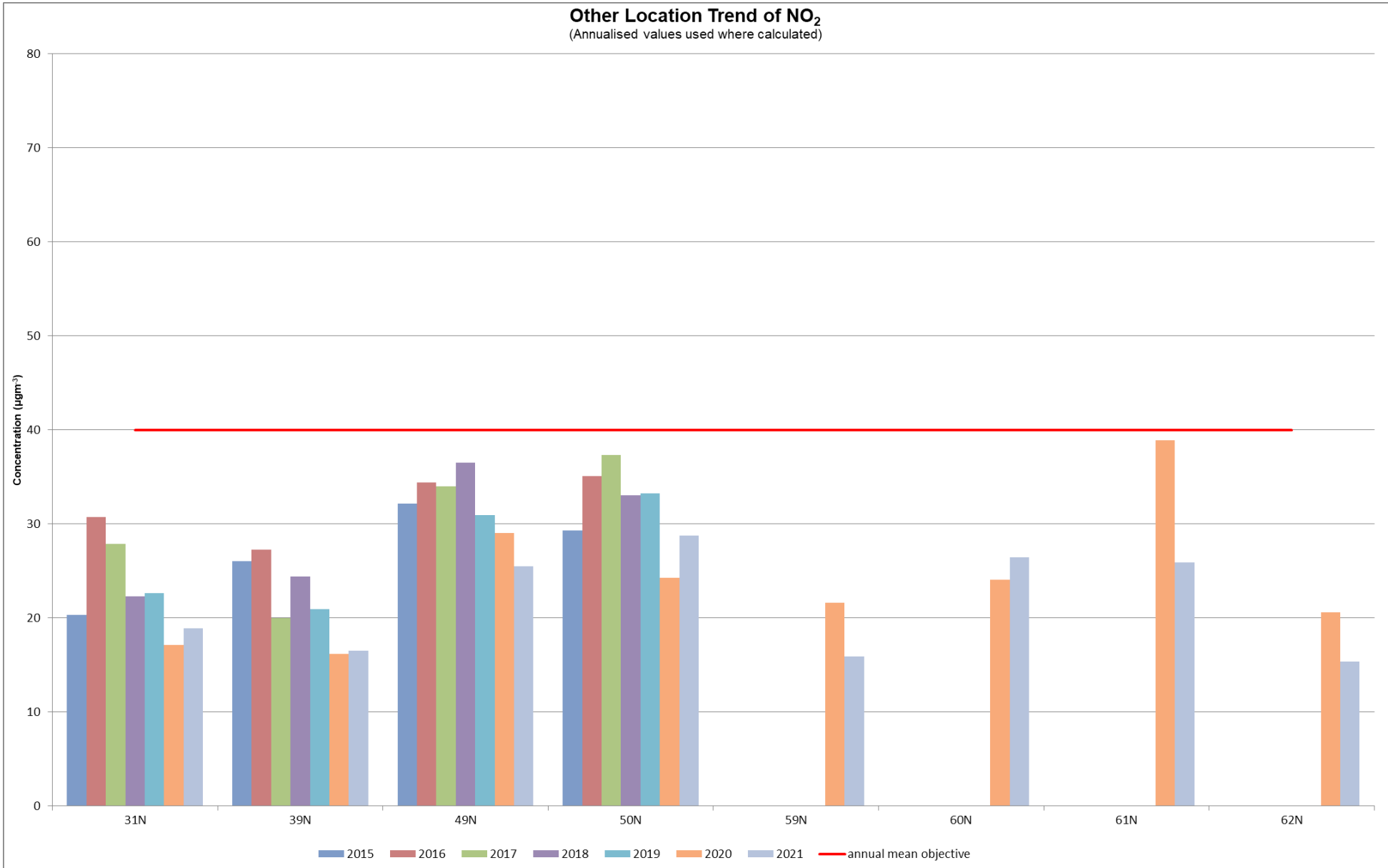


Table A. 5– 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
Z1	444610	327448	Roadside	90.42	37.16					0 (118.9)

CLICK HERE THEN PASTE COMPLETED DATA ROWS FROM ASR EXCEL TEMPLATE

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m³ have been recorded.

Exceedances of the NO₂ 1-hour mean objective (200µg/m³ not to be exceeded more than 18 times/year) are shown in **bold**.

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

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

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

Table A. 6 – Annual Mean PM₁₀ Monitoring Results (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
Z1	444610	327448	Roadside	96.16	39.53					10.9

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16 (confirm by selecting in box).

Notes:

The annual mean concentrations are presented as µg/m³.

Exceedances of the PM₁₀ annual mean objective of 40µg/m³ are shown in **bold**.

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

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

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

Table A. 7 – 24-Hour Mean PM₁₀ Monitoring Results, Number of PM₁₀ 24-Hour Means > 50µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
Z1	444610	327448	Roadside	96.16	39.53					0(20.5)

Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m³ have been recorded.

Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ not to be exceeded more than 35 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.

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

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

Table A. 8 – Annual Mean PM_{2.5} Monitoring Results (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
Z1	444610	327448	Roadside	96.19	39.53					7.2

CLICK HERE THEN PASTE COMPLETED DATA ROWS FROM ASR EXCEL TEMPLATE

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16 (confirm by selecting in box).

Notes:

The annual mean concentrations are presented as µg/m³.

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.

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

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

Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B. 1 – NO₂ 2021 Diffusion Tube Results (µg/m³)

DT ID	XOS Grid Ref (Easting)	YOS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.78)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
06N	443632	314026	41.8	22.6	25.1	27.4	19.1	22.0	24.6	18.0	38.4	20.2	29.0	38.2	27.4	21.4	.	
08N	448138	313012	24.7	20.3	22.0	20.9	18.1	58.2	19.4	18.8	22.5	11.4		22.7	24.1	18.8	.	
12N	444161	326355	24.9	18.1	15.4	13.7	12.7	12.7	15.0	10.6	19.1	18.9	17.8	21.7	16.7	13.0	.	
14N	444216	326788	29.8	17.7	16.8	18.9	14.8	14.7	11.6	16.7	20.4	20.0	21.4	23.1	19.0	14.8	.	
16N	444450	327233	30.3	26.4	26.6	30.3	29.7	25.3	30.5	22.8	32.9	32.5	32.6	32.6	29.3	22.8	.	
17N	444512	327335	32.9	25.0	27.0	25.5	23.4	24.1	22.9	23.0	31.0	27.5	32.9	32.3	27.3	21.3	.	
18N	444580	327411	47.3	39.7	40.7	44.5	38.9	42.4	41.7	46.3	47.0	42.9	44.1	47.6	43.8	34.2	.	
19N	444707	327603	35.1	29.1	24.4	23.5	15.4	14.3	21.0	22.8	25.8	28.3	28.8	30.4	24.9	19.4	.	
20N	448523	326885	31.4	20.6	23.1	21.3		1.9		14.7	20.2	22.6	27.8	28.3	21.0	16.4	.	
22N	448817	326621	33.2	20.6	23.4	17.8	18.7	19.0	20.3	18.2	23.2	26.2	27.4	25.4	22.8	17.8	.	
23N	448108	326305	30.0	18.4	23.3	16.5	17.0	10.4	15.1	14.4	21.2	25.5	20.5	22.1	19.4	15.2	.	
31N	440167	315264	35.0	20.8	23.0	19.9	23.0	19.2	20.8	17.3	24.9	26.1	30.5	29.9	24.2	18.9	.	
32N	448082	313100	53.4	54.3	54.2	46.1	55.7	54.9	55.8	53.7	66.1	34.7	23.9	60.3	51.2	39.9	.	
39N	446935	323744	23.1	21.3	23.1	16.1	21.0	16.1	19.0	17.3	20.7	26.7	25.6	24.3	21.0	16.4	.	
40N	444323	326975	27.8	22.0	19.2	17.5	15.8	15.4	12.2	18.4	21.2	23.4	20.1	22.1	19.6	15.3	.	
41N	444474	327171	35.9	27.5	30.3	28.4	25.7	27.7	30.3	30.0	32.4	31.6	33.2	36.0	30.9	24.1	.	
43N	443675	313642	27.7	29.2	25.8	25.3	22.8	23.7	24.7	23.5	24.9	10.3	29.6	28.5	24.6	19.2	.	
45N	448119	312920	37.9	24.9	30.2										31.9	21.2	.	

DTID	XOS GridRef (Easting)	YOS GridRef (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.78)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
46N	448724	326702	34.1	22.9	26.8	20.5	19.9	13.5	18.7	16.8	21.3		23.0	26.0	22.1	17.2	-	
47N	448639	326805	34.0	23.9	22.9	18.2	20.1	15.3	17.4	16.4	23.1	24.4	30.7	25.8	22.6	17.6	-	
48N	448792	326533	25.7	19.7	25.1	19.8	19.1	16.9	19.0	18.1	21.7	24.9	30.8	29.3	22.5	17.5	-	
49N	442578	312871	35.9	34.2	32.2	33.0	22.1	32.7	27.1	20.7	37.2	37.0	39.5	40.8	32.7	25.5	-	
50N	442562	312823	44.9		37.8	33.5	35.0	31.4	31.2	29.8	41.0	34.5	47.2	39.2	36.7	28.6	-	
51N	448361	326997	29.6	22.9	25.5	19.7	20.6	17.9	17.8	17.4	25.4	27.0	31.5	27.0	23.4	18.3	-	
52N	448436	326931	34.7	25.4	26.3	14.8	20.7	9.1	16.7	17.7	25.8	28.4	33.6	27.4	23.1	18.0	-	
53N	448436	326931	30.9	22.4	22.1	20.5	18.7	16.3	17.9	10.5	17.9	16.0	22.3	24.7	20.0	15.6	-	
54N	444331	327257	26.9	19.5	22.3	21.5	20.8	20.5	20.0	19.7	24.4	24.7	27.0	26.4	22.9	17.8	-	
56N	443649	314040	29.0	35.2	33.4	28.5	33.9	28.5	28.8	26.4	21.1	11.0	33.5	40.6	29.1	22.7	-	
57N	443630	314028	46.8	30.4	38.2	42.3	36.0	39.5	25.1	39.2	37.7	20.2	25.6	39.2	35.6	27.8	-	
58N	443634	313996	34.6	31.0	38.8	26.2	37.2	16.8	40.5	31.1	36.4	18.6	24.5	25.5	29.7	23.2	-	
59N	442754	317177	29.3	24.4	19.1	20.2	14.5	15.2	15.4	17.3		20.8	23.6	24.6	20.4	15.9	-	
60N	443366	316277	32.4	33.7	31.7	30.6	35.4	32.2	35.7	34.4	35.7	31.6	36.6	37.0	33.9	26.4	-	
61N	436194	316958	43.0	28.8	35.4	31.1	27.8	27.9		25.6	35.3	32.8	41.3	36.2	33.2	25.9	-	
62N	435587	317204	37.4	14.6	21.2	19.7	16.0	15.1	16.0	14.7	19.5		22.9		19.9	15.6	-	
63N	442800	314466	33.2	18.7	25.6	20.7	21.7	18.9	19.6	16.2	24.6	26.4	31.6	26.8	23.7	18.5	-	
64N	448050	312906				23.4	14.4	22.8	23.9	26.2	35.0	19.6	43.2	35.5	27.1	21.1	-	

All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1 (confirm by selecting in box).

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM TG16 (confirm by selecting in box).

Local bias adjustment factor used (confirm by selecting in box).

National bias adjustment factor used (confirm by selecting in box).

Where applicable, data has been distance corrected for relevant exposure in the final column (confirm by selecting in box).

North West Leicestershire District Council confirm that all 2021 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System (confirm by selecting in box).

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within North West Leicestershire During 2021

North West Leicestershire District Council has not identified any new sources relating to air quality within the reporting year of 2021.

Additional Air Quality Works Undertaken by North West Leicestershire District Council During 2021

North West Leicestershire District Council in partnership with Harborough District Council employed Air Quality Consultants Limited to submit a bid for an air quality grant to improve knowledge of particulate matter and raise awareness of its potential impact on health.

QA/QC of Diffusion Tube Monitoring

2021 diffusion tubes were supplied by Socotec (Didcote) using 50% TEA in acetone

The supplier used for diffusion tubes within 2021 and the method of preparation, e.g. 20% TEA in water;

- Information on the diffusion tube supplier; any accreditation held, analysis procedure followed, participation in analysis schemes (e.g. AIR-PT) and most recent results, inclusion in the annual field inter-comparison exercise and associated result;
- If the diffusion tube supplier has been changed part way through the year (if so provide the previous two points for both suppliers);
- State whether or not the monitoring has been completed in adherence with the 2021 Diffusion Tube Monitoring Calendar, providing commentary of any divergences as necessary.

The additional subsections should be used to provide QA/QC details of the data processing methodologies applied to diffusion tube monitoring data, specifically in relation to annualisation, bias adjustment and fall-off-with-distance calculations.

Diffusion Tube Annualisation

The Diffusion tube data processing tool and identified 1 site for annualisation. Results of the annualisation are presented in **Error! Reference source not found.**

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2022 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO₂ 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 0.78 to the 2021 monitoring data. A summary of bias adjustment factors used by North West Leicestershire District Council over the past five years is presented in **Error! Reference source not found.**

Table C. 1 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	National	03/22-	0.78
2020	National	03/21	0.82
2019	National	03/20	0.87
2018	National	03/19	0.92
2017	National	03/18	0.97
2016	National	03/17	1.01

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in **Error! Reference source not found.**

No diffusion tube NO₂ monitoring locations within North West Leicestershire required distance correction during 2021

QA/QC of Automatic Monitoring

Annualisation of the Zephyr data was required for the 2 locations it was placed during 2020. An overview of the annualisation is included in Table C2 and the data used is attached as Appendix C3.

PM₁₀ and PM_{2.5} Monitoring Adjustment

The type of monitor utilised within North West Leicestershire does not require the application of a correction factor.

Automatic Monitoring Annualisation

Annualisation was required for the zephyr automatic monitoring site was required the annualisation data is summarized in **Error! Reference source not found.**

Full data is attached as appendix C2

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in **Error! Reference source not found.**

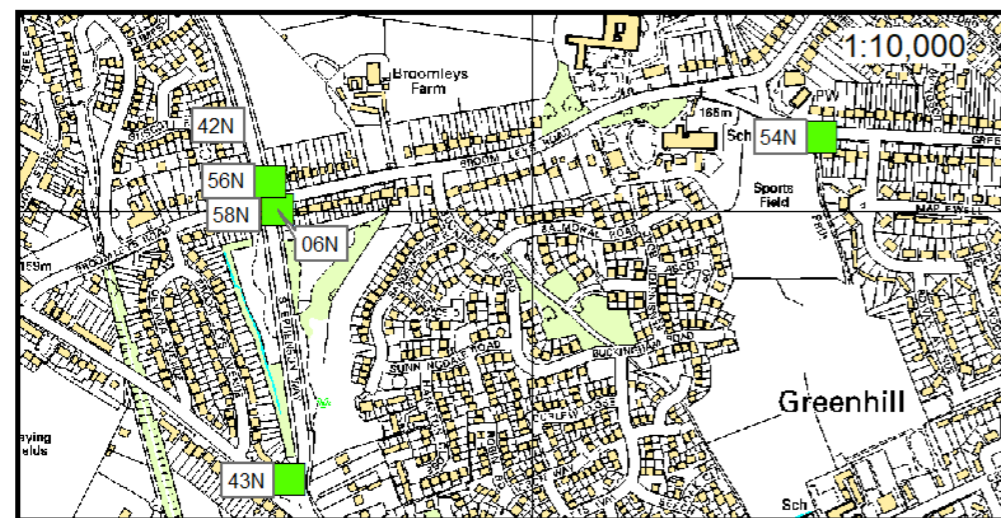
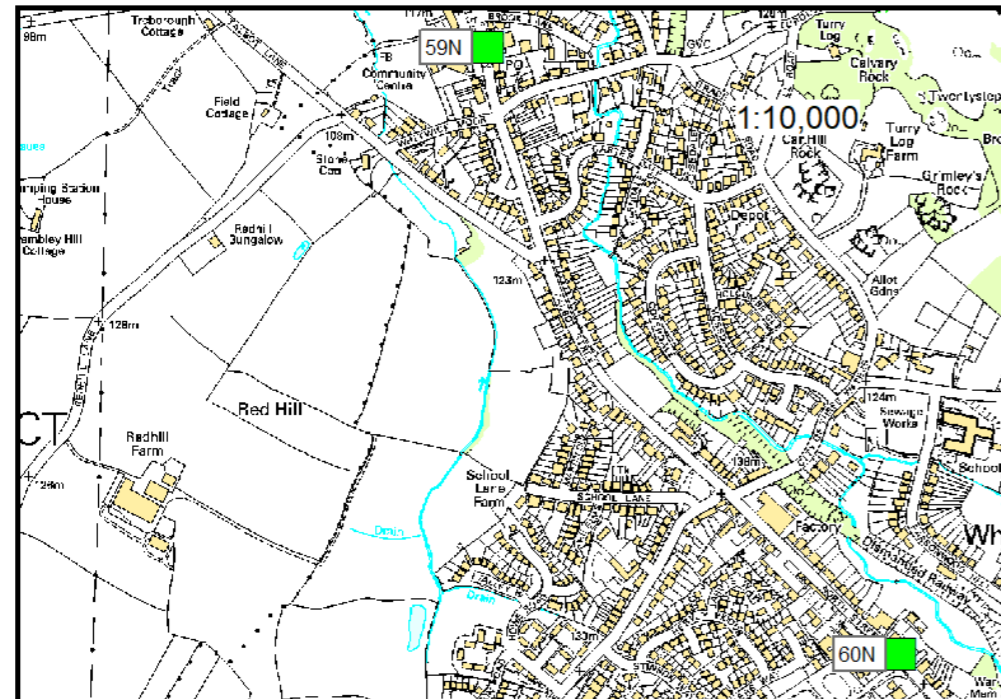
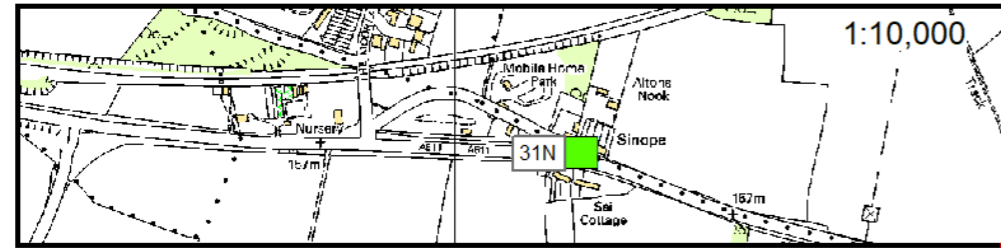
No automatic NO₂ monitoring locations within North West Leicestershire required distance correction during 2021

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

Site ID	Annualisation Factor Derby St Alkmund's Way	Annualisation Factor Leicester University	Annualisation Factor Nottingham Centre	Annualisation Factor Nottingham Western Boulevard	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
45N	0.8808	0.7945	0.8774	0.8490	0.8504	31.9	27.2	

Site ID	Annualisation Leicester A594 Roadside	Annualisation Factor Leicester University	Annualisation Factor Nottingham Centre	Annualisation Factor Nottingham Western Boulevard	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
Z1 NO2	0.92	0.95	0.92	0.98	0.94	56.1	52.9	
Z1 PM10	1.03	1.08	1.02	1.09	1.06	10.3	10.9	
Z1 PM2.5	1.12	1.08	1.03	1.11	1.09	6.6	7.2	

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



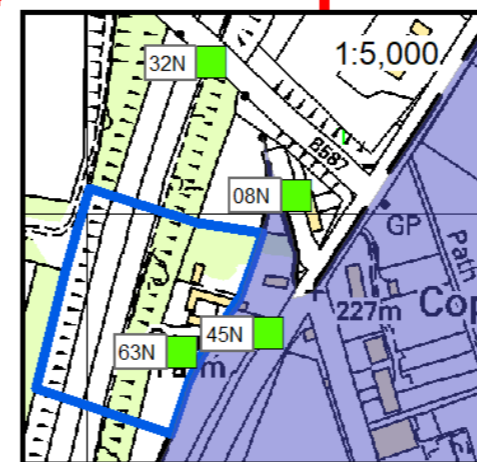
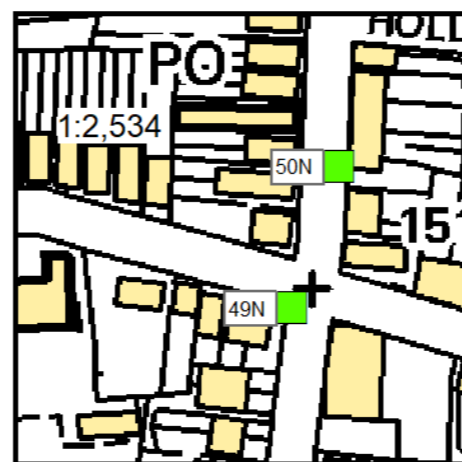
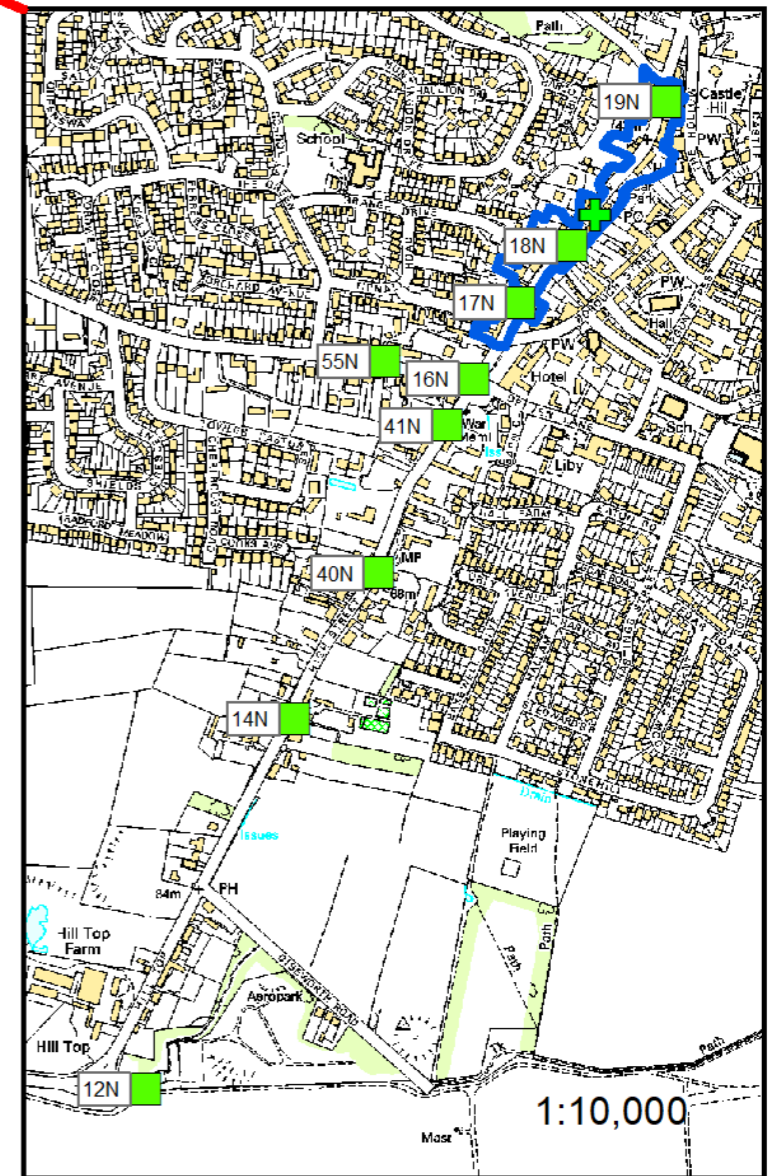
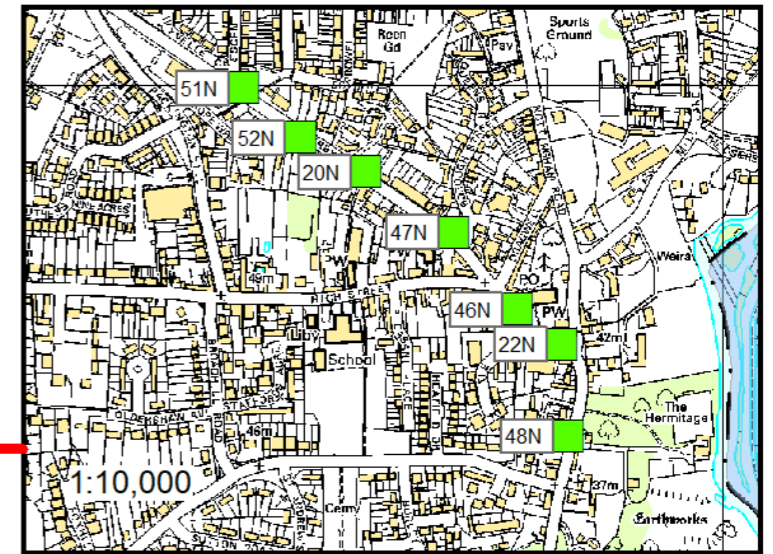
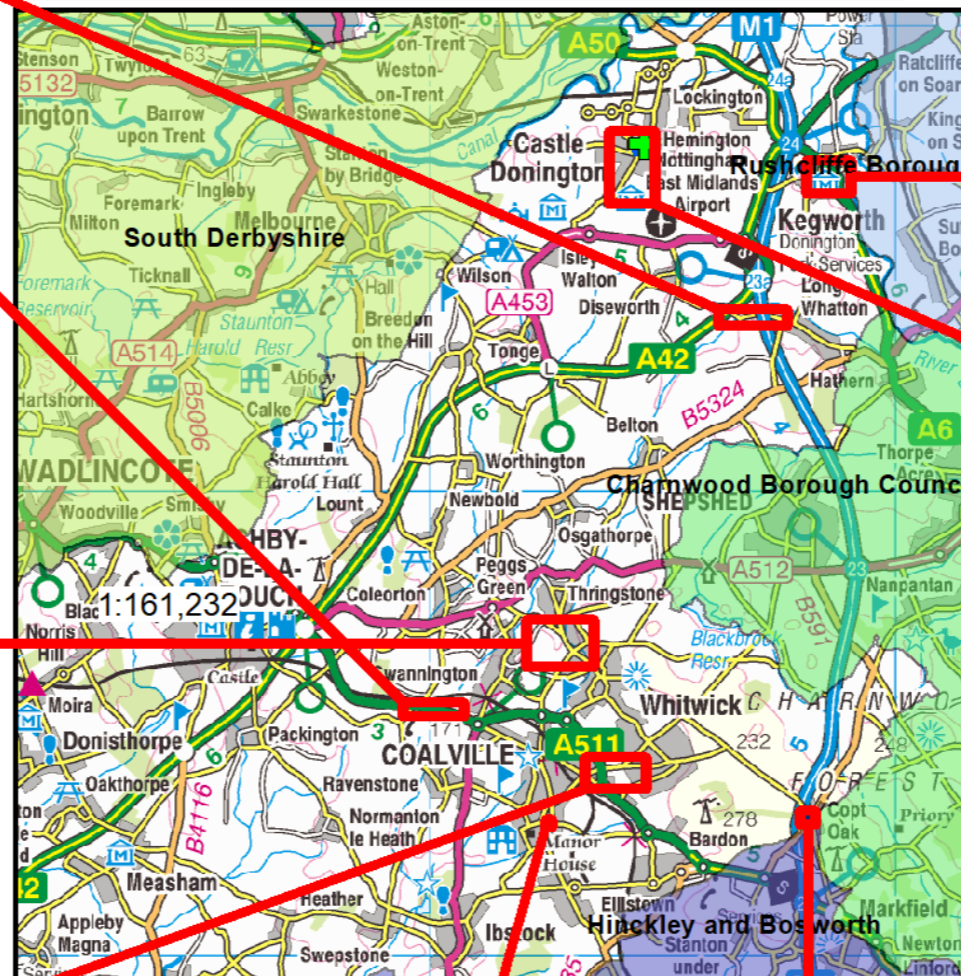
Legend



- Diffusion Tubes
- AQMA
- + Zephyr Monitoring Site



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Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England⁷

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/m³).

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.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.

[Add additional references here](#)