



DISTRICT OF HARBOROUGH

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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1 Executive Summary: Air Quality in Our Area

1.1 Air Quality in Harborough District Council

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

The mortality burden of air pollution within the UK is equivalent to 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.

The Council has two AQMAs:

- One AQMA in Lutterworth declared for exceedances of the annual mean Air Quality Objective (AQO) for Nitrogen Dioxide (NO₂). Copies of the Air Quality Management Orders and a map showing the area covered is available from the Council website. https://www.harborough.gov.uk/info/20025/environmental_health/101/air_quality/3
- One AQMA in the Kibworths declared for exceedances of the annual mean Air Quality Objective (AQO) for Nitrogen Dioxide (NO₂). Copies of the Air Quality Management Orders and a map showing the area covered is available from the Council website. https://www.harborough.gov.uk/info/20025/environmental_health/101/air_quality/2

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

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

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

1.2 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.

During 2021 the council have

- been working with development control and Leicestershire County Council Highways to determine what funding is available to implement the junction improvements that we modelled in 2019
- worked in partnership with North West Leicestershire District Council and Air Quality Consultants to apply for an air quality grant to monitor the impact of PM2.5 from solid fuel burning and to encourage behaviour change to improve local air quality.
- taken part in clean air day

1.3 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

- Continue to monitor in Lutterworth to show that the AQS for NO₂ continues to be met.

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

- Work with LCC highways to progress junction improvements in the Kibworths.

1.4 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

- Harborough District Council Air Quality website
http://www.harborough.gov.uk/info/20025/environmental_health/101/air_pollution
- 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/>

1.5 Local Responsibilities and Commitment


This ASR was prepared by the Regulatory Services Department of Harborough District Council with the support and agreement of the following officers and departments:

- List officers/departments involved in the preparation of the ASR

This ASR has been approved by:

- The councils Cabinet.

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



Mike Sandys, Director of Public Health, Leicestershire County Council

If you have any comments on this ASR please send them to Regulatory Services at:

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3 Local Air Quality Management

This report provides an overview of air quality in Harborough District Council 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 Harborough 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.

4 Actions to Improve Air Quality

4.1 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 Harborough District Council can be found in Table 4.1. The table presents a description of the 2 AQMA(s) that are currently designated within Harborough District. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMA(s) and also the air quality monitoring locations in relation to the AQMA(s). The air quality objectives pertinent to the current AQMA designations are as follows:

- NO₂ annual mean;

Table 4.1 – 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
Lutterworth	Declared 18/07/2001, Amended 04/04/2011, Amended 16/04/2013	NO2 Annual Mean	An area encompassing dwellings adjacent to Rugby Road, High street and Market Street.	NO	51	31.9	Apr-13	http://www.harborough.gov.uk/download/downloads/id/145/lutterworth_air_quality_action_plan.pdf
Kibworth	Declared 28/11/2017	NO2 Annual Mean	Area encompassing dwelling with close proximity to the kerb line along the A6 between the roundabout with Wistow Road south to the junction with church road	NO	55	38	Feb-19	http://www.harborough.gov.uk/download/downloads/id/5104/2019_kibworth_air_quality_action_plan.pdf

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- Harborough District Council confirm the information on UK-Air regarding their AQMA(s) is up to date.
- Harborough District Council confirm that all current AQAPs have been submitted to Defra.

4.2 Progress and Impact of Measures to address Air Quality in Harborough District Council

Defra's appraisal of last year's ASR concluded

1. The AQAP for the Lutterworth AQMA was published in 2013 and is therefore out of date. The Council are encouraged to update the AQAP and develop a new set of targeted actions to improve air quality in Lutterworth should the Council wish to retain the designation.

The Lutterworth AQMA has been compliant for the last 3 years unless there is significant change in concentration in the next 3-4 years the AQMA would be suitable to be undeclared as such resources spent drafting a replacement AQAP would be better spent elsewhere

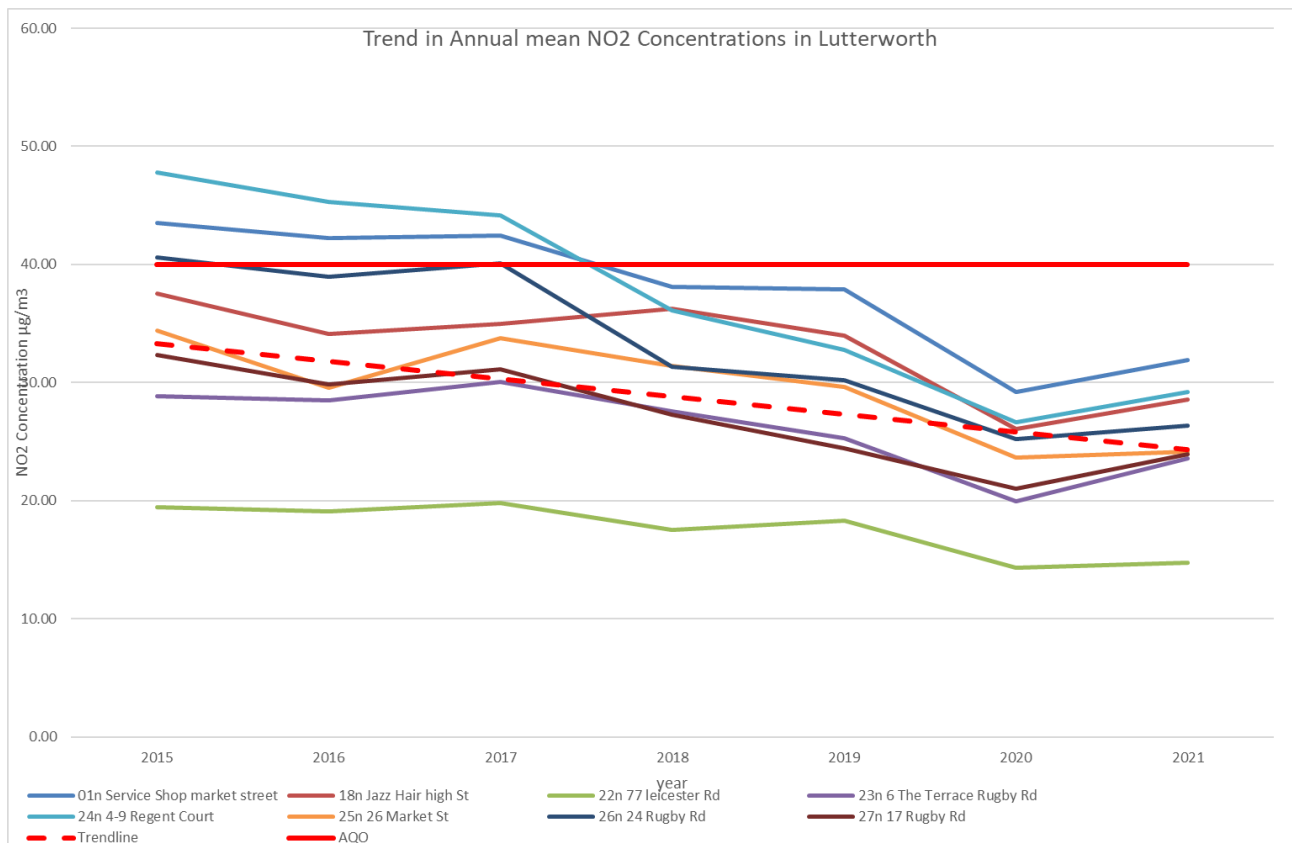
2. Whilst a significant decline in concentrations has been identified in Harborough during 2020, it is important to note that this decline is likely attributable to reduced traffic flows as a result of national lockdowns during the COVID-19 pandemic. It is therefore important that monitoring data for 2020 be interpreted with caution. Moreover, NO₂ concentrations recorded during 2020 should not be used in isolation to determine the success of any existing AQAP measures, nor should they solely be used as grounds for progressing amendments to existing AQMAs or justifications ceasing of interventions. This is acknowledged by HDC.
3. The inclusion of results from short-term continuous monitoring using Zephyr sensors is commended. The additional monitoring will enable a greater understanding of air quality within the District.
4. All the relevant sections of the Action Plan Measures table have been completed where possible. The Council continue to split the measures up into separate tasks, which gives more clarity on the progress of the measures, and which tasks are currently active. This continues to be commended.
5. The council applied the national bias adjustment factor to their 2020 monitoring results, using a factor of 0.77 for tubes prepared by Socotec (Didcot) using the 50% TEA in Acetone method. This factor was obtained from the 03/21 version of the national bias adjustment factor spreadsheet. Based on the submission date of the report, the 09/21 version should have been used, which would have provided a factor of 0.76. As the correct factor is lower than that which has been applied, this is not

considered to be grounds for rejection. However, please be advised that the most recently published version of the spreadsheet should be used at the time of submission.

Harborough 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 4.2. 7 measures are included within Table 4.2, with the type of measure and the Harborough 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 4.2.

4.2.1 Lutterworth AQMA

Concentrations of NO₂ have been below the Annual Mean air quality Objective for the 4th year running since the HGV gating system has been implemented. No specific actions beyond monitoring have been undertaken in Lutterworth.



4.2.2 Kibworth AQMA

Progress on the implementation of junction improvements in Kibworth has been slower than expected due to negotiations with Leicestershire County Council Highways.

Whilst the measures stated above and in Table 4.2 will help to contribute towards compliance, Harborough District Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of Kibworth AQMA.

Table 4.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
Lutterworth 1	20mph zone	Traffic Management	Reduction of speed limits, 20mph zones	Apr-18	Apr-18	Harborough District Council, Leicestershire County Council Highways	LA, Funding: Defra AQ grant	NO	Funded		Completed		Determine reduction in traffic emissions	Complete	Lengthy Timescale
													Determine impact on air quality	Complete	
													Determine exact area of the speed reduction (likely required to be larger than AQMA by Highway authority) and costs of implementation and undertake cost benefit analysis	none	First phase successful, second phase complete. LCC Highways require further evidence of likely reduction before they would be willing to consider implementation
Kilworth 1	Impact assessment of local traffic management options.	Transport Planning and Infrastructure	Other	2018	2018	Harborough District Council, Leicestershire County Council Highways	Harborough District Council	NO	Partially Funded		Completed	Cannot be quantified as work is to identify works and the potential benefit	To publish findings		The modelling has been completed and found that implementing the proposed junction improvements will improve air quality within the AQMA by approximately 4 µg.m-3
	1. Detailed traffic surveys.										Completed				
	2. Undertake traffic simulation of proposed junction										Completed				

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
	improvements.														
	3. Undertake air quality impact assessment of junction improvements.										Completed				
Kibworth 2	Continue consultation between Regulatory Services and Development Management. Establish mechanism for consultation between the two parties to ensure Regulatory Services are consulted on all relevant planning applications and policy documents	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2018		Harborough District Council,	Harborough District Council,	NO	Funded		Implementation	Unlikely to provide improvements to air quality but will limit potential negative impacts		ongoing	
Kibworth 3	Provide Guidance and Training to members. Provide guidance and training to the members on assessing air quality impacts and their significance when considering planning applications.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2018		Harborough District Council,	Harborough District Council,	NO	Funded		Implementation			ongoing	Local plan adopted April 2019

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
Kibworth 4	Ensure air quality policies in Local Plan documents and evidence base. Provide information on air quality to residents in an accessible format.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2018		Harborough District Council,	Harborough District Council,	NO	Funded		Implementation			ongoing	Local plan adopted April 2019
Kibworth 5	Provide information about the AQMA to local residents. Provide information on air quality to residents in an accessible format.	Public Information	Via the Internet	2018		Harborough District Council,	Harborough District Council,	NO	Funded		Implementation			ongoing	
Kibworth 6	Development of local air quality monitoring. Retain monitoring at relevant locations within and adjacent to the AQMA and to install real time monitoring within the AQMA.	Public Information	Via the Internet	2017		Harborough District Council,	Harborough District Council,	NO	Funded		Implementation			ongoing	

4.3 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://www.gov.uk/government/collections/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}).

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 Harborough District has the joint lowest fraction of attributable deaths to particulate air pollution in Leicestershire.

(<https://fingertips.phe.org.uk/indicator-list/view/SnpYsREYp0#page/3/gid/1/pat/402/ati/401/are/E07000131/iid/30101/age/230/sex/4/cid/4/tbm/1/page-options/car-do-0>)

Harborough District Council is not currently taking any specific measures to address PM_{2.5}. However the following measures and activities undertaken by Harborough District Council will improve PM_{2.5} concentrations:

- The Council controls dust and combustion emissions from permitted processes within the district
- Promoting the use of green waste collection and Leicestershire County Council run waste bring sites over bonfires to dispose of garden waste
- Robust planning process

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

This section sets out the monitoring undertaken within 2021 by Harborough 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.

5.1 Summary of Monitoring Undertaken

5.1.1 Automatic Monitoring Sites

Harborough District Council undertook automatic (continuous) monitoring at 1 site during 2021. Table A.1 in Appendix A shows the details of the automatic monitoring sites. The https://www.harborough.gov.uk/info/20025/environmental_health/101/air_quality/2 page presents automatic monitoring results for Harborough District Council.

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.

Harborough District Council also placed a Zephyr analyser at 1 location during 2021,

- A6 in Kibworth from 01/01/2021 to 31/12/2021

5.1.2 Non-Automatic Monitoring Sites

Harborough District Council undertook non- automatic (i.e. passive) monitoring of NO₂ at 34 sites during 2021. 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. annualization and/or distance correction), are included in Appendix C.

5.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualization (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.

5.2.1 Nitrogen Dioxide (NO₂)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40µg/m³. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualization, 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 Table B.1 includes distance corrected values, only where relevant.

Table A.5 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past five years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

Briefly describe any exceedances of the air quality objectives here, relating to both annual mean and 1-hour (where applicable) objectives. Detail where monitored exceedances are located - are these within a current AQMA, close to an AQMA boundary or located away from any current AQMA(s). What are the conclusions of the monitoring following the most recent results - will there be any changes to existing AQMAs or the declaration of a new AQMA? Are there any proposed changes to the monitoring network?

Where relevant, consider annual means greater than 60µg/m³, which indicates that an exceedance of the 1-hour mean objective is also likely at these sites.

5.2.1.1 The Kibworths

There are 10 long term diffusion tube monitoring locations within the Kibworths. During 2021 all locations were below the Annual mean Air quality Standard for NO₂, however location 34n did exceed 36µg.m⁻³. The low results are likely the result of reduced traffic caused by the COVID19.

The automatic monitor and the Zephyr low cost monitor did not detect any exceedances of either the hourly or annual mean air quality objectives for NO₂.

5.2.1.2 Lutterworth

There are 10 long term diffusion tube monitoring locations in and around the Lutterworth AQMA. All locations were significantly below the annual mean air quality standard for NO₂. This is the 4th year that the air quality standard has been achieved however,

- results were substantially lower in 2020 and 2021 than in previous years this is likely still a result of the COVID19.
- Results in 2021 were slightly higher than in 2020 but still generally lower than 2018/19

5.2.1.3 Theddingworth

There are 2 long term diffusion tube monitoring locations in Theddingworth both were below the annual mean air quality standard for NO₂.

5.2.1.4 A5

There are 2 long term diffusion tube monitoring locations along the A5, both were below the annual mean air quality standard for NO₂.

5.2.1.5 Market Harborough

There are 5 long term diffusion tube monitoring locations within Market Harborough, all locations were below the annual mean air quality standard for NO₂.

5.2.1.6 Broughton Astley

There are 2 long term diffusion tube monitoring locations within Broughton Astley, both locations were below the annual mean air quality standard for NO₂.

5.2.1.7 Other Locations

3 other locations have been monitored Walcote (45n) Fleckney (50n) and Bushby (51n) all locations recorded concentrations below the Annual mean air quality objective for NO₂.

5.2.2 Particulate Matter (PM₁₀)

Table A.6 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.

Table A.7 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.

5.2.2.1 The Kibworths

The zephyr low cost analyser has been located in Kibworth since 3/6/2020. During that time. The Annual mean air quality objective for PM₁₀ and no exceedances of the daily mean air quality objective for PM₁₀ were detected.

5.2.3 Particulate Matter (PM_{2.5})

Table A.8 in Appendix A presents the ratified and adjusted monitored PM_{2.5} annual mean concentrations for the past five years.

5.2.3.1 The Kibworths

The zephyr low cost analyser has been located in Kibworth since 3/6/2020. During that time. The Annual mean air quality objective for PM_{2.5} was achieved.

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)
A1	Kibworth	Roadside	468114	294353	NO ₂	yes Kibworth	chemiluminescence	9	2.5	1.8
Z2	Kibworth	Roadside	468309	294352	NO ₂ PM _{2.5} PM ₁₀	yes Kibworth	Zephyr	0	1.4	2.5

Notes:

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

(2) N/A if not applicable

Table A.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)
01n	Lut. Service Shop	Roadside	454475	284560	NO2	yes Lutterworth	0.0	4.2		2.0
11n	Day Nursery	Roadside	454539	284932	NO2		9.0	1.3		2.0
12n	A6 Kibworth	Roadside	468425	294314	NO2	yes kibworth	10.7	1.3		2.0
18n	Jazz Hair	Roadside	454443	284348	NO2	yes Lutterworth	0.0	3.0		2.0
22n	77 leicester road	Roadside	454533	284872	NO2		0.0	13.5		2.0
23n	6 The Terrace Rugby Road	Roadside	454428	284274	NO2	yes Lutterworth	0.0	2.5		2.0
24n	regent court	Roadside	454410	284326	NO2	yes Lutterworth	2.0	1.0		2.0
25n	26 Market Street Lutterworth	Roadside	454497	284618	NO2	yes Lutterworth	1.6	4.8		2.0
26n	24 Rugby Road Lutterworth	Roadside	454432	284229	NO2	yes Lutterworth	0.0	2.0		2.0
27n	17 Rugby road Lutterworth	Roadside	454476	284178	NO2	yes Lutterworth	3.7	5.2		2.0
28n	Spencerdene main street theddingworth	Roadside	466535	285545	NO2		1.2	0.2		2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
29n	Homeside main street Theddingworth	Roadside	466651	285607	NO2		0.2	1.4		2.0
30n	40 regent street lutterworth	Roadside	466651	285607	NO2		0.2	1.4		2.0
31n	69 leicester road Kibworth	Roadside	467933	294660	NO2	yes Lutterworth	3.5	4.0		2.0
32n	Alma House, Watling Street Claybrooke Parva	Roadside	448065	287719	NO2		0.0	7.0		2.0
33n	sign post outside White House Farm Watling street	Roadside	448948	286554	NO2		14.0	1.0		2.0
34n	sign outside 64 Leicester Road Kibworth	Roadside	468143	294351	NO2	yes kibworth	0.5	2.3		2.0
35n	lamppost outside 78 leicester road kibworth	Roadside	468022	294450	NO2	yes kibworth	3.1	6.4		2.0
36n	signpost just north of 11 Leicester road Kibworth	Roadside	468309	294352	NO2	yes kibworth	0.0	1.4		2.0
37n	pizza Express st marys road	Roadside	473749	287214	NO2		0.0	1.4		2.0
38n	coach and horse kibworth	Roadside	468403	294298	NO2	yes kibworth	2.2	2.5		2.0
39n	lamppost 29 church road kibworth	Roadside	468412	294218	NO2		10.2	2.0		2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
40n	106 main street kibworth	Roadside	468027	294570	NO2		0.0	1.7		2.0
41n	lampost outside 52 Leicester Road	Roadside	468982	293824	NO2	yes kibworth	9.0	2.2		2.0
42n	road sign on leicester road, rear of 9 Milestone Close	Roadside	469037	293796	NO2		12.0	2.0		2.0
43n	3 dunton road BA	Roadside	453583	292002	NO2		2.9	1.5		2.0
44n	26 Dunton Road BA	Roadside	453625	291935	NO2		2.0	0.2		2.0
45n	lampost est of 5 Lutterworth road Walcote	Roadside	456575	283605	NO2		3.0	0.2		2.0
46n	sw junction welland park road and northampton road MH	Roadside	473596	286821	NO2		14.0	2.3		2.0
47n	53 northampton road MH	Roadside	473598	286851	NO2		9.0	1.0		2.0
48n	7 leicester road MH	Roadside	473172	287534	NO2		2.6	2.9		2.0
49n	lamppost outside 12 Springfield Street MH	Roadside	473678	286931	NO2		2.1	1.9		2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
50n	lamppost carpark adjacent Fleckney Fish bar, High street Fleckney	Roadside	464971	293501	NO2		0.1	2.0		2.0
51n	lamppost outside thurnby memorial hall, main street, bushby	Roadside	464773	303914	NO2		1.6	3.8		2.0

Notes:

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

(2) N/A if not applicable.

Table A.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
A1	468114	294353	Roadside	99.8%	99.8%			43.97	30.64	32.22
Z2	468309	294352	Roadside	87.02%	87.02%				34.47	35.01

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

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

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
01n	454475	284560	Roadside	90.4	90.4	42.4	38.1	37.9	29.2	31.7
11n	454539	284932	Roadside	66.1	66.1	26.6	30.1	41.8	21.6	22.9
12n	468425	294314	Roadside	90.4	90.4	23.8	28.4	29.4	20.7	22.7
18n	454443	284348	Roadside	90.4	90.4	35.0	36.2	34.0	26.1	28.4
22n	454533	284872	Roadside	90.4	90.4	19.8	17.6	18.3	14.3	14.6
23n	454428	284274	Roadside	90.4	90.4	30.1	27.6	25.3	19.9	23.3
24n	454410	284326	Roadside	82.5	82.5	37.1	36.1	32.8	26.7	28.8
25n	454497	284618	Roadside	90.4	90.4	32.0	31.4	29.7	23.6	24.3
26n	454432	284229	Roadside	90.4	90.4	40.1	31.4	30.2	25.2	26.2
27n	454476	284178	Roadside	90.4	90.4	28.0	27.3	24.4	21.0	23.8
28n	466535	285545	Roadside	90.4	90.4	16.5	16.4	17.5	14.5	12.2
29n	466651	285607	Roadside	90.4	90.4	27.9	22.2	21.6	14.6	17.7
30n	466651	285607	Roadside	85.0	85.0	22.6	17.1	17.6	12.7	14.1

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
31n	467933	294660	Roadside	90.4	90.4	33.6	31.0	28.6	23.6	25.2
32n	448065	287719	Roadside	80.3	80.3	29.2	25.1	23.9	18.8	20.6
33n	448948	286554	Roadside	90.4	90.4	18.8	24.4	21.9	16.4	17.8
34n	468143	294351	Roadside	90.4	90.4	56.9	49.3	52.0	37.6	38.0
35n	468022	294450	Roadside	90.4	90.4	32.5	32.0	38.5	26.2	30.7
36n	468309	294352	Roadside	90.4	90.4	44.3	34.4	34.5	24.8	26.8
37n	473749	287214	Roadside	90.4	90.4	29.7	25.9	27.7	20.3	20.7
38n	468403	294298	Roadside	80.3	80.3	22.5	19.4	19.8	15.0	15.3
39n	468412	294218	Roadside	90.4	90.4		18.1	17.7	13.9	14.9
40n	468027	294570	Roadside	90.4	90.4	24.4	21.0	21.1	16.1	16.3
41n	468982	293824	Roadside	90.4	90.4			19.3	13.4	14.9
42n	469037	293796	Roadside	90.4	90.4			21.6	15.3	16.8
43n	453583	292002	Roadside	90.4	90.4			19.1	15.4	18.4

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
44n	453625	291935	Roadside	65.0	65.0			22.8	15.3	16.0
45n	456575	283605	Roadside	90.4	90.4			18.1	13.0	13.3
46n	473596	286821	Roadside	57.9	57.9			31.4	22.0	24.1
47n	473598	286851	Roadside	90.4	90.4			27.0	21.9	25.9
48n	473172	287534	Roadside	90.4	90.4			26.1	18.5	22.4
49n	473678	286931	Roadside	56.0	56.0			26.0	17.9	22.8
50n	464971	293501	Roadside	63.4	63.4				12.8	14.9
51n	464773	303914	Roadside	73.2	73.2				10.3	11.8

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

Diffusion tube data has been bias adjusted.

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

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**.

NO_2 annual means exceeding $60\mu\text{g}/\text{m}^3$, 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 – The Kibworths Trends in Annual Mean NO₂ Concentrations

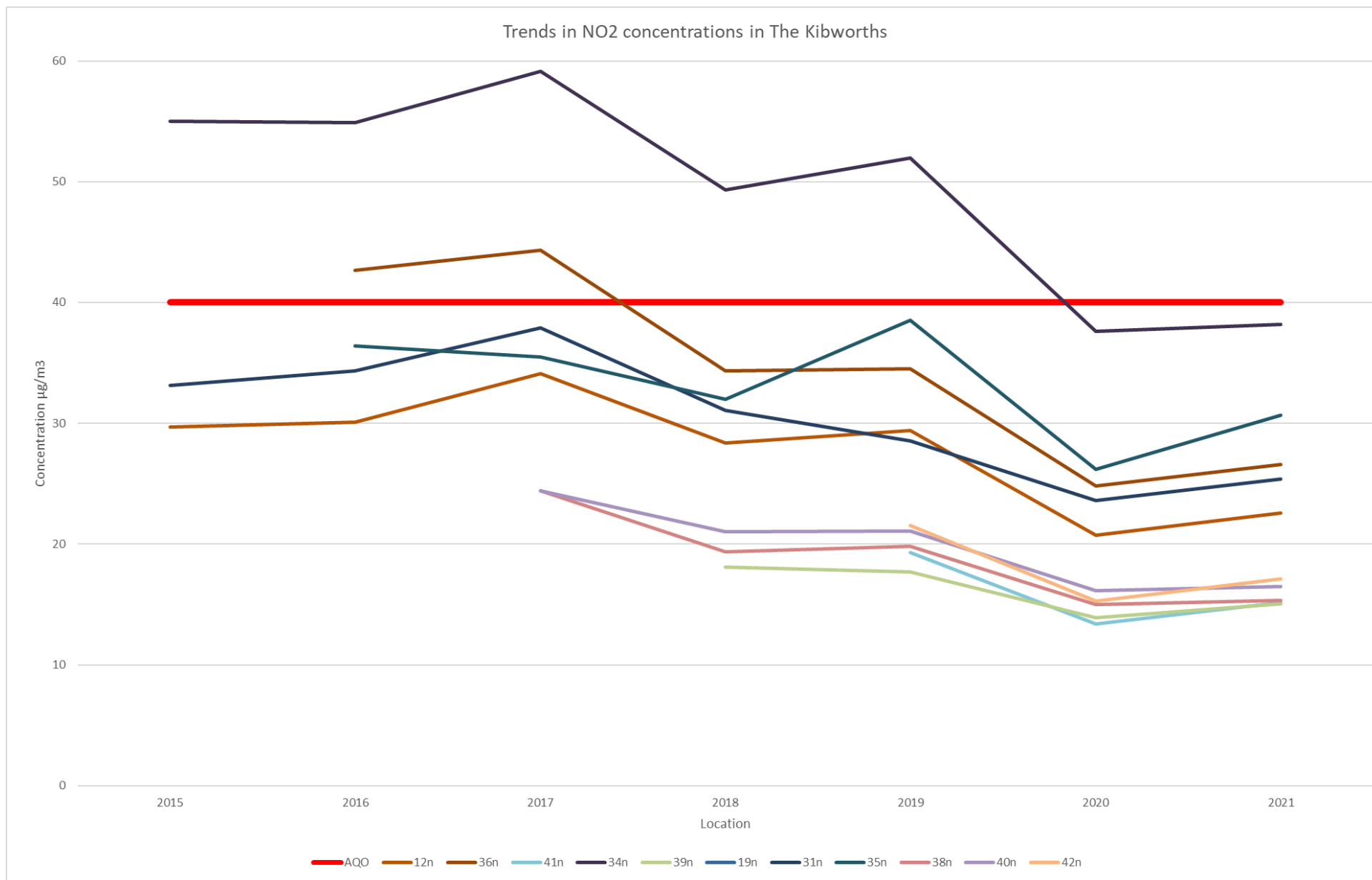


Figure A.2 – Lutterworth Trends in Annual Mean NO₂ Concentrations

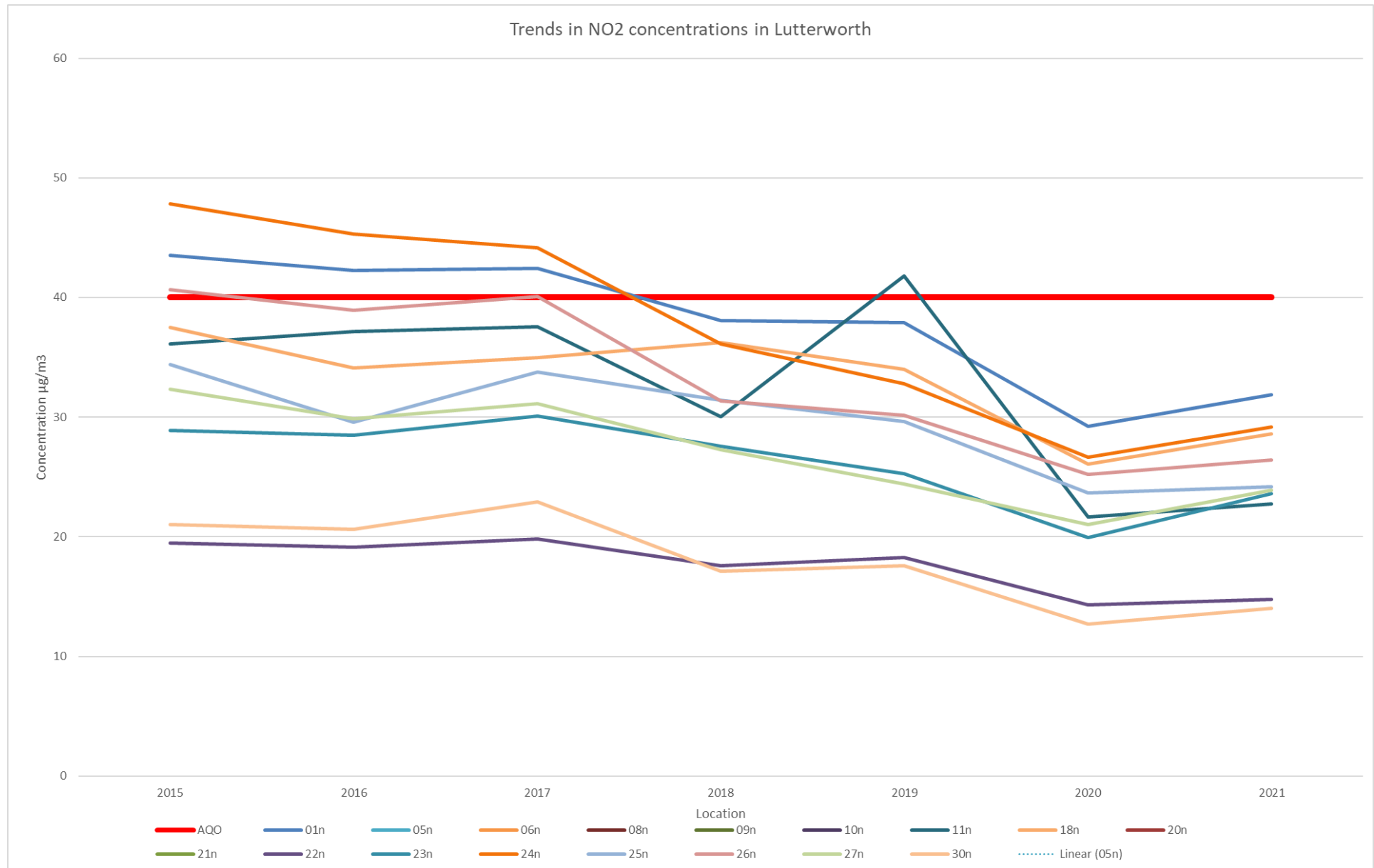


Figure A.3 – Theddingworth Trends in Annual Mean NO₂ Concentrations

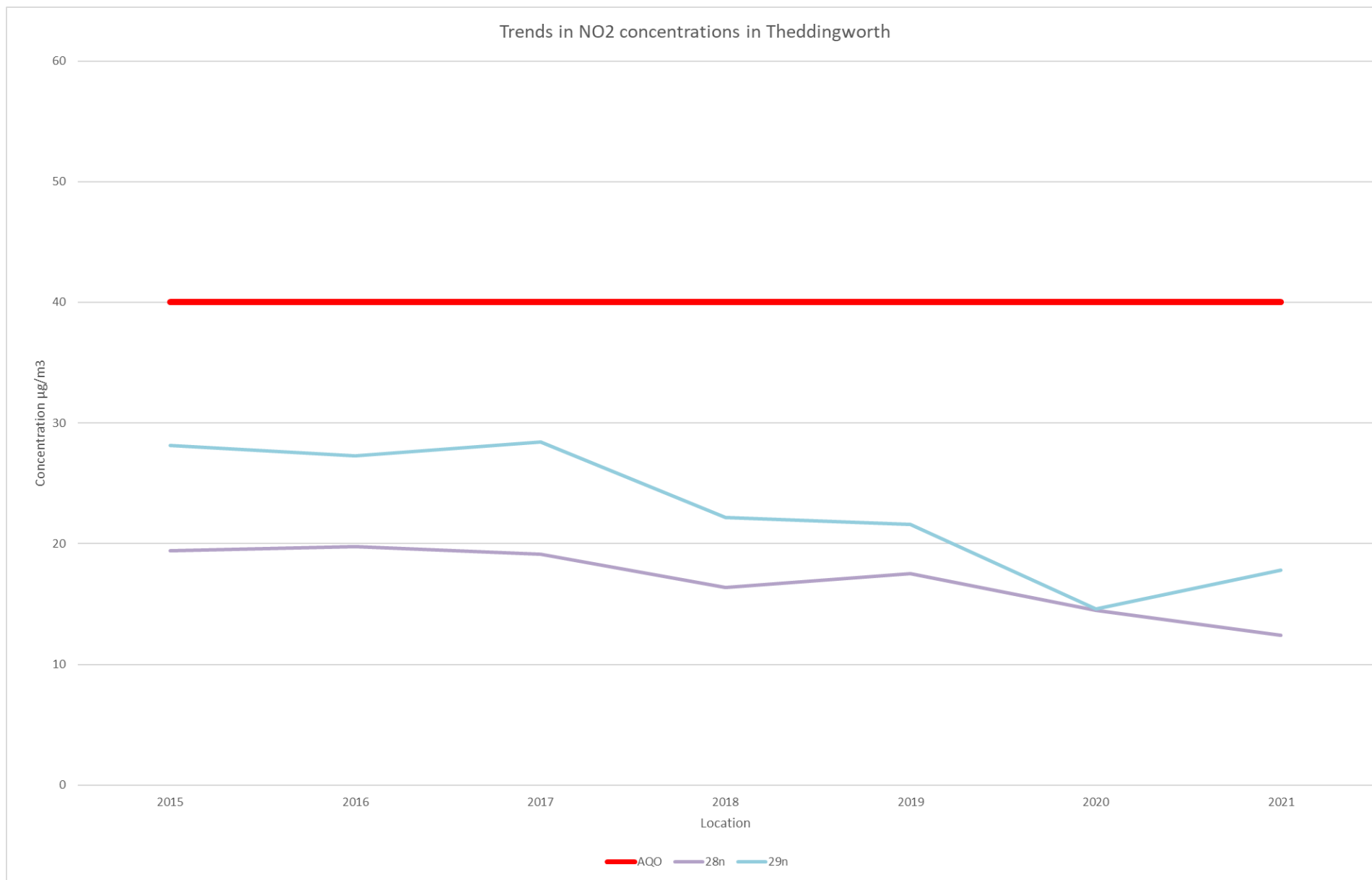


Figure A.4 – A5 Trends in Annual Mean NO₂ Concentrations

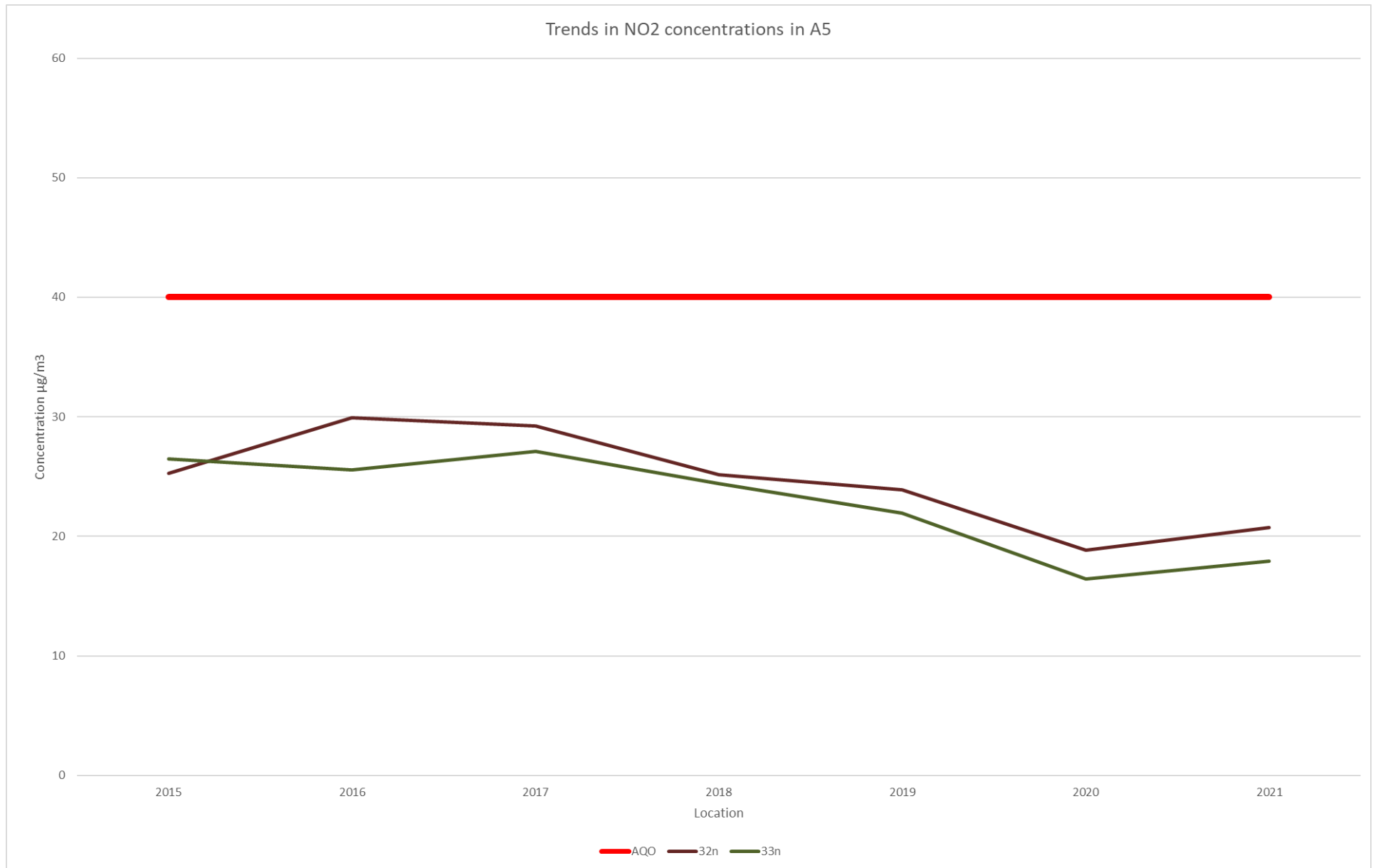


Figure A.5 – Market Harborough Trends in Annual Mean NO₂ Concentrations

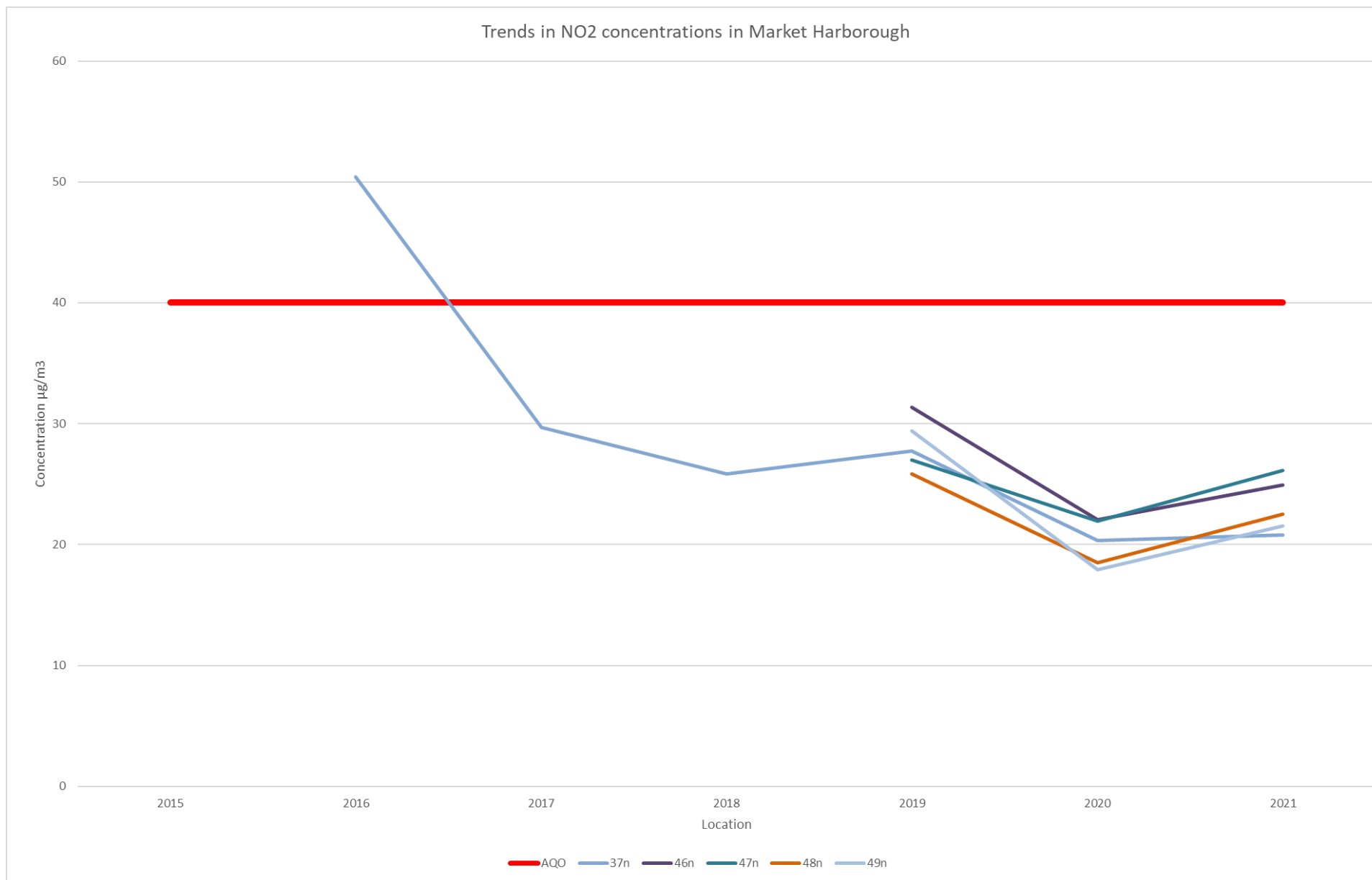


Figure A.6 – Broughton Astley Trends in Annual Mean NO₂ Concentrations

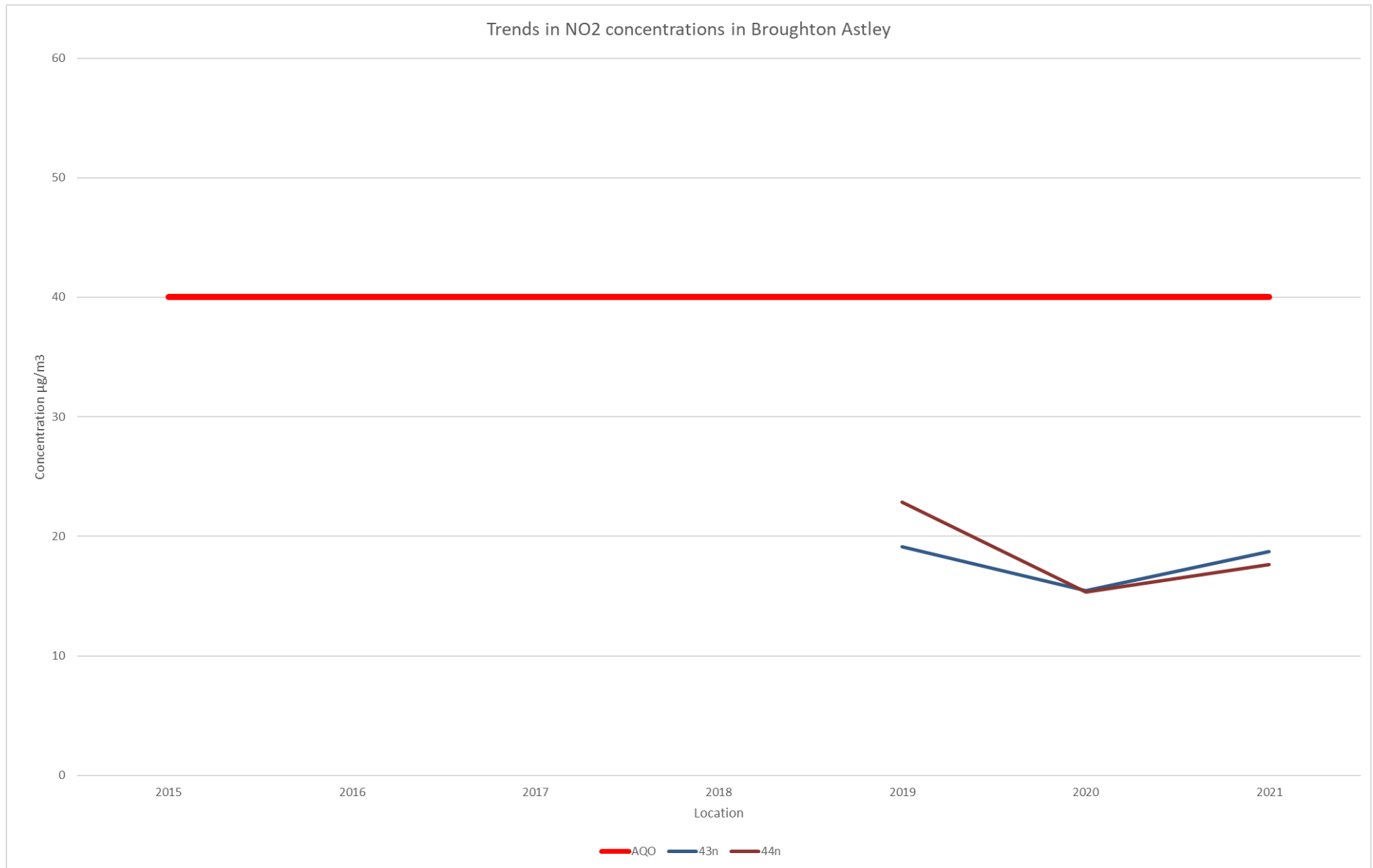


Figure A.7 – Other Locations Trends in Annual Mean NO₂ Concentrations

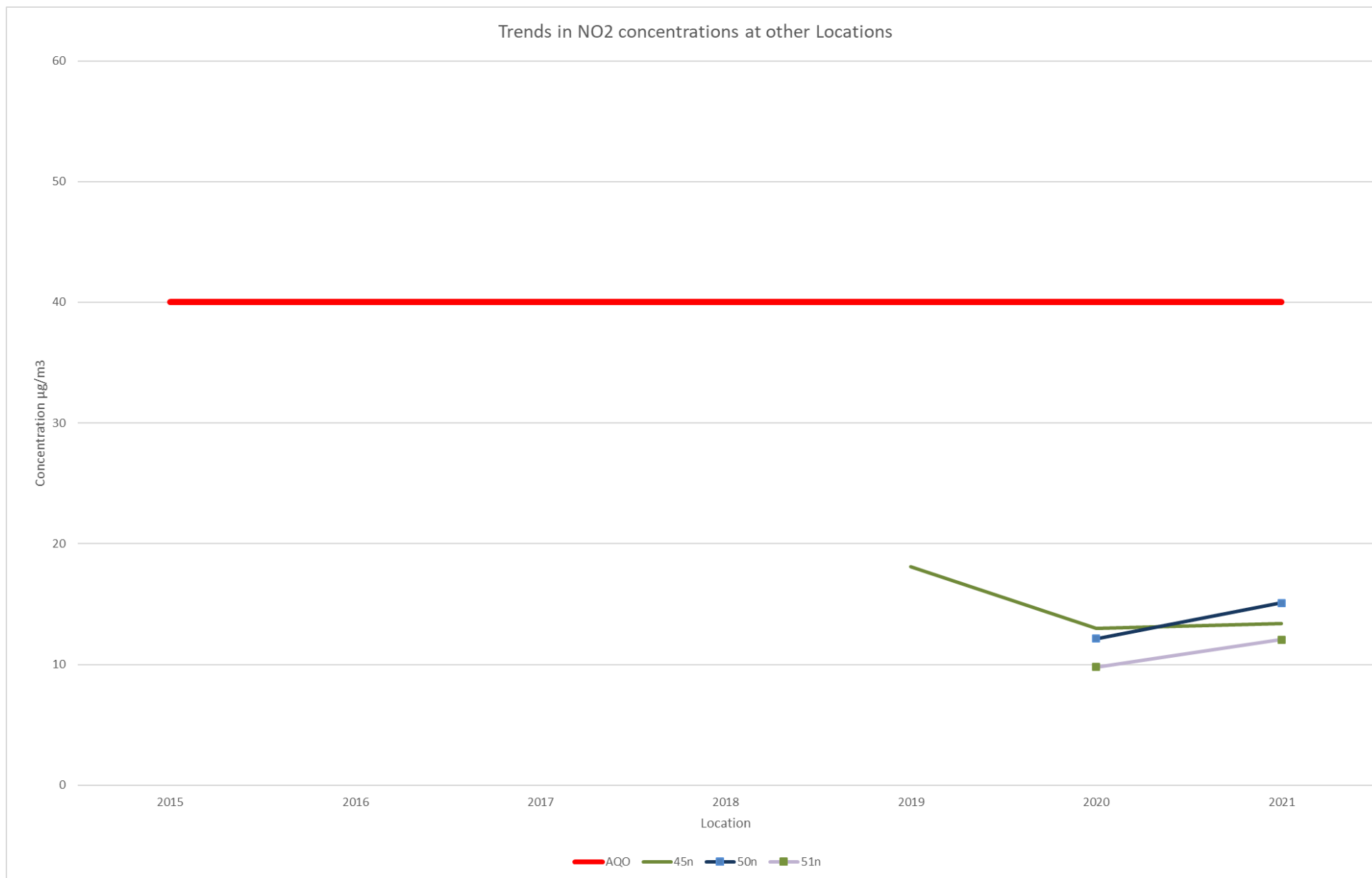


Table A.5 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	X OS Grid Ref (Eastin g)	Y OS Grid Ref (Northin g)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
A1	468114	294353	Roadside	99.8%	99.8%				0	0
Z2	468309	294352	Roadside	87.02 %	87.02 %				3 (153)	0

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 (Eastin g)	Y OS Grid Ref (Northin g)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
Z2	468309	294352	Roadside	87.47 %	87.47 %				16.2	9.18

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

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 (Eastin g)	Y OS Grid Ref (Northin g)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2021 (%) ⁽²⁾	2017	2018	2019	2020	2021
Z2	468309	294352	Roadside	87.47 %	87.47 %				0 (20.63)	0

CLICK HERE THEN PASTE COMPLETED DATA ROWS FROM ASR EXCEL TEMPLATE

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
Z2	468309	294352	Roadside	87.47 %	87.47 %				9.21	6.82

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
01n	454475	284560	45.3		44.8	39.1	40.0	33.0	36.2	29.3	43.5	45.5	51.6	41.6	40.7	31.7	-	
11n	454539	284932	42.1		28.8	30.2	28.8	26.0	25.6	21.3				30.3	28.7	22.9	-	
12n	468425	294314	25.3		31.0	24.3	28.6	20.6	23.7	19.5	26.2	37.4	46.0	35.5	29.1	22.7	-	
18n	454443	284348	46.5		36.0	45.6	41.1	24.8	34.3	16.0	44.3	34.9	42.5	37.0	36.4	28.4	-	
22n	454533	284872	29.3		19.7	18.2	16.9	14.0	15.5	5.7	19.4	20.7	25.1	23.6	18.7	14.6	-	
23n	454428	284274	41.0		32.2	31.9	23.9	28.3	24.3	33.1	25.3	29.4	33.0	30.5	29.9	23.3	-	
24n	454410	284326	46.4		41.5	40.7	31.6	23.4	34.7		39.6	33.3	47.5	35.5	37.0	28.8	-	
25n	454497	284618	37.0		33.6	34.7	30.7	24.8	28.1	19.6	23.5	34.6	37.7	36.5	31.1	24.3	-	
26n	454432	284229	42.7		39.5	32.0	29.2	25.3	29.7	28.9	31.2	39.3	39.7	34.7	33.6	26.2	-	
27n	454476	284178	40.9		30.7	29.5	27.1	24.8	37.4	15.9	32.0	32.6	35.3	31.1	30.5	23.8	-	
28n	466535	285545	21.3		15.6	14.5	15.7	11.8	14.5	10.1	16.3	14.6	22.0	18.4	15.7	12.2	-	
29n	466651	285607	26.5		25.4	21.5	20.1	16.7	19.5	16.2	22.8	25.2	32.0	25.3	22.7	17.7	-	
30n	466651	285607			19.6	14.8	15.3	10.6	15.0	14.8	20.6	21.2	25.0	23.1	18.0	14.1	-	
31n	467933	294660	36.9		35.8	37.4	28.8	29.8	29.5	15.6	30.5	32.8	47.8	32.8	32.4	25.2	-	
32n	448065	287719	31.7		25.0	29.3	24.0	21.6	24.3	20.5	28.1		34.1	27.0	26.4	20.6	-	
33n	448948	286554	29.3		22.7	20.0	21.8	18.1	20.5	15.4	21.7	24.7	31.0	27.2	22.8	17.8	-	
34n	468143	294351	50.0		53.7	41.7	48.9	40.8	48.7	40.7	52.7	46.2	60.9	53.9	48.7	38.0	36.6	

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
35n	468022	294450	34.6		42.1	37.8	40.1	28.1	39.7	32.0	47.3	41.6	49.8	39.8	39.4	30.7	-	
36n	468309	294352	32.8		35.2	32.5	33.1	28.9	34.9	18.6	32.2	41.5	45.0	40.7	34.4	26.8	-	
37n	473749	287214	29.6		27.1	25.5	26.7	18.3	24.4	18.2	30.4	29.1	33.6	30.0	26.6	20.7	-	
38n	468403	294298	22.1		20.3	20.7	17.0	14.8	16.3	12.6	22.2		27.7	23.2	19.6	15.3	-	
39n	468412	294218	25.3		21.8	16.0	15.3	14.1	14.3	14.1	18.8	20.2	27.6	24.6	19.1	14.9	-	
40n	468027	294570	29.2		22.8	16.8	17.0	9.1	15.9	16.8	21.7	24.4	32.4	26.6	20.9	16.3	-	
41n	468982	293824	27.4		21.8	18.1	17.1	15.6	14.4	14.7	21.2	18.1	25.4	20.3	19.1	14.9	-	
42n	469037	293796	28.8		22.8	24.3	20.6	19.6	18.5	17.0	23.7	19.5	26.9	19.8	21.6	16.8	-	
43n	453583	292002	34.5		25.3	25.1	20.4	20.5	18.3	17.0	25.5	22.3	29.3	25.6	23.6	18.4	-	
44n	453625	291935	31.0			20.6	17.8	17.5			21.5	19.0	27.4	26.1	22.2	16.0	-	
45n	456575	283605	23.5		16.9	13.9	14.9	12.0	14.3	11.7	19.1	18.7	22.6	21.6	17.0	13.3	-	
46n	473596	286821	37.9		29.9			25.1	29.7		26.9	39.6		34.5	32.1	24.1	-	
47n	473598	286851	45.6		33.7	39.2	33.5	30.7	30.4	24.9	32.3	30.1	34.5	33.5	33.2	25.9	-	
48n	473172	287534	34.2		29.2	34.0	32.3	29.5	25.3	26.0	19.9	25.9	33.0	27.9	28.7	22.4	-	
49n	473678	286931	37.9		29.0	29.2	26.2	23.7	26.2	21.0					27.2	22.8	-	
50n	464971	293501	26.4		19.1		15.8	14.6	16.1	16.2			24.1	22.6	19.1	14.9	-	
51n	464773	303914	21.5		16.7	13.5	10.9	9.9	9.0	10.4			27.5	19.8	15.1	11.8	-	

CLICK HERE THEN PASTE COMPLETED DATA ROWS FROM LAQI DATA PROCESSING TOOL (IF UTILISED)

- All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1.
- Annualisation has been conducted where data capture is <75% and >25% in line with LAQM TG16.
- Local bias adjustment factor used.
- National bias adjustment factor used.

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

Harborough 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 Harborough District During 2021

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

Additional Air Quality Works Undertaken by Harborough District Council During 2021

Harborough District Council has not completed any additional works within the reporting year of 2021.

QA/QC of Diffusion Tube Monitoring

Diffusion tubes for 2021 were supplied by Socotec (Didcot) prepared using 50% TEA in acetone. The laboratories QA/QC information is attached as appendix C1.

Diffusion Tube Annualisation

Annualisation of 5 diffusion tubes (11n, 44n, 46n, 49n and 50n) was required as they only had 55-70% data coverage for 2021.

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/NO₂ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Harborough District Council have applied a National bias adjustment factor 0.78 to the 2021 monitoring data. A summary of bias adjustment factors used by Harborough District Council over the past five years is presented in Table C.1.

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-	0.77
2019	National	03/20	0.75
2018	National	03/19	0.76
2017	National	03/18	0.77
2016	National	03/17	0.77

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 Table B.1.

1 diffusion tube location (34n) required distance correction in 2021, details of the calculations are included in the Diffusion tube processing tool attached as appendix C2

QA/QC of Automatic Monitoring

Chemiluminescence analyser

- LSO calibration of the councils Chemiluminescence analyser is undertaken by environmental technologies limited.
- Data ratification and QA/QC is undertaken by Air Quality Data Management. AQDMs 2020 report and QA/QC procedures are attached as appendix C4

Zephyr analyser

- The analyser is provided by and data is managed by EarthSense Systems Limited

PM₁₀ and PM_{2.5} Monitoring Adjustment

No adjustments of the Zephyr PM₁₀ and PM_{2.5} data have been made as a result of the method of monitoring.

Automatic Monitoring Annualisation

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

NO₂ Fall-off with Distance from the Road

No automatic NO₂ monitoring locations within Harborough District required distance correction during 2021.

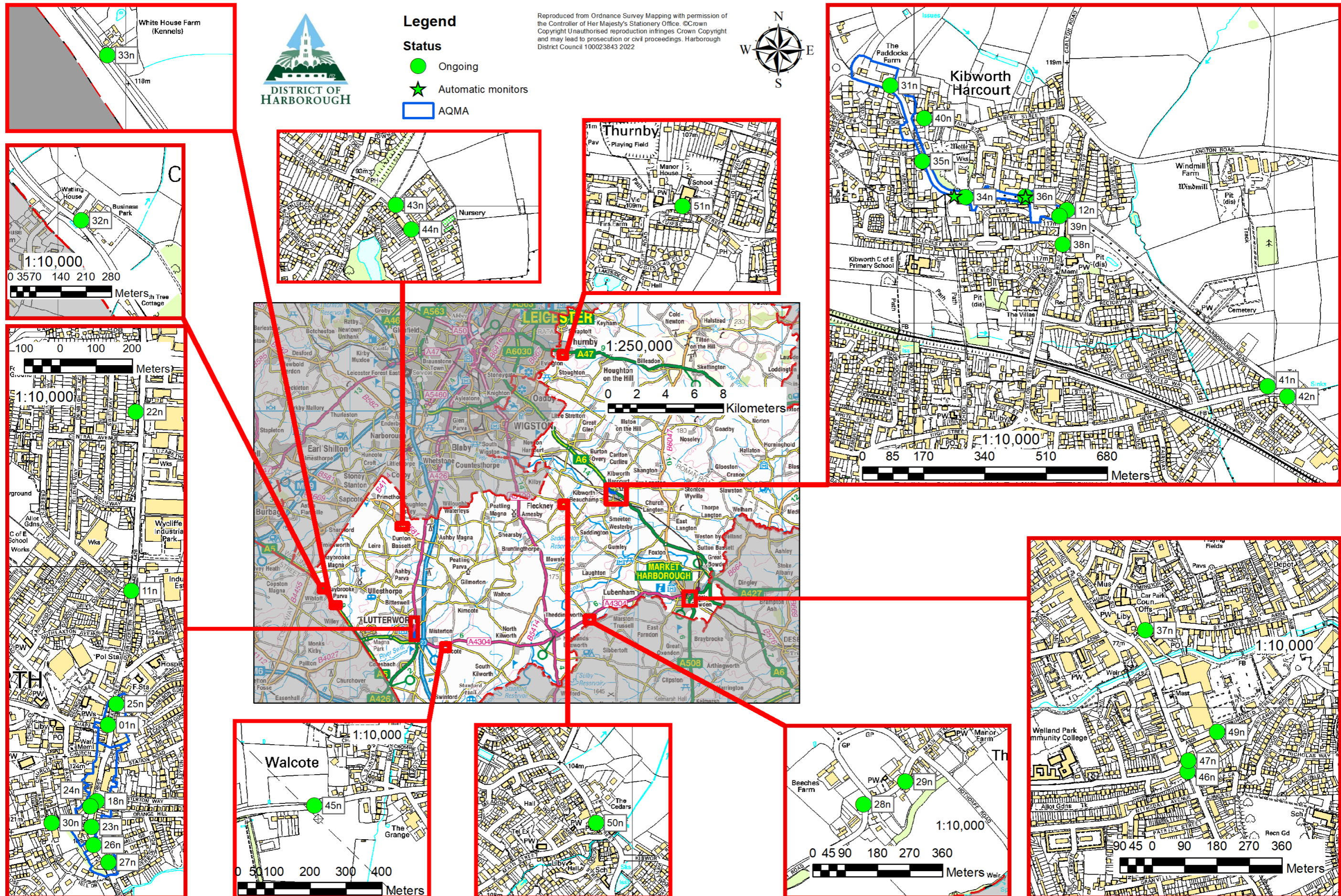
Table C.2 – Annualisation Summary (concentrations presented in $\mu\text{g}/\text{m}^3$)

Site ID	Annualisation Factor Cannock A5190 Roadside	Annualisation Factor Coventry Allesley	Annualisation Factor Leamington Spa Rugby Road	Annualisation Factor Leicester University	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
11n	1.0142	1.0702	1.0605	0.9555	1.0251	28.7	29.4	
44n	0.9234	0.9429	0.9463	0.8822	0.9237	22.2	20.5	
46n	0.9638	0.9629	1.0011	0.9220	0.9624	32.1	30.9	
49n	1.0570	1.1324	1.1227	0.9796	1.0729	27.2	29.2	
50n	1.0165	1.0275	1.0428	0.9159	1.0007	19.1	19.1	

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

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted)	Background Concentration	Concentration Predicted at Receptor	Comments
34n	2.3	2.8	38.0	8.2	36.6	<i>Predicted concentration at Receptor within 10% the AQS objective.</i>

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



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.
- National Diffusion Tube Bias Adjustment Factor Spreadsheet. March 2022. Published by DEFRA.
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