2021 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Date: June, 2021

Information	Harborough District Council Details
Local Authority Officer	Gareth Rees
Department	Regulatory Services
Address	Council Offices The Symington Building Adam and Eve Street Market Harborough Leicestershire LE16 7AG
Telephone	01858 828282
E-mail	airquality@harborough.gov.uk
Report Reference Number	ASR_HDC_2020
Date	

Executive Summary: Air Quality in Our Area

Air Quality in Harborough District

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

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

The Council has two AQMAs:

- One AQMA in Lutterworth declared for exceedances of the annual mean Air Quality Objective (AQO) for Nitrogen Dioxide (NO_2). 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 (NO_2). 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 2020

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

Actions to Improve Air Quality

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

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

- During 2020 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
- The council took part in clean air day

Conclusions and Priorities

The ASR concludes that

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

In 2021 the council plans to

- Continue to monitor in Lutterworth to show that the AQS for NO2 continues to be met.
- Work with LCC highways to progress junction improvements in the Kibworths.

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

---

[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

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

- DEFRAs UK-AIR: Air Information Resource website
  https://uk-air.defra.gov.uk/

- DEFRAs Local Air Quality Management (LAQM) Support website
  http://laqm.defra.gov.uk/

- Environmental Protection UK Air Pollution website
  http://www.environmental-protection.org.uk/policy-areas/air-quality/about-air-pollution/

Table of Contents

Figures

Tables

1 Local Air Quality Management

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

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

A summary of AQMAs declared by Harborough District Council can be found in Table 2.1. The table presents a description of the 2 AQMAs that are currently designated within Harborough District .Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMAs and also the air quality monitoring locations in relation to the AQMAs. The air quality objectives pertinent to the current AQMA designations are as follows:

- NO_2 annual mean;

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
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	29.2	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	37.6	Feb-19	http://www.harborough.gov.uk/download/downloads/id/5104/2019_kibworth_air_quality_action_plan.pdf

☒ **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.**

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

Defra's appraisal of last year's ASR concluded

1. The Public Health Outcomes Framework was referred to and this is encouraged to continue.
2. Comments from last year's Appraisal are included and responded to.
3. The map clearly shows the AQMA boundaries and extent of the monitoring network with monitoring locations labelled relevant to the results table.
4. Trends are presented and a robust comparison with air quality objectives is provided.
5. All the relevant sections of the Action Plan Measures table have been completed where possible. Splitting up the measures into separate tasks has given more clarity on the progress of the measures, and which tasks are currently active.
6. Concentrations of NO_2 in the Lutterworth AQMA have been below the annual mean air quality objective for the 2nd year running. This shows the success of the HDV gating system implemented. If this trend continues, with no readings within 10% of the objective for 5 years, the Council could consider revoking the AQMA.
7. Concentrations have increased at site 35n and are now within 5% of the air quality objective. It is recommended to pay close attention to this location over the next couple of years.
8. Annualisation was carried out for the 7 new monitoring sites and calculations provided in the appendix. Data from 9 continuous monitoring sites was used for the calculation. Whilst this is good practice (the more sites, the more robust), in future, these sites should be background (Urban Background, Suburban or Rural) sites where possible. This is to avoid any very local effects that may occur at Urban Centre, Roadside or Kerbside sites, and should, wherever possible lie within a radius of about 50 miles.
9. Overall this is an excellent report, showing the hard work Harborough District Council have put into tackling air quality in the district.

Harborough District Council has taken forward a number of direct measures during the current reporting year of 2020 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. 6 measures are included within Table 2.2, with the type of measure and the progress Harborough District Council have made during the reporting year of 2020 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

2.2.1 Lutterworth AQMA

Concentrations of NO_2 have been below the Annual Mean air quality Objective for the 3rd year running since the HGV gating system has been implemented. No specific actions beyond monitoring have been undertaken in Lutterworth.

Nitrogen Dioxide Trend in Lutterworth AQMA since 2010

Legend:
- 01n Service Shop market street
- 18n Jazz Hair high St
- 23n 6 The Terrace Rugby Rd
- 24n 4-9 Regent Court
- 25n 26 Market St
- 26n 24 Rugby Rd
- 27n 17 Rugby Rd
- AQO
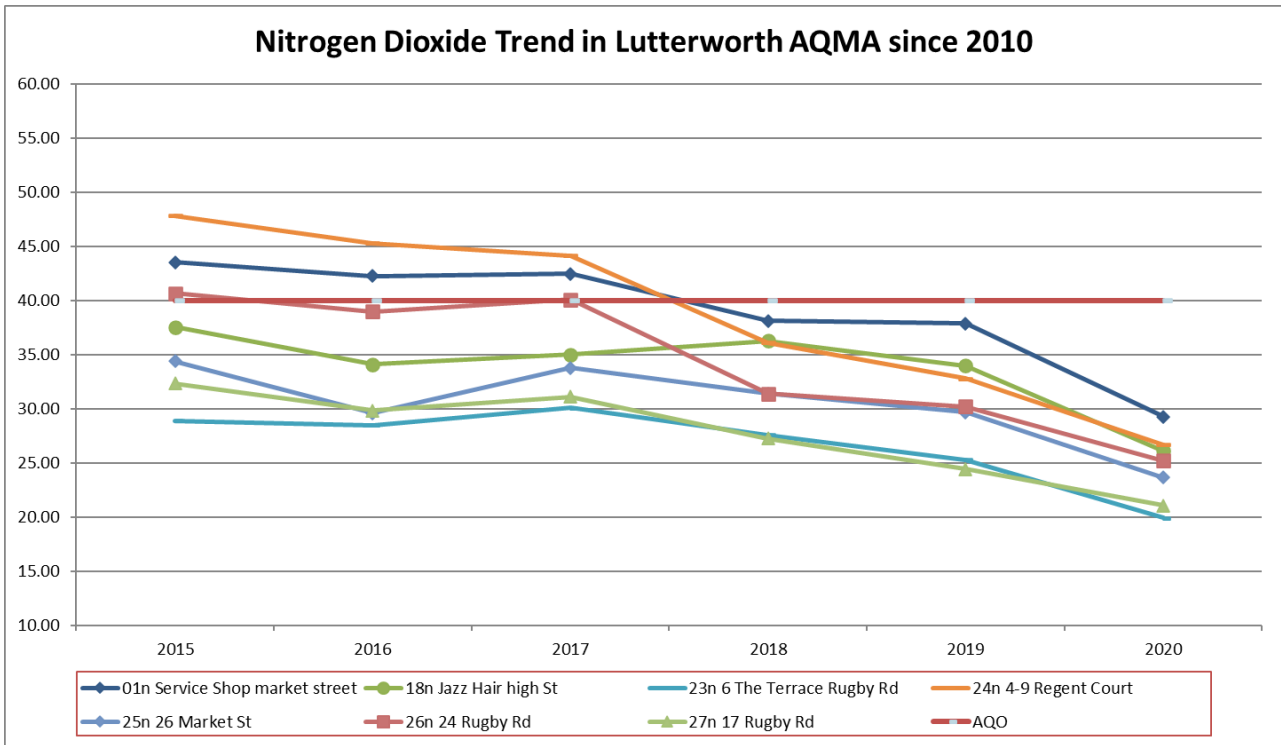
2.2.2 Kibworth AQMA

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 2.2 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 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
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 compete. LCC Highways require further evidence of likely reduction before they would be willing to consider implementation
Kibworth 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 improvements.										Completed				
	3. Undertake air quality impact assessment of										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
	junction improvements.														
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
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	Public Information	Via the Internet	2018		Harborough District Council,	Harborough District Council,	NO	Funded		Implementation			ongoing	

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
	residents. Provide information on air quality to residents in an accessible format.														
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	

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

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

The Public Health Outcomes Framework (PHOF) (https://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

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

This section sets out the monitoring undertaken within 2020 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 2016 and 2020 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Harborough district Council undertook automatic (continuous) monitoring at 1 site during 2020. 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 2 locations during 2020,

- Springfield Street in Market Harborough from 14/02/2020 to 03/06/2020

- A6 in Kibworth from 03/06/2020 to 31/12/2020

3.1.2 Non-Automatic Monitoring Sites

Harborough District Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 34 sites during 2020. Table A.2 in Appendix A presents the details of the non-automatic sites.

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

3.2 Individual Pollutants

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

3.2.1   Nitrogen Dioxide (NO$_2$)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO$_2$ annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2020 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Table A.5 in Appendix A compares the ratified continuous monitored NO$_2$ hourly mean concentrations for the past five years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

3.2.1.1 The Kibworths

There are 10 long term diffusion tube monitoring locations within the Kibworths. During 2020 all locations were below the Annual mean Air quality Standard for NO$_2$, however location 34n did exceed 36µg.m^{-3}. The low results are likely the result of reduced traffic caused by the COVID19 lockdowns.

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 NO$_2$.

3.2.1.2 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 NO$_2$. This is the 3rd year that the air quality standard has been achieved however, results were substantially lower in 2020 than in previous years (around 10µg.m^{-3} lower) this is likely a result of the COVID19 lockdowns.

3.2.1.3 Theddingworth

There are 2 long term diffusion tube monitoring locations in Theddingworth both were below the annual mean air quality standard for NO_2.

3.2.1.4 A5

There are 2 long term diffusion tube monitoring locations along the A5, both were below the annual mean air quality standard for NO_2.

3.2.1.5 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 NO_2.

3.2.1.6 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 NO_2.

3.2.1.7 Walcote

There is 1 long term diffusion tube monitoring location within Walcote, the location was below the annual mean air quality objective for NO_2

3.2.1.8 Other Locations

2 Locations were commissioned during 2020 in Fleckney (50n) and Bushby (51n) both locations recorded concentrations below the Annual mean air quality objective for NO_2.

3.2.2 Particulate Matter (PM_{10})

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past five years with the air quality objective of $40\mu g/m^3$.

Table A.7 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past five years with the air quality objective of $50\mu g/m^3$, not to be exceeded more than 35 times per year.

3.2.2.1 The Kibworths

The zephyr low cost analyser has been located in Kibworth since 3/6/2020. During that time. When annualised the annual mean is below the Annual mean air quality objective

for PM_{10} and no exceedences of the daily mean air quality objective for PM_{10} were detected.

3.2.2.2 Market Harborough

The zephyr low cost analyser has been located on Springfield Street between 14/02/2020 and 3/6/2020. During that time when annualised the annual mean is below the Annual mean air quality objective for PM_{10} and no exceedences of the daily mean air quality objective for PM_{10} were detected.

3.2.3 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.

3.2.3.1 The Kibworths

The zephyr low cost analyser has been located in Kibworth since 3/6/2020. During that time. When annualised the annual mean is below the Annual mean air quality objective for $PM_{2.5.}$

3.2.3.2 Market Harborough

The zephyr low cost analyser has been located on Springfield Street between 14/02/2020 and 3/6/2020. During that time when annualised the annual mean is below the Annual mean air quality objective for $PM_{2.5}$.

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	NO2	yes Kibworth	chemiluminesence	9	2.5	1.8
Z1	Springfield Street	Roadside	473678	286931	NO2 PM2.5 PM10	No	Zephyr	2.1	1.9	2.5
Z2	Kibworth	Roadside	468309	294352	NO2 PM2.5 PM10	yes Kibworth	Zephyr	0	1.4	2.5

CLICK HERE THEN PASTE COMPLETED DATA ROWS FROM ASR EXCEL TEMPLATE

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	Lutterworth	0.0	4.2	No	1.8
11n	Day Nursery	Roadside	454539	284932	NO2		9.0	1.3	No	1.8
12n	A6 Kibworth	Roadside	468425	294314	NO2	Kibworth	10.7	1.3	No	1.8
18n	Jazz Hair	Roadside	454443	284348	NO2	Lutterworth	0.0	3.0	No	1.8
22n	77 leicester road	Roadside	454533	284872	NO2		0.0	13.5	No	1.8
23n	6 The Terrace Rugby Road	Roadside	454428	284274	NO2	Lutterworth	0.0	2.5	No	1.8
24n	regent court	Roadside	454410	284326	NO2	Lutterworth	2.0	1.0	No	1.8
25n	26 Market Street Lutterworth	Roadside	454497	284618	NO2	Lutterworth	1.6	4.8	No	1.8
26n	24 Rugby Road Lutterworth	Roadside	454432	284229	NO2	Lutterworth	0.0	2.0	No	1.8
27n	17 Rugby road Lutterworth	Roadside	454476	284178	NO2	Lutterworth	3.7	5.2	No	1.8
28n	Spencerdene main street theddingworth	Roadside	466535	285545	NO2		1.2	0.2	No	1.8
29n	Homeside main street Theddingworth	Roadside	466651	285607	NO2		0.2	1.4	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)
30n	40 regent street lutterworth	Roadside	466651	285607	NO2	Lutterworth	0.2	1.4	No	1.8
31n	69 leicester road Kibworth	Roadside	467933	294660	NO2	Kibworth	3.5	4.0	No	1.8
32n	Alma House, Watling Street Claybrooke Parva	Roadside	448065	287719	NO2		0.0	7.0	No	1.8
33n	sign post outside White House Farm Watling street	Roadside	448948	286554	NO2		14.0	1.0	No	1.8
34n	sign outside 64 Leicester Road Kibworth	Roadside	468143	294351	NO2		0.5	2.3	No	1.8
35n	lamppost outside 78 leicester road kibworth	Roadside	468022	294450	NO2	Kibworth	3.1	6.4	No	1.8
36n	signpost just north of 11 Leicester road Kibworth	Roadside	468309	294352	NO2	Kibworth	0.0	1.4	No	1.8
37n	pizza Express st marys road	Roadside	473749	287214	NO2		0.0	1.4	No	1.8
38n	coach and horse kibworth	Roadside	468403	294298	NO2	Kibworth	2.2	2.5	No	1.8
39n	lamppost 29 church road kibworth	Roadside	468412	294218	NO2		10.2	2.0	No	1.8
40n	106 main street kibworth	Roadside	468027	294570	NO2		0.0	1.7	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)
41n	lampost outside 52 Leicester Road	Roadside	468982	293824	NO2	Kibworth	9.0	2.2	No	1.8
42n	road sign on leicester road, rear of 9 Milestone Close	Roadside	469037	293796	NO2		12.0	2.0	No	1.8
43n	3 dunton road BA	Roadside	453583	292002	NO2		2.9	1.5	No	1.8
44n	26 Dunton Road BA	Roadside	453625	291935	NO2		2.0	0.2	No	1.8
45n	lampost est of 5 Lutterworth road Walcote	Roadside	456575	283605	NO2		3.0	0.2	No	1.8
46n	sw junction welland park road and northamton road MH	Roadside	473596	286821	NO2		14.0	2.3	No	1.8
47n	53 northamton road MH	Roadside	473598	286851	NO2		9.0	1.0	No	1.8
48n	7 leicester road MH	Roadside	473172	287534	NO2		2.6	2.9	No	1.8
49n	lamppost outside 12 Springfield Street MH	Roadside	473678	286931	NO2		2.1	1.9	No	1.8
50n	lamppost carpark adjacent Fleckney Fish bar, High street Fleckney	Roadside	464971	293501	NO2		0.1	2.0	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)
51n	lamppost outside thurnby memorial hall, main street, bushby	Roadside	464773	303914	NO2		1.6	3.8	No	1.8

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO$_2$ Monitoring Results: Automatic Monitoring (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
A1	468114	294353	Roadside	98.60%	98.60%				**43.97**	30.64
Z1	473678	286931	Roadside	100.00%	30.00%					32.85
Z2	468309	294352	Roadside	96.69%	56.16%					34.47

☒ **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/m^3.

Exceedances of the NO$_2$ annual mean objective of 40µg/m^3 are shown in **bold**.

All means have been "annualised" as per LAQM.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 NO$_2$ Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
01n	454475	284560	Roadside	99.7	99.7	**42.3**	**42.4**	38.1	37.9	29.2
11n	454539	284932	Roadside	99.7	99.7	26.6	26.6	30.1	**41.8**	21.6
12n	468425	294314	Roadside	99.7	99.7	21.7	23.8	28.4	29.4	20.7
18n	454443	284348	Roadside	92.1	92.1	34.1	35.0	36.2	34.0	26.1
22n	454533	284872	Roadside	99.7	99.7	19.1	19.8	17.6	18.3	14.3
23n	454428	284274	Roadside	99.7	99.7	28.5	30.1	27.6	25.3	19.9
24n	454410	284326	Roadside	84.0	84.0	38.1	37.1	36.1	32.8	26.7
25n	454497	284618	Roadside	99.7	99.7	28.2	32.0	31.4	29.7	23.6
26n	454432	284229	Roadside	99.7	99.7	39.0	**40.1**	31.4	30.2	25.2
27n	454476	284178	Roadside	99.7	99.7	27.1	28.0	27.3	24.4	21.0
28n	466535	285545	Roadside	99.7	99.7	16.9	16.5	16.4	17.5	14.5
29n	466651	285607	Roadside	99.7	99.7	26.8	27.9	22.2	21.6	14.6
30n	466651	285607	Roadside	89.7	89.7	20.3	22.6	17.1	17.6	12.7

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
31n	467933	294660	Roadside	99.7	99.7	30.5	33.6	31.0	28.6	23.6
32n	448065	287719	Roadside	90.2	90.2	29.9	29.2	25.1	23.9	18.8
33n	448948	286554	Roadside	99.7	99.7	18.1	18.8	24.4	21.9	16.4
34n	468143	294351	Roadside	89.7	89.7	**52.9**	**56.9**	**49.3**	**52.0**	37.6
35n	468022	294450	Roadside	99.7	99.7	33.4	32.5	32.0	38.5	26.2
36n	468309	294352	Roadside	99.7	99.7	**42.7**	**44.3**	34.4	34.5	24.8
37n	473749	287214	Roadside	99.7	99.7	**50.4**	29.7	25.9	27.7	20.3
38n	468403	294298	Roadside	99.7	99.7		22.5	19.4	19.8	15.0
39n	468412	294218	Roadside	99.7	99.7			18.1	17.7	13.9
40n	468027	294570	Roadside	99.7	99.7		24.4	21.0	21.1	16.1
41n	468982	293824	Roadside	99.7	99.7				19.3	13.4
42n	469037	293796	Roadside	99.7	99.7				21.6	15.3
43n	453583	292002	Roadside	99.7	99.7				19.1	15.4
44n	453625	291935	Roadside	99.7	99.7				22.8	15.3

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
45n	456575	283605	Roadside	99.7	99.7				18.1	13.0
46n	473596	286821	Roadside	99.7	99.7				31.4	22.0
47n	473598	286851	Roadside	70.7	70.7				27.0	21.9
48n	473172	287534	Roadside	90.8	90.8				26.1	18.5
49n	473678	286931	Roadside	75.0	75.0				26.0	17.9
50n	464971	293501	Roadside	70	58.7					12.8
51n	464773	303914	Roadside	70	58.7					10.3

☒ **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 $\mu g/m^3$.

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

NO_2 annual means exceeding $60\mu g/m^3$, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **<u>bold and underlined</u>**.

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 – Trends in Annual Mean NO$_2$ Concentrations in The Kibworths

Trends in NO2 concentrations The Kibworths
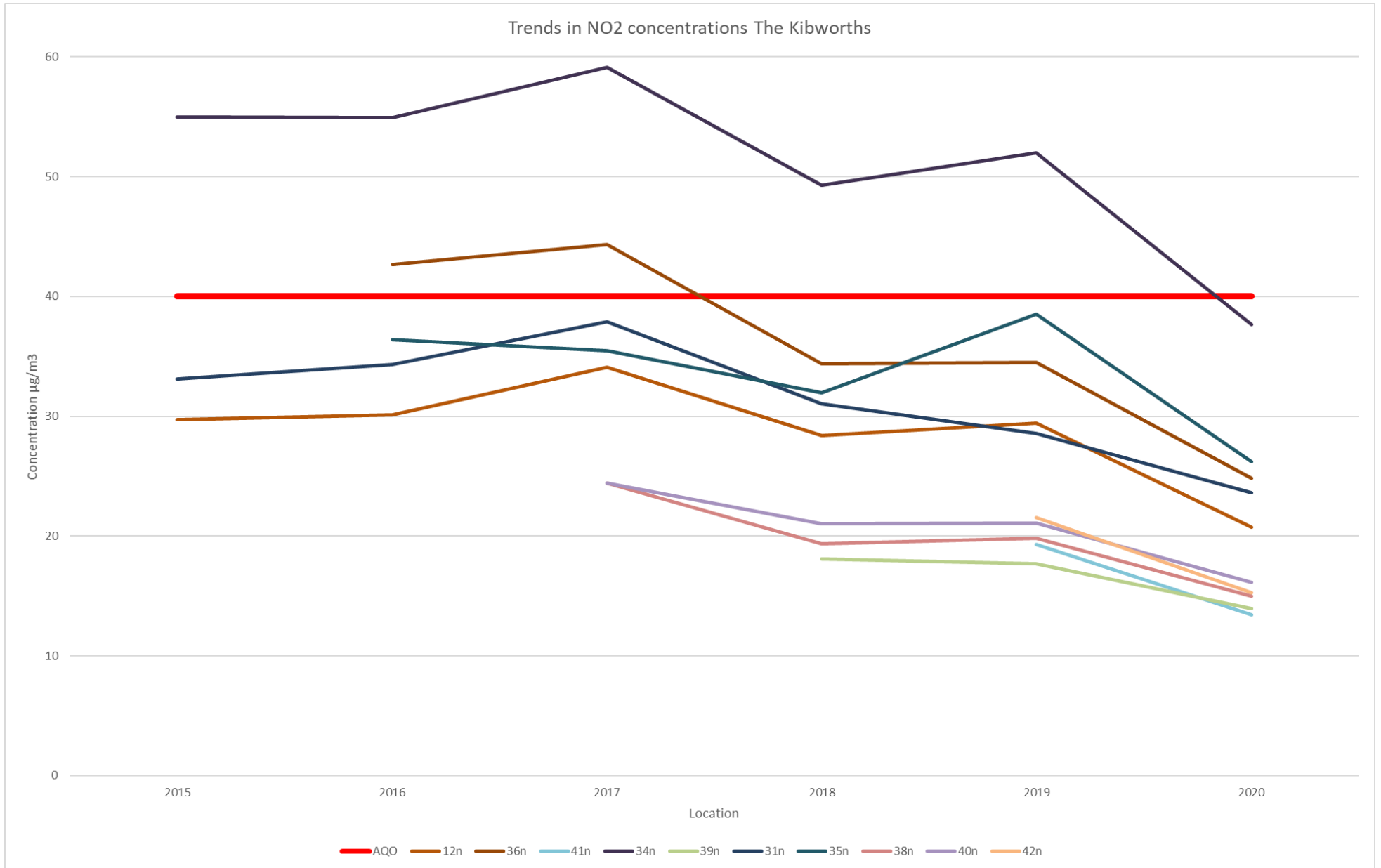
Figure A.2 – Trends in Annual Mean NO$_2$ Concentrations in Lutterworth

Trends in NO2 concentrations in Lutterworth
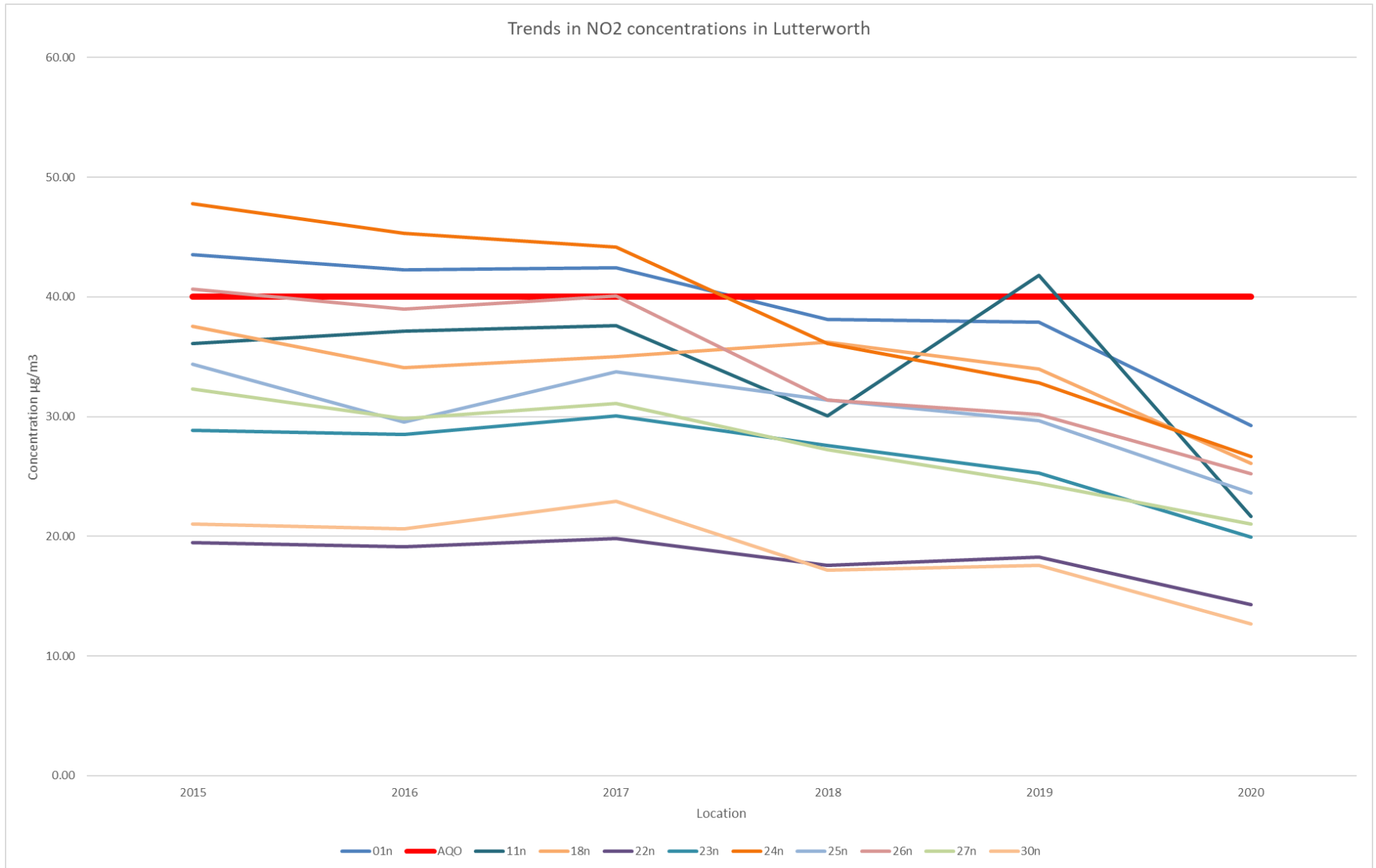
Figure A.3 – Trends in Annual Mean NO$_2$ Concentrations Theddingworth

Trends in NO2 concentrations in Theddingworth

Figure A.4 – Trends in Annual Mean NO$_2$ Concentrations on the A5

Figure A.5 – Trends in Annual Mean NO$_2$ Concentrations in Market Harborough
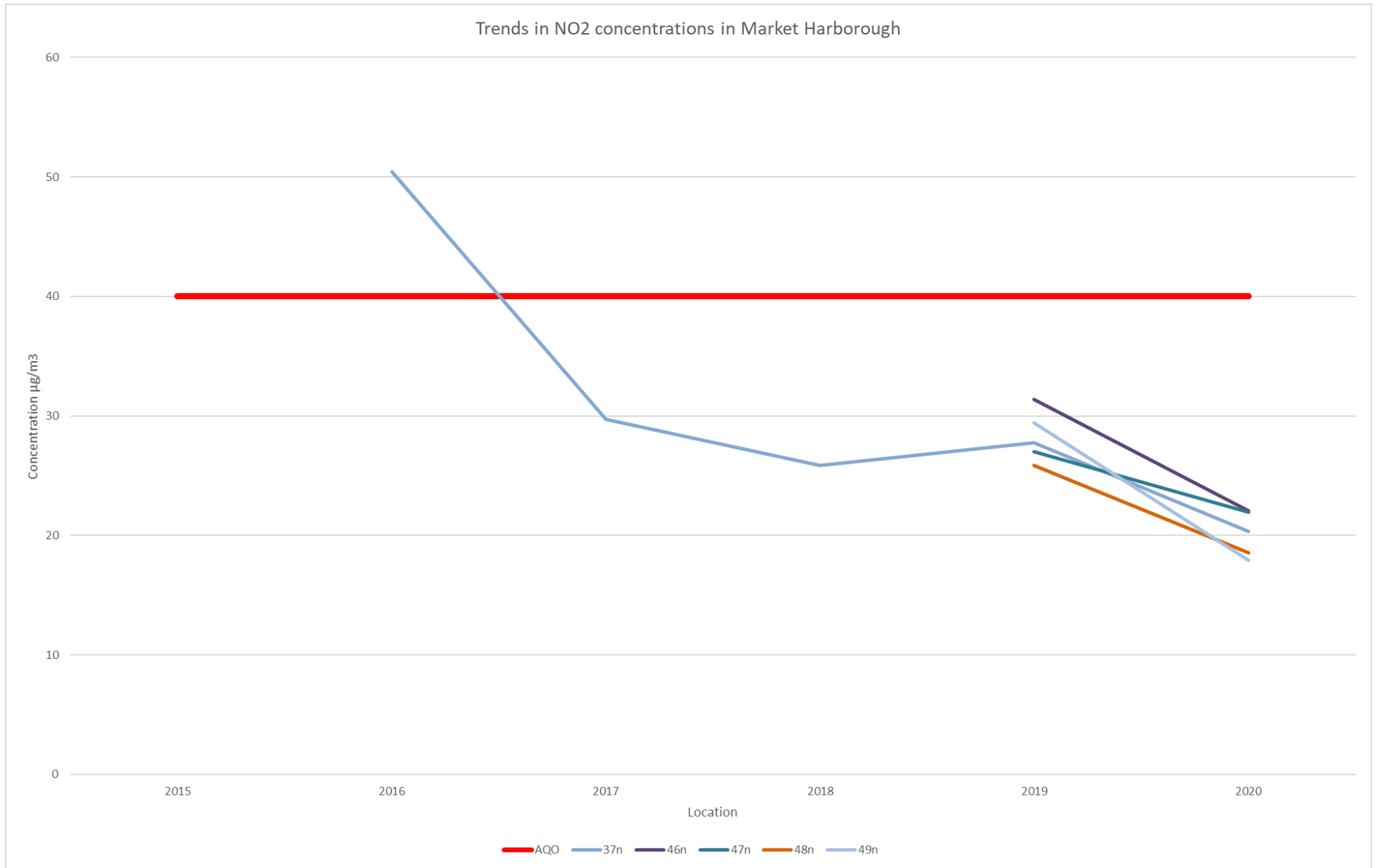
Figure A.6 – Trends in Annual Mean NO$_2$ Concentrations Broughton Astley
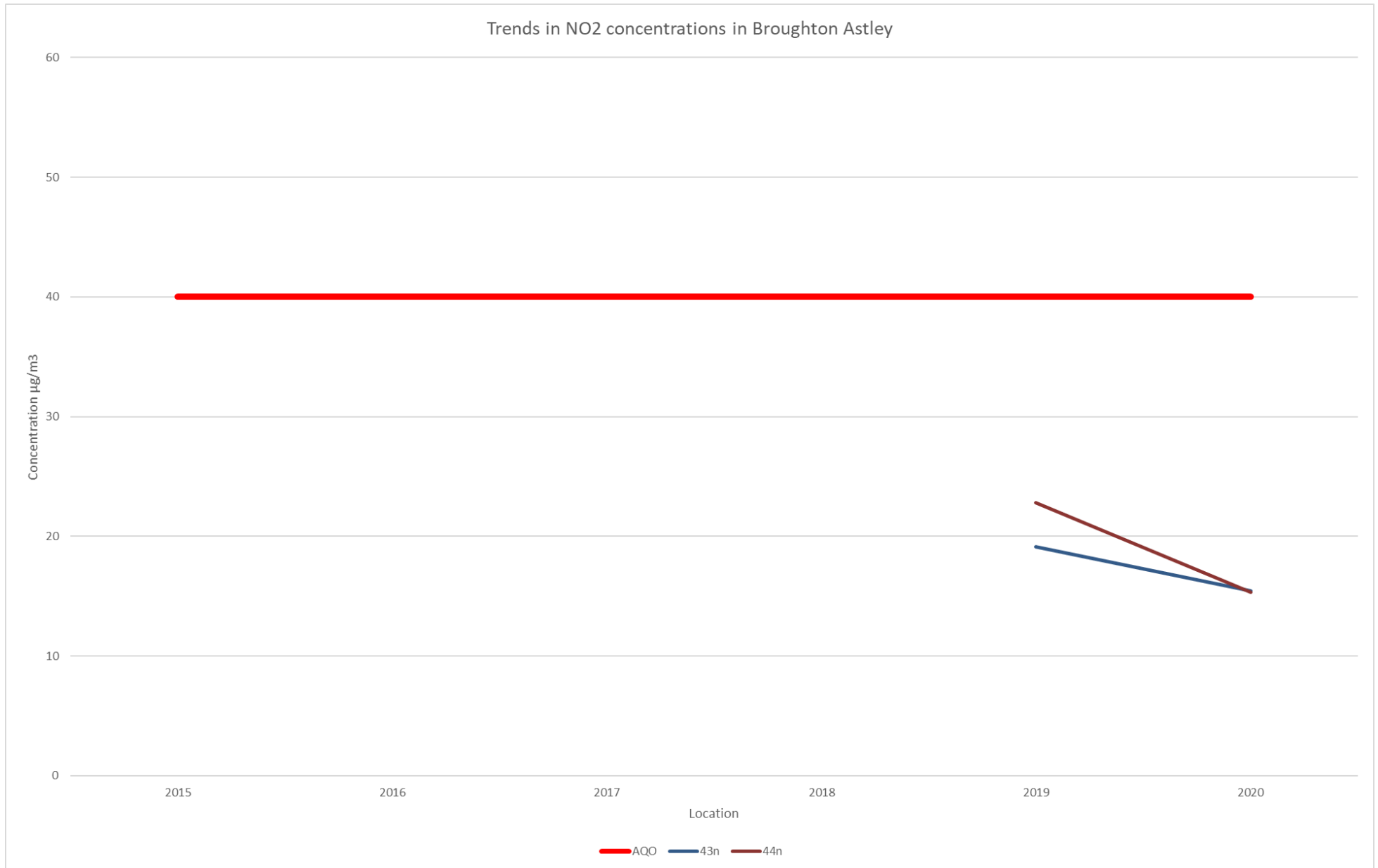
Figure A.7 – Trends in Annual Mean NO$_2$ Concentrations in Walcote
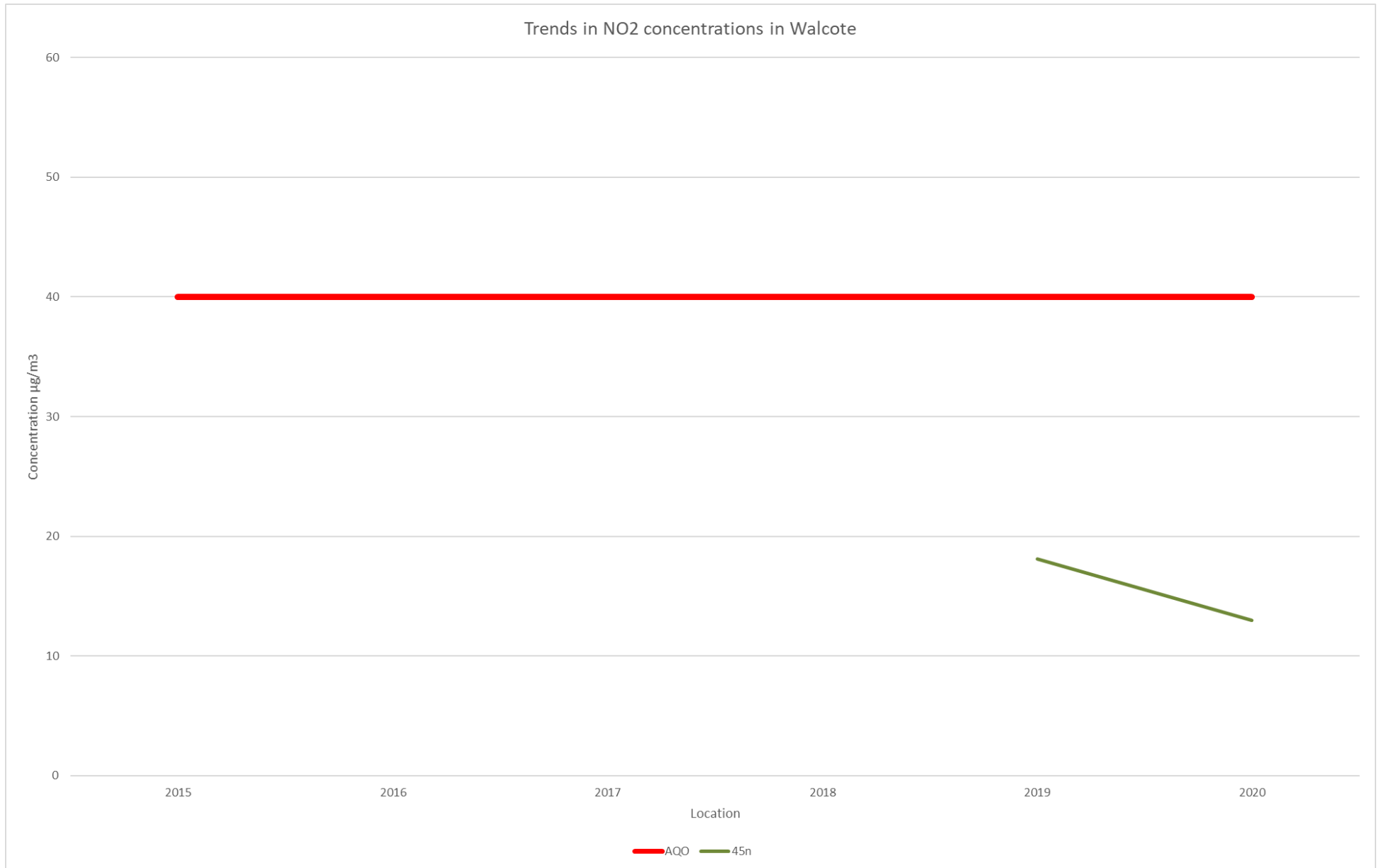
Figure A.8 – Trends in Annual Mean NO$_2$ Concentrations in Fleckney and Bushby
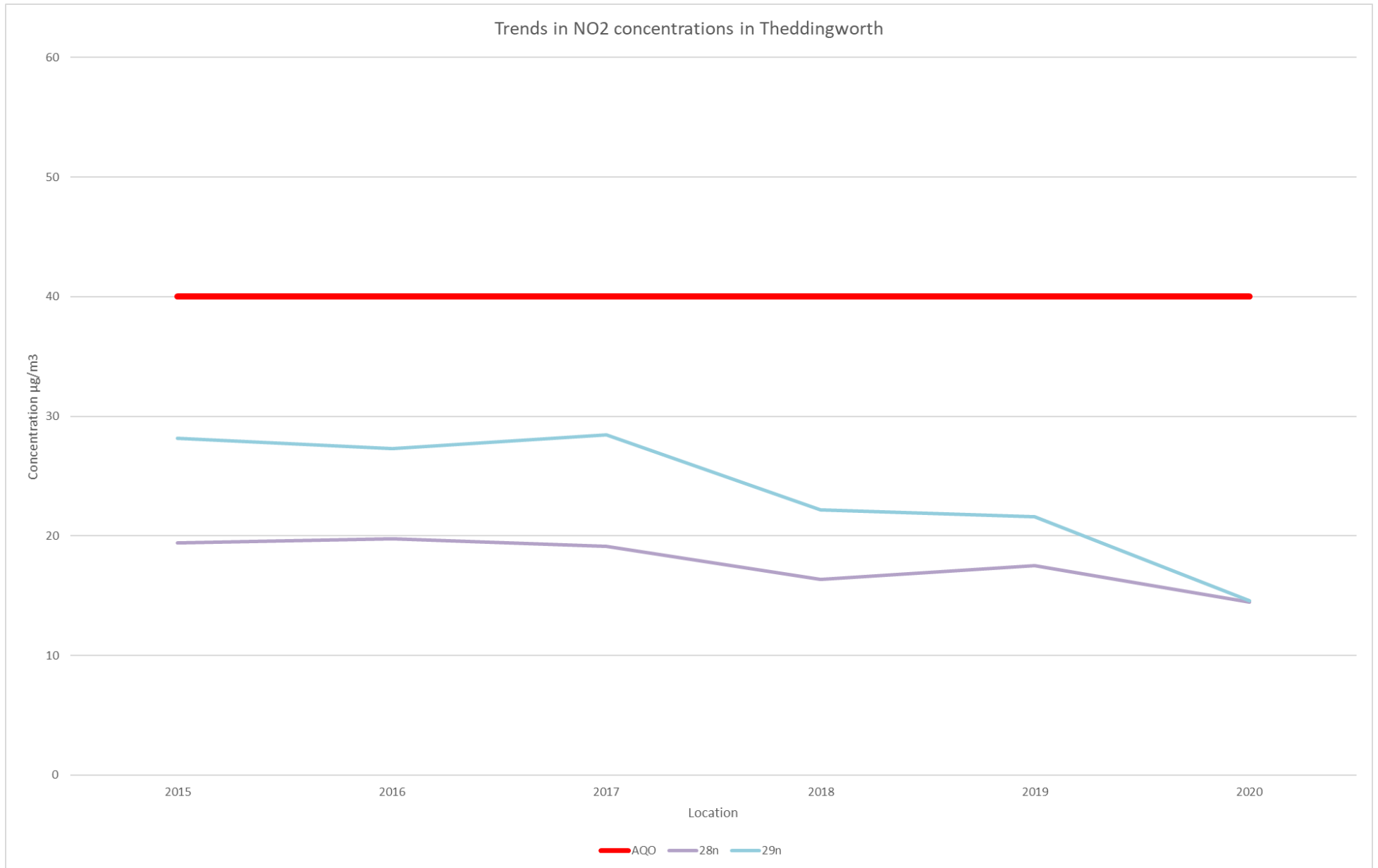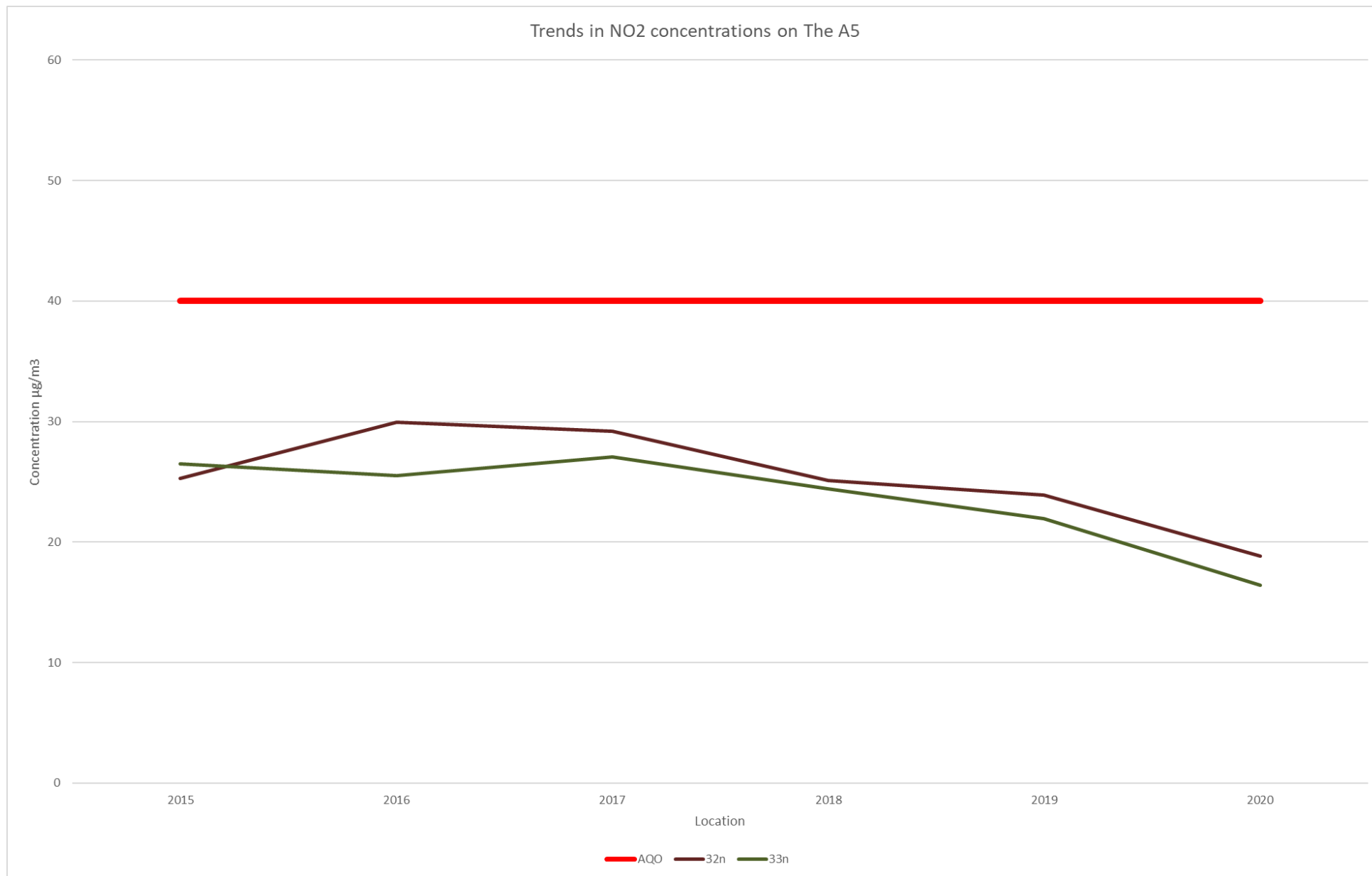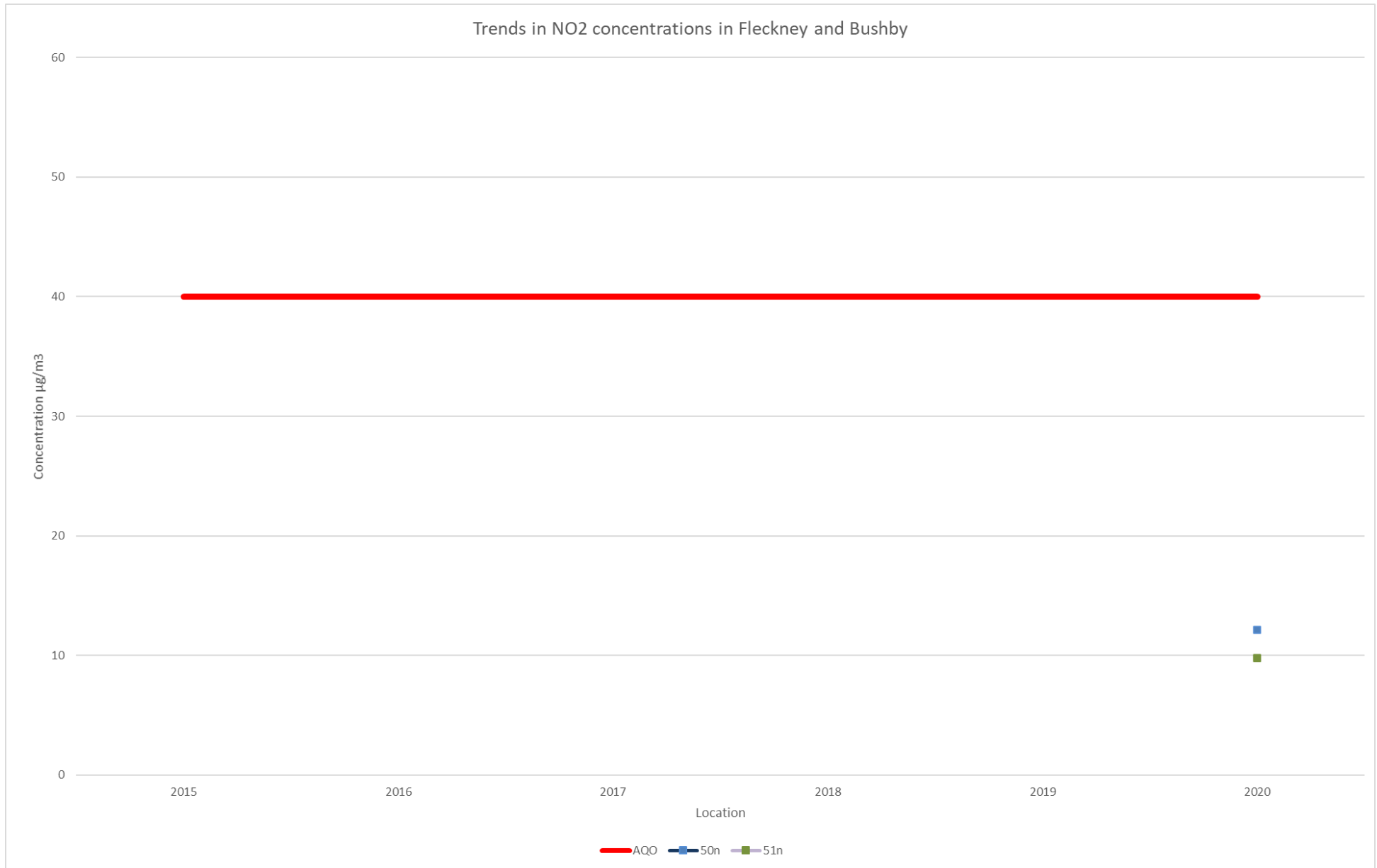
Table A.5 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
A1	468114	294353	Roadside	98.60%	98.60%				0	0
Z1	473678	286931	Roadside	100.00%	30.00%					**0 (99.9)**
Z2	468309	294352	Roadside	96.69%	56.16%					**3 (153)**

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 PM$_{10}$ Monitoring Results (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
Z1	473678	286931	Roadside	100.00%	30.00%					14.6
Z2	468309	294352	Roadside	96.69%	56.16%					16.2

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**

Notes:

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

Exceedances of the PM$_{10}$ annual mean objective of 40µg/m^3 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 PM$_{10}$ Monitoring Results, Number of PM$_{10}$ 24-Hour Means > 50µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
Z1	473678	286931	Roadside	100.00%	30.00%					**0 (26.67)**
Z2	468309	294352	Roadside	96.69%	56.16%					**0 (20.63)**

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/m^3 have been recorded.

Exceedances of the PM$_{10}$ 24-hour mean objective (50µg/m^3 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/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2020 (%) [2]	2016	2017	2018	2019	2020
Z1	473678	286931	Roadside	100.00%	30.00%					8.36
Z2	468309	294352	Roadside	96.69%	56.16%					9.21

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.**

Notes:

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

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 2020

Table B.1 – NO$_2$ 2020 Diffusion Tube Results (µg/m^3)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
01n	454475	284560	57.4	45.9	13.6	24.8	29.0	32.5	34.2	37.9	45.4	46.3	46.2	42.4	38.0	29.2	-	
11n	454539	284932	39.1	27.5	23.7	24.6	17.8	25.1	19.5	23.7	34.4	31.5	40.5	29.7	28.1	21.6	-	
12n	468425	294314	42.4	30.4	13.4	12.2	14.4	16.6	21.1	23.3	32.7	35.0	44.2	37.5	26.9	20.7	-	
18n	454443	284348	44.0	35.4	33.3	27.9	27.1	32.8	24.7	33.5	40.1	38.0		36.0	33.9	26.1	-	
22n	454533	284872	27.7	19.0	17.0	14.1	12.2	12.6	13.0	15.5	17.6	21.6	28.8	24.0	18.6	14.3	-	
23n	454428	284274	32.8	26.8	26.4	20.4	18.3	21.4	13.7	25.0	30.0	31.8	31.6	32.4	25.9	19.9	-	
24n	454410	284326	39.4	33.1	33.0			28.0	26.6	32.1	38.1	38.3	36.9	40.7	34.6	26.7	-	
25n	454497	284618	44.9	35.4	24.2	26.2	21.9	27.2	20.1	28.9	33.2	36.2	39.6	30.6	30.7	23.6	-	
26n	454432	284229	46.7	45.8	26.5	18.1	21.7	28.3	28.3	28.3	35.3	36.1	40.9	36.9	32.7	25.2	-	
27n	454476	284178	37.4	30.7	23.2	20.1	18.5	23.5	18.4	24.6	30.9	32.3	35.4	33.0	27.3	21.0	-	
28n	466535	285545	33.9	24.4	11.1	14.2	14.8	18.5	13.0	13.8	18.3	19.0	24.2	20.1	18.8	14.5	-	
29n	466651	285607	23.3	17.1	12.1	11.0	10.7	14.5	15.9	18.5	24.5	24.8	28.5	26.5	19.0	14.6	-	
30n	466651	285607	24.2	15.2	9.1	8.5	10.2	16.3	12.0	15.1	20.3	22.1	28.2		16.5	12.7	-	
31n	467933	294660	48.6	32.9	23.9	16.1	21.4	22.0	27.0	27.2	37.4	34.7	42.9	34.1	30.7	23.6	-	
32n	448065	287719	31.6	25.2	18.9	20.7	18.7	22.6	19.9	22.6	27.6		32.8	28.2	24.4	18.8	-	
33n	448948	286554	35.0	23.2	12.5	12.8	13.7	16.6	18.7	18.1	23.6	27.2	26.8	27.9	21.3	16.4	-	
34n	468143	294351	79.6	65.7	36.6	26.9	31.8	43.4	42.5	40.3	56.2	54.2	60.5		48.9	37.6	36.2	
35n	468022	294450	58.4	46.0	26.4	22.2	26.9	33.2	30.6	29.3	41.9	36.0	34.1	23.3	34.0	26.2	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.77)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
36n	468309	294352	47.3	33.8	17.5	20.3	21.8	31.8	25.5	28.8	39.6	38.4	48.2	33.7	32.2	24.8	-	
37n	473749	287214	42.8	29.2	16.9	13.5	14.9	21.7	22.5	25.5	29.9	28.6	37.9	33.2	26.4	20.3	-	
38n	468403	294298	31.4	22.5	16.6	11.3	11.6	14.1	12.3	14.1	20.9	21.4	31.3	26.0	19.5	15.0	-	
39n	468412	294218	27.8	21.4	17.1	10.5	11.5	13.3	12.4	14.2	21.6	22.6	24.5	20.0	18.1	13.9	-	
40n	468027	294570	37.6	27.2	15.4	12.2	11.1	12.4	15.8	15.3	22.1	26.8	31.0	24.5	21.0	16.1	-	
41n	468982	293824	28.4	17.5	14.8	12.6	11.5	13.6	12.5	14.0	21.2	22.9	31.3	8.8	17.4	13.4	-	
42n	469037	293796	29.8	18.9	10.5	15.6	16.6	18.6	12.7	17.4	23.3	21.5	30.4	22.6	19.8	15.3	-	
43n	453583	292002	23.0	15.6	10.3	17.3	15.3	18.2	14.1	20.4	24.6	25.0	30.0	26.8	20.1	15.4	-	
44n	453625	291935	25.9	19.2	18.6	11.6	13.6	15.8	17.9	17.4	25.1	19.6	26.7	27.4	19.9	15.3	-	
45n	456575	283605	30.7	19.7	13.5	10.4	9.6	12.8	12.1	12.5	18.4	19.0	21.9	21.6	16.9	13.0	-	
46n	473596	286821	47.8	32.2	21.7	19.8	17.2	23.7	19.2	25.5	31.5	34.1	40.4	30.3	28.6	22.0	-	
47n	473598	286851	40.4	24.6	24.2	24.5	25.0	29.1	21.1		33.9		33.7		28.5	21.9	-	
48n	473172	287534	31.7	18.1	16.0	19.0		22.9	16.7	24.5	30.4	27.2	32.8	25.3	24.1	18.5	-	
49n	473678	286931		25.5	19.7	18.5	18.4	23.8	18.5	23.0			33.8	28.1	23.3	17.9	-	
50n	464971	293501				11.9	10.4	11.7	11.2	13.7			26.8	24.6	15.8	12.8	-	
51n	464773	303914				6.0	7.0	8.4	9.5	8.7			27.5	21.8	12.7	10.3	-	

☒ **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 2020 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.**

Notes:

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

NO$_2$ annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO$_2$ 1-hour mean objective are shown in **<u>bold and underlined</u>**.

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 Councils During 2020

Following enquiries from parish councils Harborough District Council identified 1 road in Fleckney that was close to the Narrow congested streets with residential properties close to the kerb screening criteria in table 7.1 of LAQM.TG(16) and commissioned a new diffusion tube monitoring location. 1 new diffusion tube monitoring locations was commissioned in Bushby to provide confidence to the parish council that air quality was not a concern.

Additional Air Quality Works Undertaken by Harborough District Council During 2020

During 2020 Harborough District Council has been in negotiations with Leicestershire County Council Highways department on progressing junction improvements within the Kibworths AQMA, the council has also been researching what section 106 monies may be available to fund the works.

QA/QC of Diffusion Tube Monitoring

Diffusion tubes for 2020 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 2 diffusion tubes (50n and 51n) was required as they only had 58% data coverage for 2020.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2020 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under

or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Harborough District Council have applied a national bias adjustment factor of 0.77 to the 2020 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

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
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

NO_2 Fall-off with Distance from the Road

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

1 diffusion tube location (34n) required Annualisation in 2020, 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

PM_{10} and $PM_{2.5}$ Monitoring Adjustment

No adjustments of the Zephyr PM10 and PM2.5 data have been made as a result of the method of monitoring.

Automatic Monitoring Annualisation

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

NO_2 Fall-off with Distance from the Road

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

No automatic NO_2 monitoring locations within Harborough District Council required distance correction during 2020.

**Table C.2 – Annualisation Summary (concentrations presented in µg/m³)**

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
50n	0.9850	1.0773	1.0361	1.1103	1.0522	15.8	16.6	
51n	0.9850	1.0773	1.0361	1.1103	1.0522	12.7	13.4	
Z1 (no2)	1.18	1.27	1.20	1.14	1.20	27.45	32.85	
Z1 (pm10)	0.89	0.90	0.87	0.97	0.91	16.14	14.62	
Z1 (pm2.5)	0.91	0.93	0.90	0.98	0.93	8.99	8.36	
Z2 (no2)	1.02	1.01	1.00	1.03	1.01	34.01	34.47	
Z2 (pm10)	1.09	1.07	1.11	1.03	1.08	15.23	16.42	
Z2 (pm2.5)	1.09	1.08	1.11	1.04	1.08	8.53	9.21	

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	37.6	8.5	36.2	*Predicted concentration at Receptor within 10% the AQS objective.*

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

Figure D.1 – Map of Monitoring Locations and AQMAs
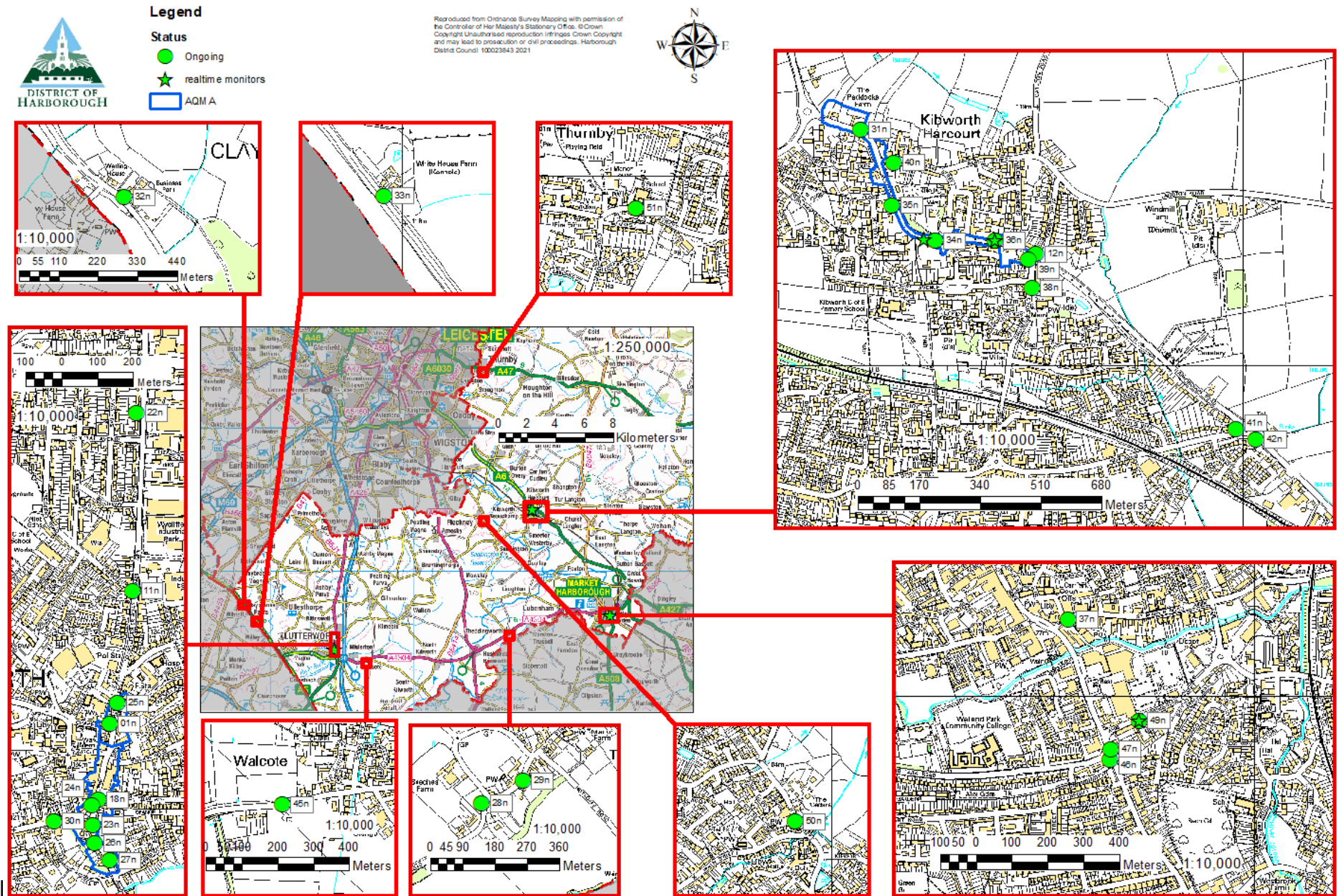
Appendix E: Summary of Air Quality Objectives in England

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

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO_2)	$200\mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO_2)	$40\mu g/m^3$	Annual mean
Particulate Matter (PM_{10})	$50\mu g/m^3$, not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM_{10})	$40\mu g/m^3$	Annual mean
Sulphur Dioxide (SO_2)	$350\mu g/m^3$, not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO_2)	$125\mu g/m^3$, not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO_2)	$266\mu g/m^3$, 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 ($\mu g/m^3$).

Appendix F: Impact of COVID-19 upon LAQM

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

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

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

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

---

[8] Prime Minister's Office, COVID-19 briefing on the 31st of May 2020

[9] Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020

represents an absolute reduction of between 10 to 20µg/m^3 if expressed relative to annual mean averages. During this period, changes in PM$_{2.5}$ concentrations were less marked than those of NO$_2$. PM$_{2.5}$ concentrations are affected by both local sources and the transport of pollution from wider regions, often from well beyond the UK. Through analysis of AURN monitoring data for 2018-2020, AQEG have detailed that PM$_{2.5}$ concentrations during the initial lockdown period are of the order 2 to 5µg/m^3 lower relative to those that would be expected under business-as-usual conditions.

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

Impacts of COVID-19 on Air Quality within Harborough District

Annual mean reductions of NO$_2$ concentrations of between 20 and 35% were experienced at roadside diffusion tube monitoring sites during 2020 compared to the mean of 2015 - 2019 results. This equated to a 30 to 45% reduction in annual mean concentration relative to 2019. The reduction in NO2 experienced within 2020 has allowed the Council to provide an evidence base in relation to the annual mean objective being achievable

Opportunities Presented by COVID-19 upon LAQM within Harborough District

No LAQM related opportunities have arisen as a consequence of COVID-19 within Harborough District Council

Challenges and Constraints Imposed by COVID-19 upon LAQM within Harborough District

No challenges or constraints relating to LAQM have arisen during 2020 as a consequence of COVID-19 within Harborough District.

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

- Local Air Quality Management Technical Guidance LAQM.TG16. April 2021. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.

- COVID-19: SUPPLEMENTARY GUIDANCE Local Air Quality Management reporting in 2021 Date: April 2021 Version: 1.0
- National Diffusion Tube Bias Adjustment Factor Spreadsheet. March 2021. Published by DEFRA.