



**2019 Air Quality
Annual Status Report (ASR)**

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

Date (September, 2019)

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
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Executive Summary: Air Quality in Our Area

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 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 exceedances are considered likely, the local authority must then 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 report covers the period 1 January 2018 to 31st December 2018

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 and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas^{1,2}.

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion³.

The Council has 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

¹ Environmental equity, air quality, socioeconomic status and respiratory health, 2010

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

³ Defra. Abatement cost guidance for valuing changes in air quality, May 2013

https://www.harborough.gov.uk/info/20025/environmental_health/101/air_quality

The Council has found that an area in Kibworth in the vicinity of the A6 is exceeding the annual mean Air Quality Objective (AQO) for Nitrogen Dioxide (NO₂) and declared an AQMA on 29th November 2017.

Actions to Improve Air Quality

Include a brief summary of core actions (and in particular success stories or lessons learned) to target sources of pollution in your area over the past year, indicate any quantitative improvements from actions taken (if known), and include a summary of progress on any grant funded projects.

The Council has adopted the air quality action plan for the Kibworths AQMA

The Council has commissioned a microsimulation model for highway junction improvements within and near to the Kibworths AQMA that have the potential to improve congestion and therefore reduce emissions.

Conclusions and Priorities

The ASR concludes that;

- there are no new areas likely to be exceeding air quality objectives,
- that the Kibworth AQMA is exceeding the annual mean air quality objective for NO₂,
- that Lutterworth has marginally met the annual mean air quality objective for NO₂ but it is too early to tell if long-term compliance has been achieved.

In 2019 the Council plans to

- complete Installation of automatic monitoring for Nitrogen Dioxide in the Kibworth AQMA

- Under take air quality dispersion modelling using the outputs of the microsimulation traffic modelling to determine the potential air quality impacts of the proposed junction improvements.
- Undertaking training of Members on air quality and assessing the impacts of new developments on local air quality.

Local Engagement and How to get Involved

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

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

- 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/>
- Joint Air Quality Initiative (JOAQUIN) website
<http://www.joaquin.eu>

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1 Local Air Quality Management

This report provides an overview of air quality in Harborough District Council during 2018. 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 can be found in Appendix E.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMA) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMA declared by Harborough District Council can be found in Table 2-1. Further information related to declared or revoked AQMA, including maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=118 or on the Council's website at:

https://www.harborough.gov.uk/info/20025/environmental_health/101/air_quality

Alternatively, see Appendix D: which includes maps of air quality monitoring locations and the area of the AQMAs.

Table 2-1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)				Action Plan		
						At Declaration		Now		Name	Date of Publication	Link
Lutterworth	Declared 18/07/2001, Amended 04/04/2011, Amended 16/04/2013	NO2 Annual Mean	Lutterworth	An area encompassing properties adjacent to Rugby Road, High Street and Market Street.	NO			36 to 38	$\mu\text{g.m}^{-3}$	2013 Lutterworth Air Quality Management Area Action Plan Framework for Harborough District Council	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	Kibworth	An 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	$\mu\text{g.m}^{-3}$	49	$\mu\text{g.m}^{-3}$	Kibworth Air Quality Management Area Action Plan for Harborough District Council Date (February 2019)	Feb-19	http://www.harborough.gov.uk/download/downloads/id/5104/2019_kibworth_air_quality_action_plan.pdf

☒ Harborough District Council confirms the information on UK-Air regarding their AQMA(s) is up to date

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

Harborough District Council has taken forward a number of direct measures during the current reporting year of 2018 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2-2.

2.2.1 Actions in Lutterworth

The HGV Gating system in Lutterworth has been implemented and appears to be having a positive effect, monitoring is ongoing to confirm this.

2.2.2 Actions in The Kibworths

The Council consulted on the Draft Air Quality Action Plan for the Kibworths between 20/9/2018 and 19/11/2018. The consultation consisted of;

- writing to key stakeholders and partners, including;
 - Leicestershire County Council highways department,
 - Leicestershire County Council Public Health
 - Public Health England,
 - Environment Agency,
 - residents located within the AQMA
- presenting the report to the 2 Parish Councils
- holding 2 drop in sessions for members of the public to discuss the report

The Council received 8 representations during the consultation, additional comments collated during the consultation process through the drop in sessions and liaison with district and parish councils were considered.

The Council commissioned traffic microsimulation modelling of proposed junction improvements along the A6 in the Kibworths results of this work are due early 2019.

The modelling involves;

- creating a detailed microsimulation traffic model of the whole of the Kibworths using LCC Highways VISSIM software,
- following traffic data was collated:
 - total of 10 Automatic Traffic Counters (ATCs) run for 2 week using Metrocount 5600 vehicle classifiers,
 - 41 Manually Classified Counts.
 - que length data of 5 junctions .
 - 12 hour Automatic Number Plate Recognition (ANPR) survey
- examining the baseline conditions and model changes that result from the junction improvements identified in *Fleckney, Great Glen and the Kibworths Harborough District Council and Leicestershire County Council Cumulative Development Traffic Impact Study 1 | Final Rev A 24 January 2017*

Following publication of the result of the vehicle microsimulation modelling, air quality dispersion modelling will be required to determine if an improvement in local air quality is likely.

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 the current AQMAs.

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

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
Lutterworth 1	20mph zone	Traffic Management	Reduction of speed limits, 20mph zones	LA, Funding: Defra AQ grant	Apr-18	Apr-20	Determine reduction in traffic emissions		Complete	Complete	Lengthy Timescale
							Determine impact on air quality		Complete	Nov-16	
							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	Apr-18	First phase successful, second phase complete. LCC Highways require further evidence of likely reduction before they would be willing to consider implementation
Lutterworth 2	HGV gating system	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	LCC highway maintenance	Jul-17	Aug-17	implement gating system		ongoing	Apr-18	system has been implemented
Kibworth 1	Impact assessment of local traffic management options	Transport Planning and Infrastructure	Other	Harborough District Council	01/01/2018	Autumn 2018	To publish findings	Cannot be quantified as work is to identify works and the potential benefit	Work commissioned	Summer 2019	A review of the action plan will be undertaken following this piece of work to incorporate any findings into the relevant work programme subject to funding.
	complete								Jun-18		
	ongoing								Jan-19		
	ongoing								Aug-19		

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
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	Harborough District Council	N/A	Quarter 1 2018/19	N/A	Unlikely to provide improvements to air quality but will limit potential negative impacts	Close links with Development Management are already in place	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	Harborough District Council	Quarter 4 2018/19	Spring 2019	To have published a guidance note to councillors and undertaken training of planning committee members	Unlikely to provide improvements to air quality but will limit potential negative impacts		On going	Linked to the approval of the new Local Plan due Spring 2019
Kibworth 4	Ensure air quality policies in Local Plan documents and evidence base	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Harborough District Council	01/01/2017	N/A	N/A	N/A	The submitted Local Plan currently under review by Secretary of State includes policies on air quality	N/A	This is dependant on the process of adopting a new Local Plan due in Spring 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	Harborough District Council	N/A	01/06/2017	N/A	N/A	All of the Council's air quality data and reports produced to date are available on the council website.	Ongoing	

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
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	Harborough District Council	01/01/2018	Quarter 3 2018	N/A	N/A	Procurement of the real time monitor complete. Issues procuring power supply	spring 2019	

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) (<http://www.phoutcomes.info/>) 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 estimated 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 lowest fraction of attributable deaths to particulate air pollution in Leicestershire. (<https://fingertips.phe.org.uk/profile/public-health-outcomes-framework/data#page/3/gid/1000043/pat/102/par/E10000018/ati/101/are/E07000135/iid/30101/age/230/sex/4>)

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

The Council did not operate any automatic monitoring stations during 2018.

Bureau Veritas currently operate an AURN network site on behalf of DEFRA during 2018. Table A-1 in Appendix A: shows the details of the site.

Maps showing the location of the monitoring sites are provided in Appendix D: or https://uk-air.defra.gov.uk/networks/site-info?site_id=MKTH&view=View . Further details on how the monitors are calibrated and how the data has been adjusted are available from the AURN Network <https://uk-air.defra.gov.uk/networks/network-info?view=aurun>.

3.1.2 Non-Automatic Monitoring Sites

Harborough District Council undertook non- automatic (passive) monitoring of NO₂ at 23 sites during 2018. Table A-2**Error! Reference source not found.** in Appendix A: shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Figure D-1 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” and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO₂)

Table A-3 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg.m⁻³.

For diffusion tubes, the full 2018 dataset of monthly mean values is provided in Appendix B:.

Table A-4 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past 5 years with the air quality objective of 200µg.m⁻³, not to be exceeded more than 18 times per year.

3.2.1.1 Lutterworth

The Council has 10 monitoring locations in Lutterworth.

- Former Lutterworth Service Shop (01n)
- Day Nursery (11n)
- Jazz Hair (18n)
- 77 Leicester Load Lutterworth (22n)
- 6 The Terrace Rugby Road (23n)
- Regent Court (24n)
- 26 Market Street Lutterworth (25n)

- 24 Rugby Road Lutterworth (26n)
- 17 Rugby Road Lutterworth (27n)
- 40 Regent Street Lutterworth (30n)

All locations, after façade correction to the nearest receptor, met the air quality standard

3.2.1.2 Kibworth

The Council has 8 monitoring locations in Kibworth

- A6 Kibworth (12n),
- 69 Leicester Road Kibworth (31n), and
- Sign outside 64 Leicester Road (34n)
- Lamppost outside 78 Leicester Road (35n), and
- Signpost north of 11 Leicester Road (36n)
- Coach and Horse Kibworth (38n)
- Lamppost outside 29 Church Road Kibworth (39n)
- 106 main street Kibworth (40n)

Following façade correction the tube at location 64 Leicester Road (34n) exceeded the annual mean air quality standard.

3.2.1.3 Market Harborough

The Council monitored one location in market Harborough

- Pizza express St Marys Road (37n)

This location did not exceed the air quality standard

3.2.1.4 Theddingworth

The Council has 2 monitoring points in Theddingworth.

- Spencerdene, Main Street Theddingworth (28n), and
- Homeside, Main Street Theddingworth (29n)

No exceedences of air quality standards were recorded.

3.2.1.5 A5

The Council has 2 monitoring points along the A5.

- Alma House, Watling Street Claybrooke Parva Leicestershire LE17 5BE (32n), and
- sign post outside White House Farm Watling street (33n)

No exceedences of air quality standards were recorded.

4 Glossary of Terms

Please add a description of any abbreviations included in the ASR – An example is provided below.

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	Air quality 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 (micrometres or microns) 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

5 Appendices

Appendix A: Monitoring Results

Table A-1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
1A	Market Harborough AURN site	Rural	483335	295896	NO; NO ₂ ;	N	Unknown	N/A	N/A	unknown

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

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
01n	Lutterworth Service Shop	Roadside	454475	284560	NO ₂	Y	0	4.2	N	2
11n	Day Nursery	Roadside	454539	284932	NO ₂	N	9	1.3	N	2
12n	A6 Kibworth	Roadside	468425	294314	NO ₂	N	10.7	1.3	N	2
18n	Jazz Hair	Roadside	454443	284348	NO ₂	N	0	3	N	2
22n	77 Leicester road Lutterworth	Roadside	454533	284872	NO ₂	N	0	13.5	N	2
23n	6 The Terrace Rugby Road	Roadside	454428	284274	NO ₂	N	0	2.5	N	2
24n	4-9 regent court	Roadside	454410	284326	NO ₂	N	0	16.25	N	2
25n	26 Market Street Lutterworth	Roadside	454497	284618	NO ₂	Y	1.6	4.8	N	2
26n	24 Rugby Road Lutterworth	Roadside	454432	284229	NO ₂	N	0	2	N	2
27n	17 Rugby road Lutterworth	Roadside	454476	284178	NO ₂	N	3.7	5.2	N	2
28n	Spencerdene main street Theddingworth	Roadside	466535	285545	NO ₂	N	1.2	0.2	N	2
29n	Homeside main street Theddingworth	Roadside	466651	285607	NO ₂	N	0.2	1.4	N	2
30n	40 regent Street Lutterworth	Roadside	454318	284288	NO ₂	N	0	2.5	N	2
31n	lamppost outside 69 Leicester road Kibworth	Roadside	467933	294660	NO ₂	N	3.5	4	N	2
32n	Alma House, Watling Street Claybrooke Parva	Roadside	448065	287719	NO ₂	N	0	7	N	2
33n	signpost outside White House Farm Watling street	Roadside	448948	286554	NO ₂	N	14	1	N	2
34n	sign outside 64 Leicester Road Kibworth	Roadside	468143	294351	NO ₂	N	0.5	2.3	N	2
35n	lamppost outside 78 Leicester road Kibworth	Roadside	468022	294450	NO ₂	N	3.1	6.4	N	2

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
36n	signpost just north of 11 Leicester road Kibworth	Roadside	468309	294352	NO ₂	N	0	1.4	N	2
37n	pizza Express St Marys road	Roadside	473479	287214	NO ₂	N	0	1	N	2
38n	coach and horse Kibworth	Roadside	468403	294298	NO ₂	N	2.2	2.5	N	2
39n	lamppost 29 church road Kibworth	Roadside	468412	294218	NO ₂	N	10.2	2	N	2
40n	106 main street Kibworth	Roadside	468027	294570	NO ₂	N	0	1.7	N	2

Notes: (1)0m if the monitoring site is at a location of exposure (e.g. installed on/adjacent to the façade of a residential property).
(2)N/A if not applicable.

Table A-3 – Annual Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg.m ⁻³) ⁽³⁾				
					2014	2015	2016	2017	2018
A1	Rural	Automatic	95.3%	95.3%	14.29	9.02	10.66	9.40	7.8
01n	Roadside	Diffusion Tube	100.0%	100.0%	39.8	43.52	42.27	42.44	38.09
11n	Roadside	Diffusion Tube	91.7%	91.7%	35.8	36.11	26.59	26.65	30.05
12n	Roadside	Diffusion Tube	100.0%	100.0%	28.2	29.72	21.74	23.82	28.37
18n	Roadside	Diffusion Tube	91.7%	91.7%	39.2	37.52	34.10	34.99	36.25
22n	Roadside	Diffusion Tube	100.0%	100.0%	19.93	19.45	19.12	19.80	17.56
23n	Roadside	Diffusion Tube	100.0%	100.0%	27.6	28.87	28.49	30.08	27.58
24n	Roadside	Diffusion Tube	100.0%	100.0%	38.84	47.8	38.06	37.08	36.12
25n	Roadside	Diffusion Tube	83.3%	83.3%	34.87	34.38	28.18	31.98	31.39
26n	Roadside	Diffusion Tube	100.0%	100.0%	40.67	40.63	38.96	40.09	31.38
27n	Roadside	Diffusion Tube	100.0%	100.0%	29.8	32.32	27.05	28.04	27.26
28n	Roadside	Diffusion Tube	100.0%	100.0%	21.13	19.43	16.89	16.45	16.38
29n	Roadside	Diffusion Tube	100.0%	100.0%	27.53	28.15	26.77	27.90	22.17
30n	Roadside	Diffusion Tube	91.7%	91.7%	20.89	21	20.30	22.56	17.14
31n	Roadside	Diffusion Tube	100.0%	100.0%		33.12	30.48	33.57	31.05
32n	Roadside	Diffusion Tube	91.7%	91.7%		25.27	29.93	29.23	25.14
33n	Roadside	Diffusion Tube	100.0%	100.0%		26.5	18.13	18.84	24.43
34n	Roadside	Diffusion Tube	83.3%	83.3%		55	52.87	56.91	49.31
35n	Roadside	Diffusion Tube	100.0%	100.0%			33.36	32.53	31.97
36n	Roadside	Diffusion Tube	100.0%	100.0%			42.67	44.31	34.36
37n	Roadside	Diffusion Tube	91.7%	91.7%			50.44	29.70	25.86
38n	Roadside	Diffusion Tube	91.7%	91.7%				22.53	19.35

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg.m ⁻³) ⁽³⁾				
					2014	2015	2016	2017	2018
39n	Roadside	Diffusion Tube	91.7%	91.7%	-				18.07
40n	Roadside	Diffusion Tube	100.0%	100.0%	-			24.41	21.00

Diffusion tube data has been bias corrected

Annualisation has been conducted where data capture is <75%

Notes: Exceedances of the NO₂ annual mean objective of 40µg.m⁻³ are shown in **bold**. NO₂ annual means exceeding 60µg.m⁻³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

- (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%).
- (3) Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Figure A-1 – Trends in Annual Mean NO₂ Concentrations

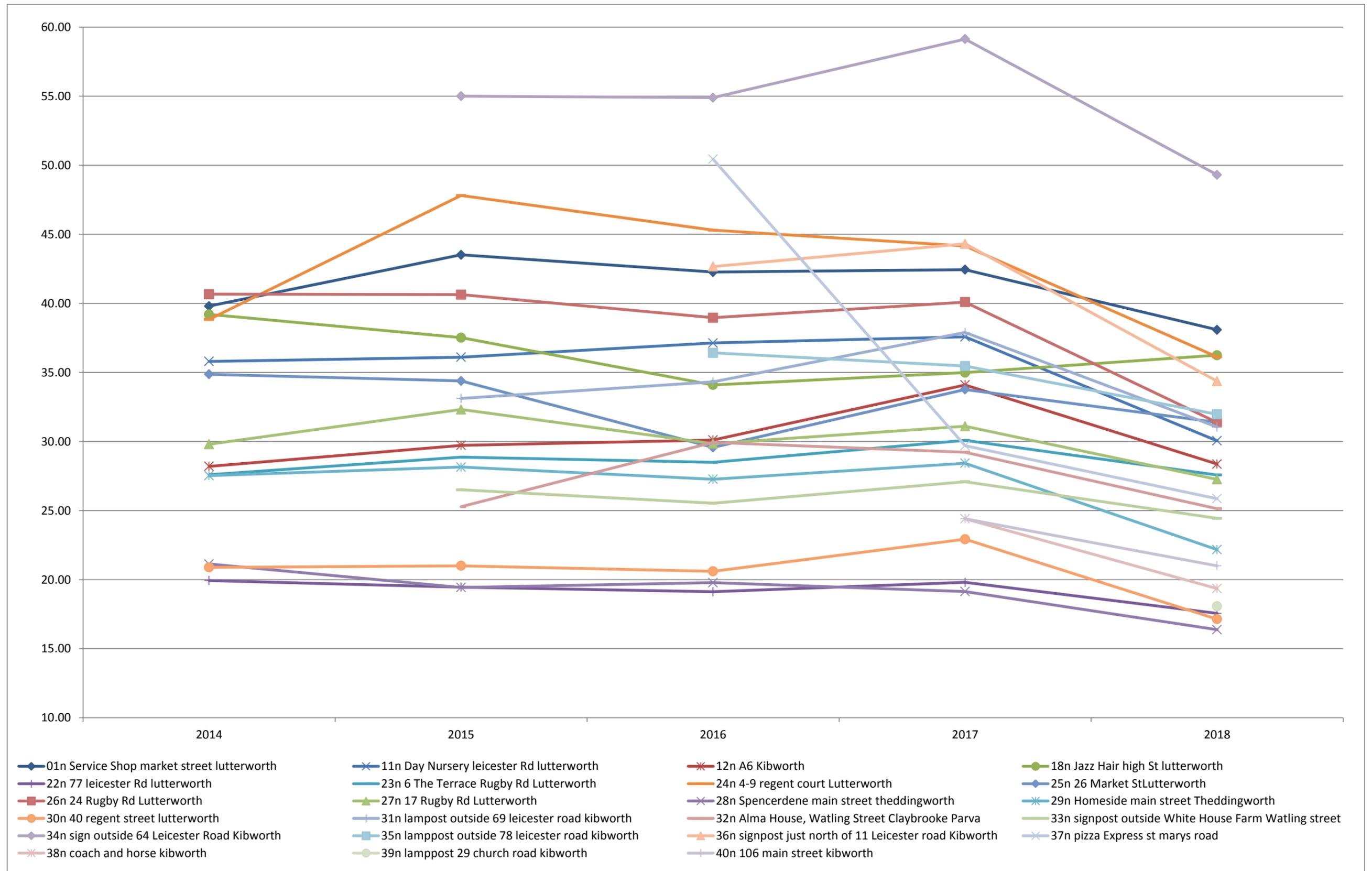


Table A-4 - 1-Hour Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ 1-Hour Means > 200µg.m ⁻³ ⁽³⁾				
					2014	2015	2016	2017	2018
A1	Rural		95.3%	95.3%	0	0	0	0	0

Notes: Exceedances of the NO₂ 1-hour mean objective (200µg.m⁻³ not to be exceeded more than 18 times/year) are shown in **bold**.

(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%).

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

Appendix B: Full Monthly Diffusion Tube Results for 2018

Table B-1 – NO₂ Monthly Diffusion Tube Results - 2018

Site ID	NO ₂ Mean Concentrations (µg/m ³)												Annual Mean		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.76) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
01n	57.6	45.5	47.0	58.2	48.5	39.6	55.2	49.3	48.8	53.9	47.5	50.3	50.1	38.1	-
11n	50.3	33.2	50.0	44.4		32.5	36.9	31.2	31.5	42.7	45.0	37.3	39.5	30.1	22.4
12n	50.4	36	32.1	35.2	24.1	18.4	47.4	38.3	37.8	42.9	45.8	39.5	37.3	28.4	20.8
18n		52.2	59.4	51.4	53.3	40.5	46.7	40.8	41.1	46	50.2	43	47.7	36.2	-
22n	27.6	24.7	24.7	20.7	21.2	16.4	18.7	21.1	21.8	25.9	27.6	26.8	23.1	17.6	-
23n	37.9	34.6	41.8	41.2	44	29.9	28.4	31.1	31.4	38.4	41.1	35.6	36.3	27.6	-
24n	68	53.7	40.8	45.7	46.8	35.4	46.3	44.8	46.6	53.7	39.3	49.2	47.5	36.1	30.8
25n		43.2	48.5	38	45.7	40.3	39.5	33	37.1	43.1		44.6	41.3	31.4	29.8
26n	36.6	39.3	40.6	51.9	36.9	29.8	42.5	43.6	44.5	50.9	47.6	31.2	41.3	31.4	-
27n	43.5	28.7	40.1	27.1	39.9	29.7	33	34.5	34.8	42.1	42.5	34.5	35.9	27.3	24.8
28n	24.3	23.3	21.5	21.1	18.5	15.2	19.5	20.8	20.7	23.6	27.5	22.6	21.6	16.4	14.5
29n	43.3	22.2	34.1	29.2	24	23.7	24.1	27.1	28.3	32.6	34	27.5	29.2	22.2	21.8
30n		25.7	25.5	23.5	17.3	15.3	18.7	21.3	20.5	27.1	25.3	27.9	22.6	17.1	16.9
31n	53.2	44.6	42.7	37.6	38.4	32.3	36.3	38.6	38.6	42.7	38.2	47	40.9	31.0	27.9
32n	41.5	29.2	36.6	37.2	35.7	29.8	35.7	28.4	34.3		35.7	19.7	33.1	25.1	-
33n	48.1	29.4	36	29.7	22.7	18.9	29.1	30.9	29.9	39.8	37.2	34.1	32.2	24.4	17.6
34n	87.5	70	58.8			46.2	61.6	66.6	64.1	62.3	64	67.7	64.9	49.3	47.5

Site ID	NO ₂ Mean Concentrations (µg/m ³)												Annual Mean		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.76) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
35n	45	42.9	38.2	40	32.8	26.3	26.5	49.2	48.1	55.4	58.8	41.6	42.1	32.0	29.5
36n	62.2	43.6	56.5	55.1	46.3	37.3	37.8	37.1	42.5	43.8	43	37.4	45.2	34.4	-
37n	39.2		40	38.8	29.7	22.4	22.2	32.4	33.5	37.6	40.8	37.7	34.0	25.9	-
38n	33.5	28		24.2	17.3	16.7	21.1	20.1	21.5	30.4	33.6	33.7	25.5	19.4	18.3
39n	30.7		24.6	25.4	21.1	15.9	18.5	20.8	23.2	25.5	28.8	27.1	23.8	18.1	15.7
40n	38.9	29.2	27.4	25.8	17.5	11	20.9	27.9	29.6	35.7	33.3	34.4	27.6	21.0	-

- Local bias adjustment factor used (confirm by selecting in box)
 National bias adjustment factor used (confirm by selecting in box)
 Annualisation has been conducted where data capture is <75% (confirm by selecting in box)
 Where applicable, data has been distance corrected for relevant exposure (confirm by selecting in box)

Notes:

Exceedances of the NO₂ annual mean objective of 40µg.m⁻³ are shown in **bold**.

NO₂ annual means exceeding 60µg.m⁻³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure.

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

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

Figure D-1 – Diffusion Tube monitoring locations 2018

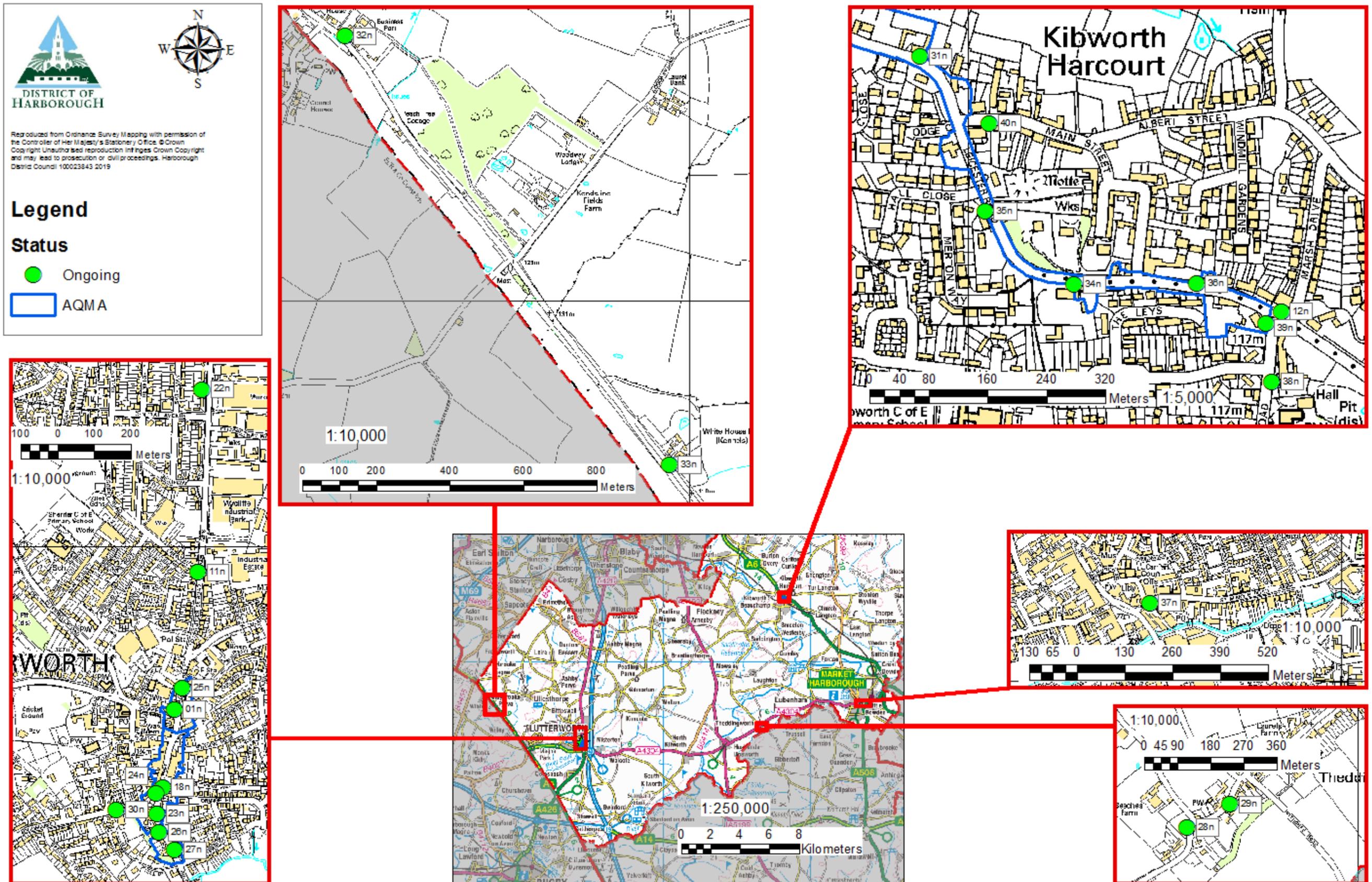
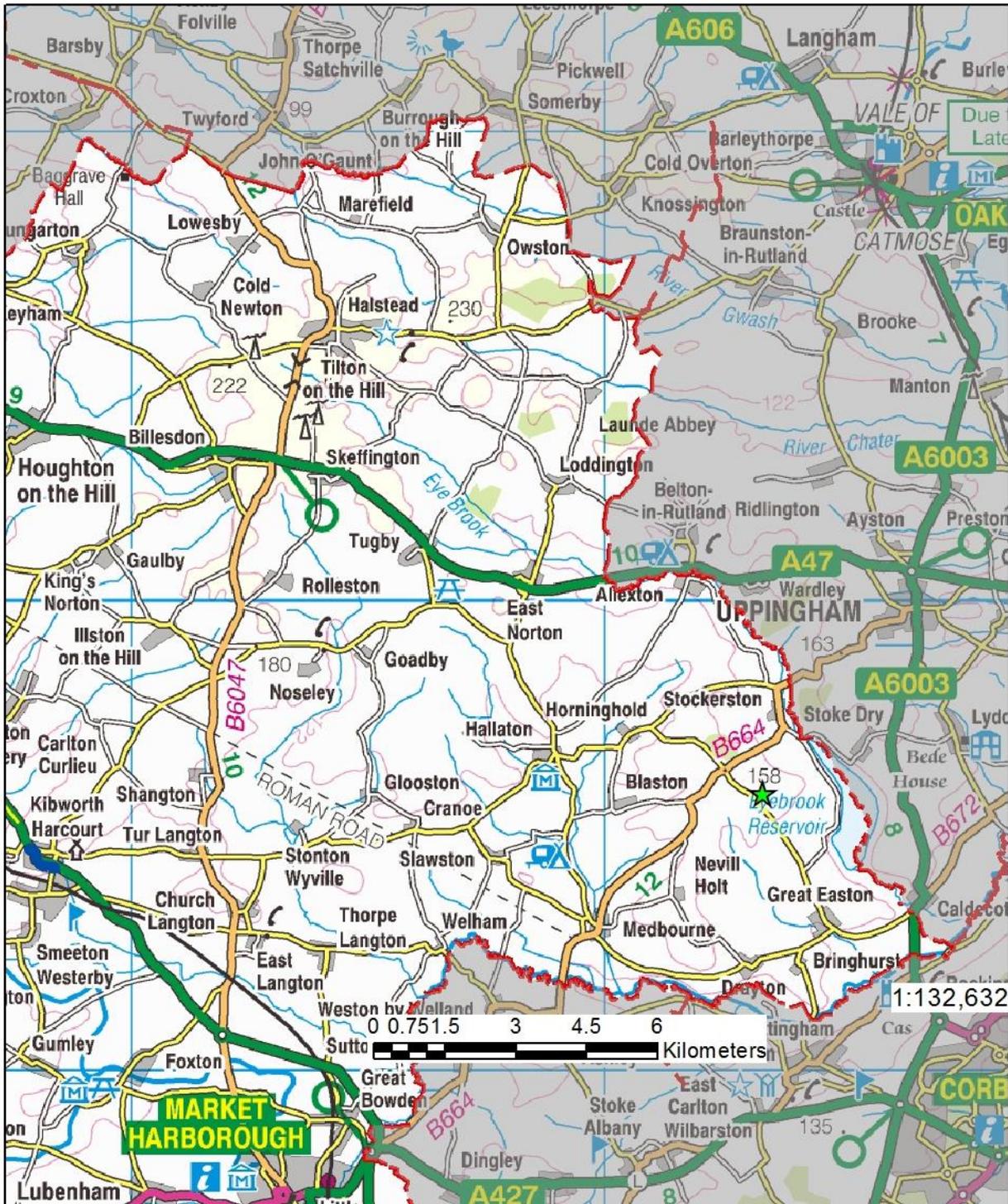
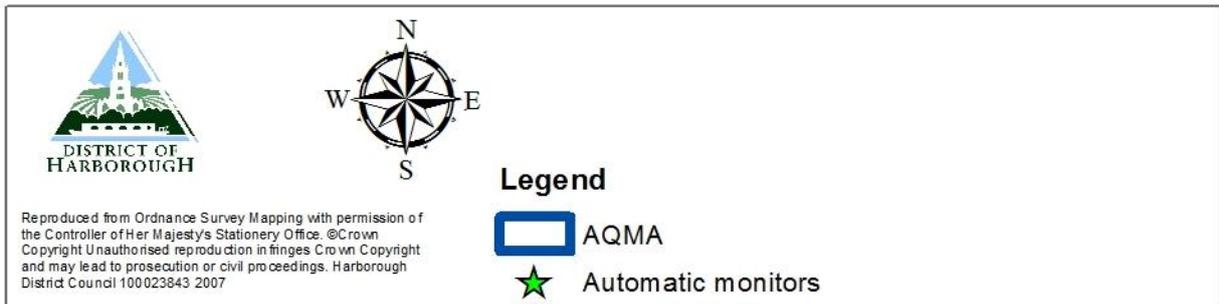


Figure D-2 – Automatic monitor locations 2018



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective ⁴	
	Concentration	Measured as
Nitrogen Dioxide (NO ₂)	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m ³	Annual mean
Particulate Matter (PM ₁₀)	50 µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m ³	Annual mean
Sulphur Dioxide (SO ₂)	350 µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean

⁴ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).