2014 Air Quality Progress Report for Harborough District Council

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Date May 2014

Local Authority Officer	Gareth Rees
Department	Regulatory Services
Address	Council Offices Adam and Eve Street Market Harborough LE16 7AG
Telephone	01858 821174
E-mail	airquality@harborough.gov.uk
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Executive Summary

Under Part IV of the Environment Act 1995 there is a requirement for all Local Authorities to assess their local air quality and to predict future conditions against the National Air Quality Standards.

This report has been compiled as part of the forth round of the air quality assessment for Harborough District Council. The Progress Report has been carried out in accordance with the requirements of the DEFRA guidance LAQM.TG(09) [9].

Progress Reports are intended to maintain continuity in the LAQM process, and fill in the gaps between the three-yearly cycle of Review and Assessment. Progress Reports are required in all years when the authority is not completing an Updating and Screening Assessment.

The report has found that:

- Air quality in the district is generally within the Air Quality Standard
- That there are exceedences of the air quality standard in and around the Lutterworth AQMA.

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1 Introduction

1.1 Description of Local Authority Area

Harborough District Council is a diverse, largely rural authority covering approximately 590 Km^2 (230 mi^2) of Southern Leicestershire, as shown in Figure. 1. Geographically it is the largest of the Leicestershire districts. Approximately 85,382 people (Census 2011 by The Office for National Statistics [39]) live within the District.

The two major population centres are the market towns of Market Harborough and Lutterworth, providing the main shopping and business services. These two towns, together with the villages of Thurnby, Bushby and Scraptoft adjoining Leicester City, and the villages of Broughton Astley, Great Glen, Kibworth and Fleckney accommodate 67% of the district population. The remaining residents live in villages varying from populations of several hundreds to hamlets comprising of a handful of dwellings.

The District borders on to the suburbs of Leicester to the north, Rutland to the east, Warwickshire to the west and Northamptonshire to the south.

Located at the heart of England, Harborough District has excellent transport links. The M1, M6 “Catthorpe” interchange connects Harborough District to Felixstowe, Birmingham, London and Edinburgh. The M1 and M6 and A14 are all identified on the Trans-European Network. The A5, A6, A5199 and A47 also run through the district which are a major part of the East Midlands road network and consequently are heavily used.

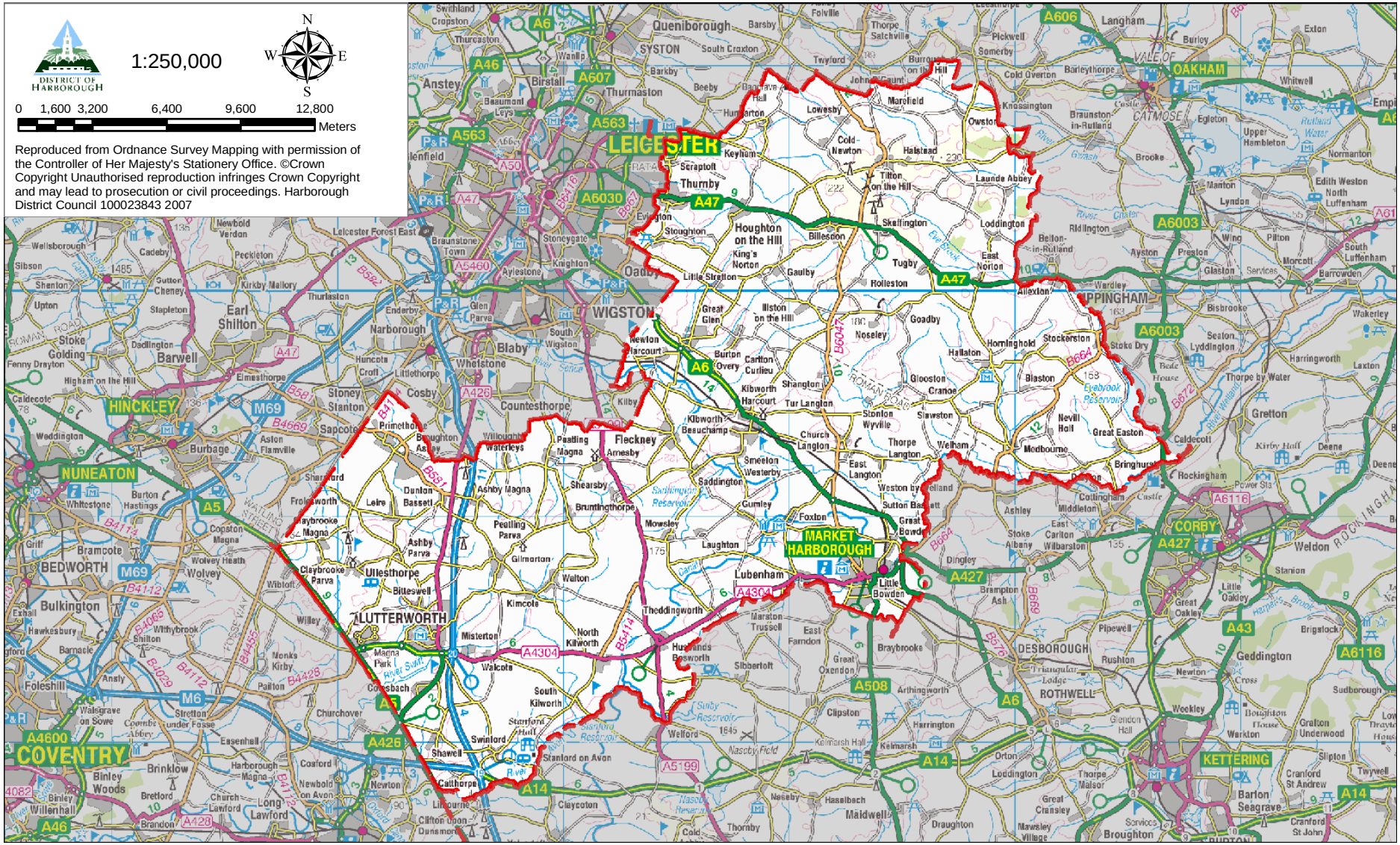
The Midland Main Line railway runs through the district and Market Harborough has an Inter-City station with direct links to London St. Pancras.

These good transport links have encouraged a number of industrial estates to develop, containing medium sized businesses carrying out a range of coating and spraying activities, moulding, and timber processes.

In the south west of the District there is a cluster of mineral activities including sand and gravel extraction, cement batching plants and other associated products.

Although agriculture still plays an important role in the local economy, manufacturing and distribution are of ever increasing importance. At the extreme western side of the District is Magna Park, which is a major warehousing and distribution site, covering approximately 2.3Km^2 (0.9 square miles). A number of the major manufacturers within the UK are located on this site and the 24-hour operation results in a great deal of traffic as most of the products are transported by road. Magna Park is located between the M1 and the A5, therefore a majority of the traffic is directed onto these major roads; however the nearby town of Lutterworth is affected by the increase in road traffic.

Figure. 1. Map of the Local Authority Area



1.2 Purpose of Progress Report

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 exceedences 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.

Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the Local Air Quality Management process.

They are not intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedence of an Air Quality Objective, the Local Authority (LA) should undertake a Detailed Assessment immediately, and not wait until the next round of Review and Assessment.

1.3 Air Quality Standards (AQS)

The air quality objectives applicable to Local Air Quality Management (LAQM) in England are set out in:

- the Air Quality (England) Regulations 2000 (SI2000/No.0928)[2],
- the Air Quality (England) (Amendment) Regulations 2002 (SI2002/No.3043)[3],
- The Air Quality Standards Regulations 2007 (SI2007/No.0064)[4], and
- The Air Quality Standards Regulations 2010 (SI2010/No.1001)[5].

They are shown in Table 1 which includes the number of permitted exceedences in any given year (where applicable).

Table 1. Air Quality Standards (AQS) included in Regulations for the purpose of Local Air Quality Management in England.			
Pollutant	Concentration	Measured as	Date to be achieved
Benzene	16.25 μgm^{-3}	Running annual mean	2003
	5.00 μgm^{-3}	Running annual mean	2010
1,3-Butadiene	2.25 μgm^{-3}	Running annual mean	2003
Carbon monoxide	10.0 mgm^{-3}	Running 8-hour mean	2003
Lead	0.5 μgm^{-3}	Annual mean	2004
	0.25 μgm^{-3}	Annual mean	2008
Nitrogen dioxide	200 μgm^{-3} not to be exceeded more than 18 times a year	1-hour mean	2005
	40 μgm^{-3}	Annual mean	2005
Particles (PM_{10}) (gravimetric)	50 μgm^{-3}, not to be exceeded more than 35 times a year	24-hour mean	2004
	40 μgm^{-3}	Annual mean	2004
Sulphur dioxide	350 μgm^{-3}, not to be exceeded more than 24 times a year	1-hour mean	2004
	125 μgm^{-3}, not to be exceeded more than 3 times a year	24-hour mean	2004
	266 μgm^{-3}, not to be exceeded more than 35 times a year	15-minute mean	2005

1.4 Summary of Previous Review and Assessments

The Review and Assessment of the local air quality takes place over a number of stages. The First Stage Review and Assessment [28] carried out in Harborough district concluded that further investigation would be required for Carbon Monoxide, Lead, Particulates and Nitrogen Dioxide. The Second and Third Stage review [27] concluded that with the exception of Nitrogen Dioxide all of the National Air Quality Standards would be met within the appropriate time frame. As it was anticipated that the national objective for Nitrogen Dioxide was unlikely to be met in Lutterworth Town Centre, an Air Quality Management Area (AQMA) was declared in July 2001.[6] See Figure. 2 for a map of the AQMA.

Following the declaration of the Air Quality Management Area a Stage 4 assessment [23] was required to give the council the opportunity to supplement any information already gathered in earlier review and assessment work.

The findings of the Stage 4 assessment confirmed that the annual average National Air Quality Objective for Nitrogen Dioxide was unlikely to be achieved. New Monitoring Data confirmed the source of the problem was traffic related, and an Action Plan [24] was developed which was incorporated into the second Leicestershire County Council Local Transport Plan which ran from 2006 to 2011.

In 2009 the Council undertook an update and screening assessment [18] which found that generally the air quality in Harborough district is very good; however the air quality in Lutterworth remains high and exceeds the national air quality objective. During 2008 it became apparent that the diffusion tubes in the area were showing a potential exceedence of the objective levels outside of the existing Air Quality Management Area (AQMA). It was necessary to relocate some of the diffusion tubes to confirm the initial findings, and was recommended that a detailed assessment of Lutterworth High Street would be required to confirm whether the existing AQMA needed to be extended.

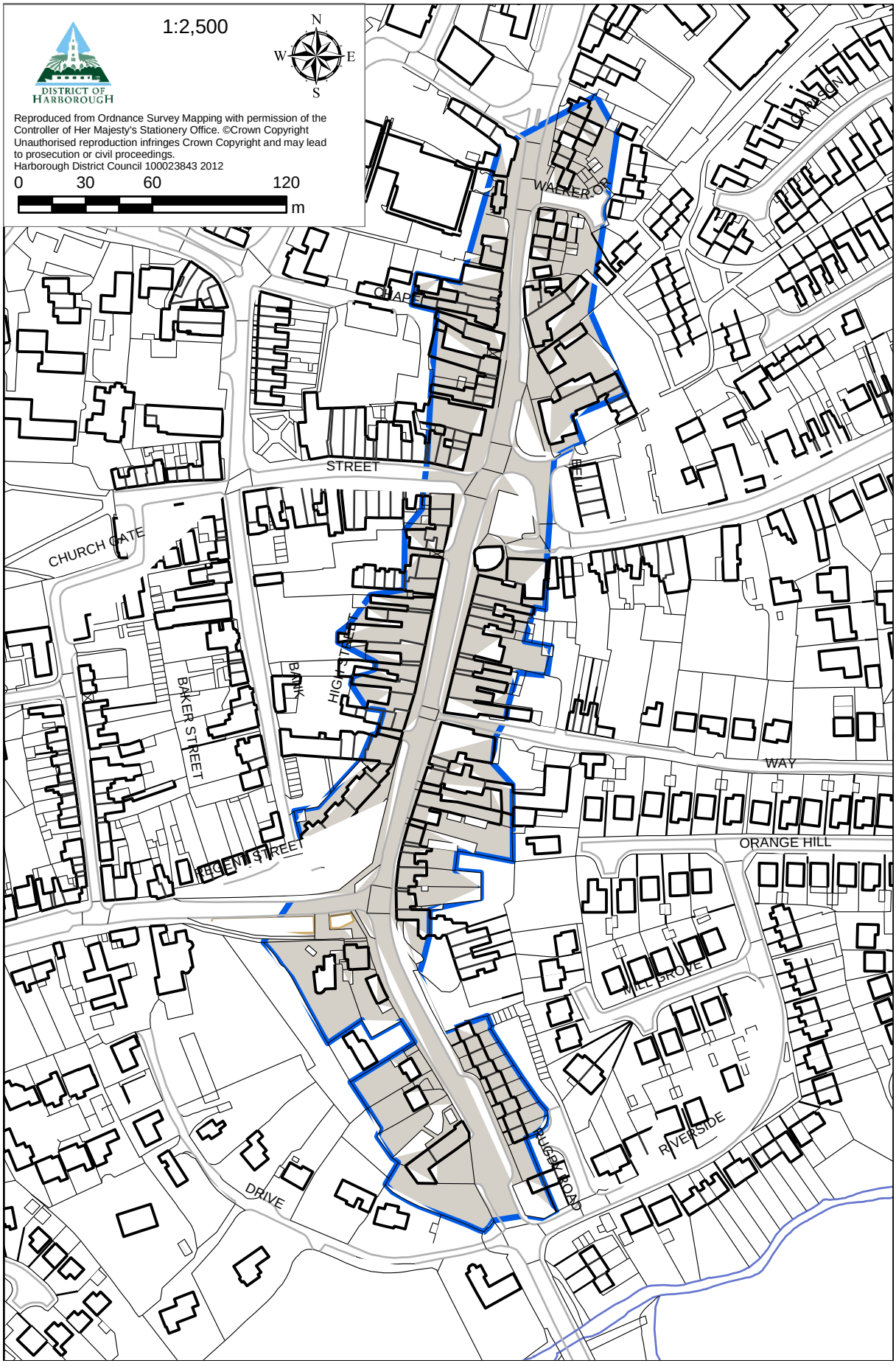
A detailed assessment of Lutterworth was conducted in 2010 [16]The assessment found that the AQMA did not require extension to the north of the currently declared area but that the air quality standard was being exceeded to the south of the currently declared area. In order to improve the data for the further assessment of the proposed extension to the AQMA it was necessary for several NO_2 diffusion tubes to be relocated.

A Further Assessment was undertaken in 2012[13]. The Further Assessment assessed the area to the south of the AQMA as amended following the Detailed Assessment and also looked at source apportionment. The assessment found that the area south of the Amended AQMA is exceeding the Annual Mean Air Quality Standard for

NO_2 and requires amendment. It also found that (based on Annual Average Daily Traffic Flow (AADT) data):

- There are ~15000 vehicle movements through the AQMA on a daily basis.
- Approximately 85% of these movements are made by cars, 6% are made by Heavy Goods Vehicles (HGVs), and 8% are made by Light Goods Vehicles (LGVs). The remainder of movements are made by buses and motorcycles.

Figure. 2. Map of AQMA Boundary



2 Data handling and modelling

2.1 Façade Correction

Some diffusion tubes have undergone a façade correction (presented in 3.2.1.2) the corrections were undertaken using the procedure outlined in Box 2.3: Predicting nitrogen dioxide concentrations at different distances from road of the technical guidance [9] (reproduced in Figure. 3 for reference).

Figure. 3. Box 2.3: Predicting nitrogen dioxide concentrations at different distances from road of the technical guidance [9]

Box 2.3: Predicting nitrogen dioxide concentrations at different distances from roads

A method has been developed to allow NO_2 measurements made at one distance from a road to be used to predict concentrations at a different distance from the same road. It is appropriate for distances between 0.1 m and 140 m of the kerb.

Step 1: Identify the local background concentration in μgm^{-3}, either from local monitoring or from the national maps published at www.airquality.co.uk. (Note that the background concentration must be less than the measured concentration).

Step 2: apply the following calculation

$$C_z = \left(\frac{C_y - C_b}{-0.5476 \times Ln(D_y) + 2.7171} \right) \times (-0.5476 \times Ln(D_z) + 2.7171) + C_b$$

Where:

C_z is the total predicted concentration (μgm^{-3}) at distance D_z;
C_y is the total measured concentration (μgm^{-3}) at distance D_y;
C_b is the background concentration (μgm^{-3});
D_y is the distance from the kerb at which concentrations were measured; and
D_z is the distance from the kerb (m) at which concentrations are to be predicted.
Ln(D) is the natural log of the number D.

Results derived in this way will have a greater uncertainty than the measured data. Further assistance with this procedure and interpretation of the results can be obtained from the Review and Assessment helpdesk (www.uwe.ac.uk/aqm/review).

Calculator

The equation above is available as a simple calculator (available at http://www.airquality.co.uk/archive/ laqm/tools.php) . This is set up to work from 0.1 to 50 m from the kerb, as this is the range that is likely to be relevant for Local Air Quality Management (LAQM) work. Kerbside sites should be treated as being at 0.1 m from the kerb. The calculator works for receptors either closer to or further from the kerb than the monitor. The greater the distance between the receptor and monitor, the greater the uncertainty in the derived receptor concentration. It is therefore recommended that if the receptor is further from the kerb than the monitor it should be no more than 20 m away. If the receptor is closer to the kerb, then it should be no more than 10 m from the monitor.

Modified from Box 2.3 page 2-6 of the technical Guidance 2009 [9] (modification are improved layout of equation and insertion of hyperlinks where footnotes are present in the original.

2.2 Annualisation

Where data does not cover the whole year it is possible to estimate the annual mean using the method in Box 3.2 Estimation of annual mean concentrations from short-term monitoring data of the technical guidance [9] (reproduced in Figure. 4 for reference).

Figure. 4. Estimation of annual mean concentrations from short-term monitoring data

Box 3.2: Estimation of annual mean concentrations from short-term monitoring data

Example

It has only been possible to carry out a monitoring survey (automatic or diffusion tube) at site **S** for six months between July and December 2008. The measured mean concentration **M** for this period is 30.2µgm^{-3}. How can this be used to estimate the annual mean for this location?

Adjustment to estimate annual mean

The adjustment is based on the fact that patterns in pollutant concentrations usually affect a wide region. Thus if a six month period is above average at one place it will almost certainly be above average at other locations in the region. The adjustment procedure is as follows:

1. Identify two to four nearby, long-term, continuous monitoring sites, ideally those forming part of the national network. These should be background sites to avoid any very local effects that may occur at roadside sites, and should, wherever possible lie within a radius of about 50 miles.
2. Obtain the annual means, **Am,** for the calendar year for these sites, 2008 in this example.
3. Work out the period means, **Pm,** for the period of interest, in this case July to December 2008. [It may be necessary to use unratified automatic data.]
4. Calculate the ratio, **R,** of the annual mean to the period mean $\left(\frac{Am}{Pm}\right)$ for each of the sites.
5. Calculate the average of these ratios, $\mathbf{R_a}$**.** This is then the adjustment factor.
6. Multiply the measured period mean concentration **M** by this adjustment factor $\mathbf{R_a}$ to give the estimate of the annual mean for 2008.

Long term site	Annual mean 2008 (Am)	Period Mean 2008 (Pm)	Ratio $\left(\frac{Am}{Pm}\right)$
A	28.6	29.7	0.963
B	22.0	22.8	0.965
C	26.9	28.9	0.931
D	23.7	25.9	0.915
Average (Ra)			**0.944**

For this example the best estimate of the annual mean for site **S** in 2008 will be

$$\begin{aligned} S &= M \times R_a \\ &= 30.2 \times 0.944 \\ &= 28.5 \mu g m^{-3} \end{aligned}$$

Notes

- Monitoring data for the long-term sites must have adequate data capture rates: above 90% is preferable; sites with data capture below 75% should not be used.
- It may be appropriate to use diffusion tube results from a long-term survey to adjust short-term diffusion tube results. To allow for the greater uncertainty of diffusion tubes results from four or more sites should be used. Ensure that the tubes are from the same supplier using the same method of preparation.
- If the short-term period covers, for instance, February to June 2009, and the work is being carried out in August 2009, then an annual mean for 2009 will not be available. The calculation can then be carried out using the ratio to the 2008 annual mean, but the result is then an estimate of the 2008 annual mean at the short-term site.

Modified from Box 3.2 page 3-4 of the technical Guidance 2009 [9].

3 New Monitoring Data

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

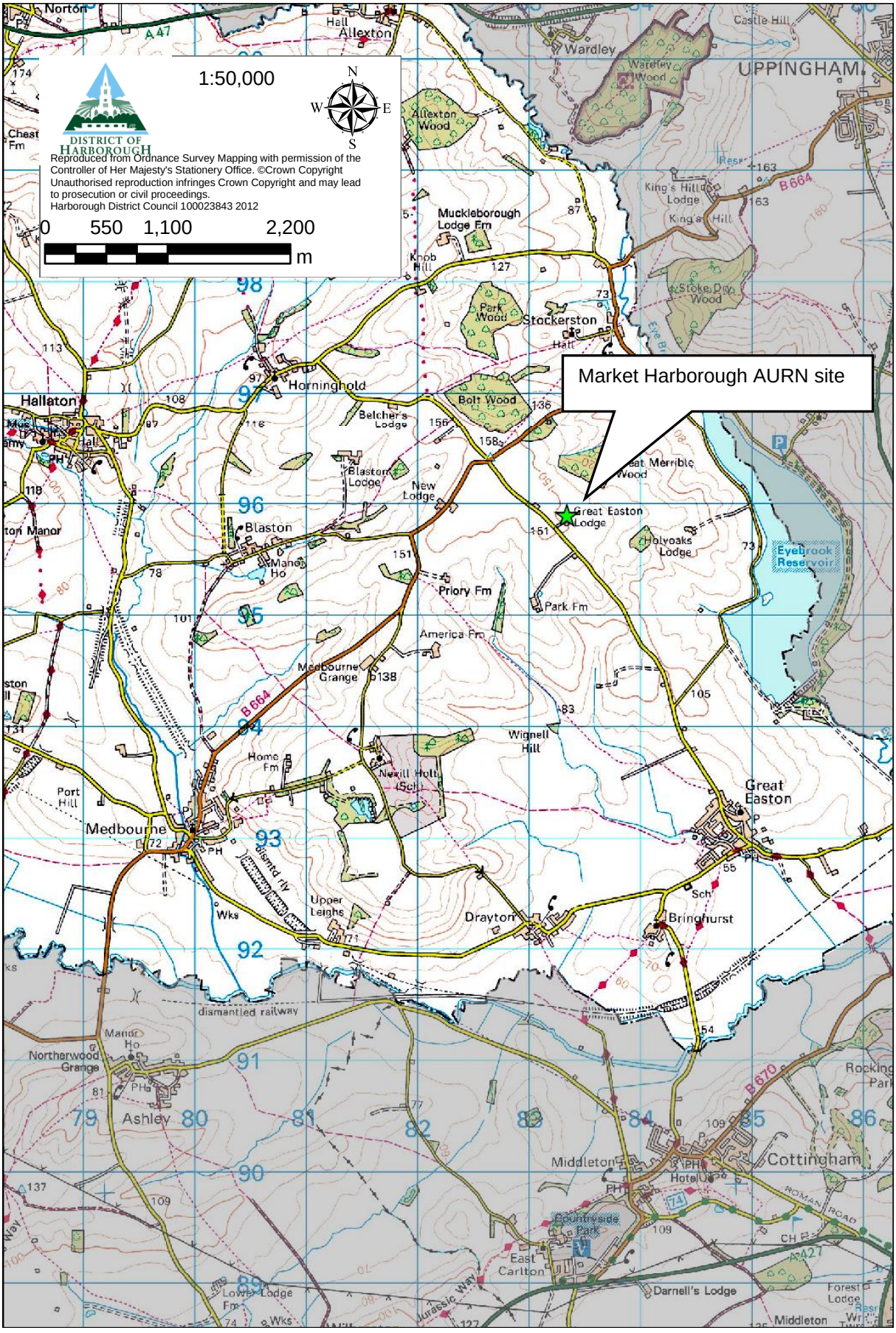
The council does not currently operate any automatic monitoring stations.

Bureau Veritas currently operate an AURN site on behalf of DEFRA near to Eye Brook Reservoir (Figure. 5). This site monitors for nitrogen dioxide, carbon monoxide and ozone. Details of the site can be found at http://uk-air.defra.gov.uk/networks/site-info?uka_id=UKA00463 (correct 21/03/2013).

Table 2. Details of Automatic Monitoring Sites

Site ID		1		
Site Name		Market Harborough AURN site		
Site Type		Rural		
OS Grid Ref	X	483335		
	Y	295896		
Pollutants Monitored		NO	NO_2	Ozone
Monitoring Technique		unknown	unknown	unknown
In AQMA ?		No		
Relevant Exposure? (Y/N with distance (m) to relevant exposure)		N/A		
Distance to kerb of nearest road (N/A if not applicable)		N/A		
Does this location represent worst-case exposure?		N/A		

Figure. 5. Map of AURN Automatic Monitoring Site



3.1.2 Non-Automatic Monitoring Sites

As part of the assessment of the local air quality, a number of diffusion tubes are located throughout the district. These tubes are a simple and cost effective method for screening air quality and provide a good indication of the annual average levels of Nitrogen Dioxide

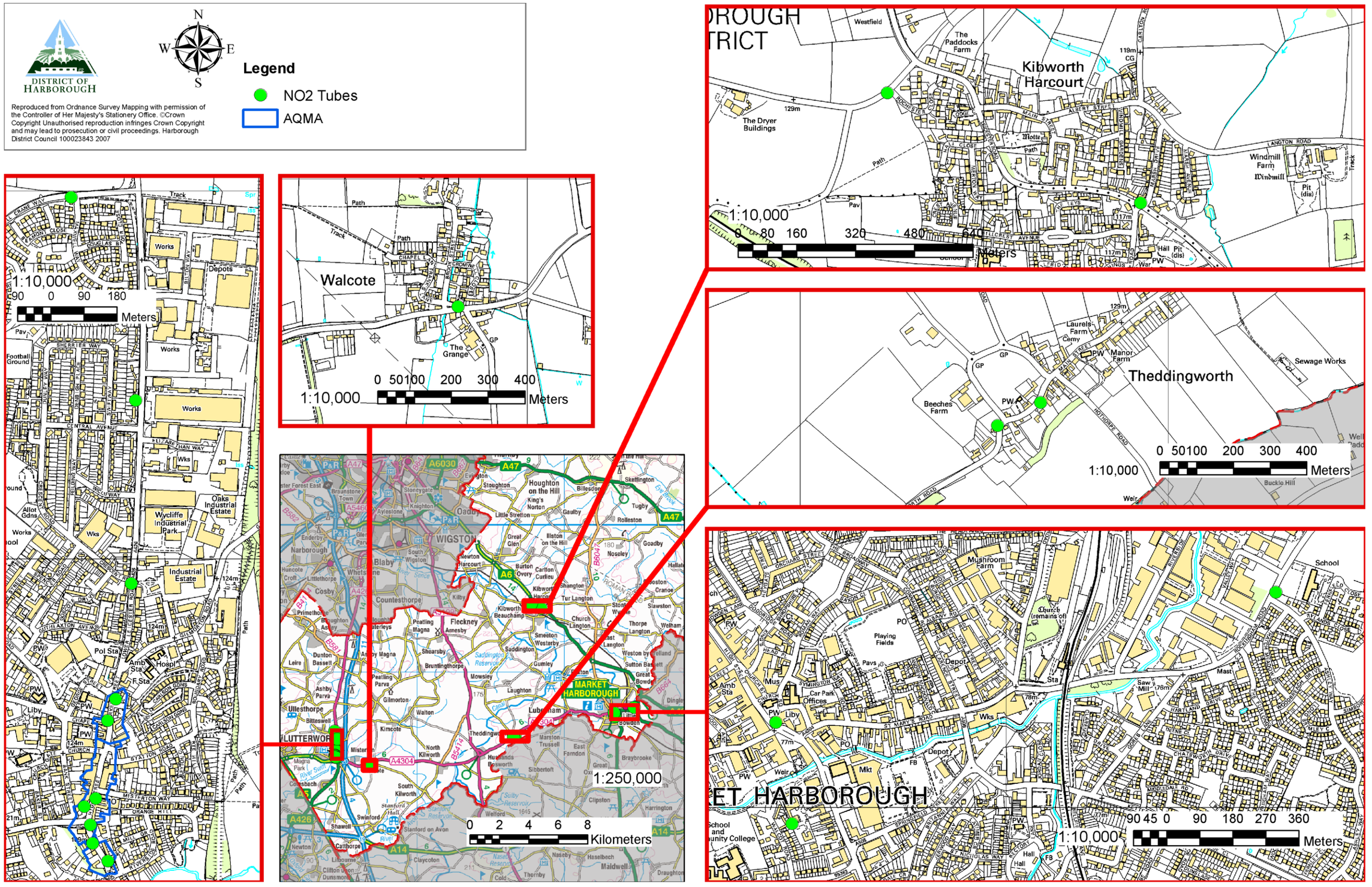
The diffusion tube supplied and analysed by Lambeth Scientific services by spiking with 50% triethanolamine (TEA) in acetone.

The DEFRA Review and assessment helpdesk National Diffusion Tube Bias Adjustment Factor Spreadsheet 03/2014 [41]has data for Lambeth Scientific Services in 2013 the average Bias adjustment for 2013 is 0.83

Table 3. Details of Non- Automatic Monitoring Sites

Site ID	location	Site Type	Grid Reference		Our Tube No.	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (m) (N/A if not applicable)	Worst-case Location?
			X	Y						
01n	Lutterworth Service Shop	Roadside	454475	284560	2	NO_2	Y	0	4.2	Y
03n	Brooklands (Home)	Urban background	473418	286956	3	NO_2	N	N/A	N/A	Y
09n	Maxwell Way	Roadside	454376	285981	8	NO_2	N	11.1	1.2	Y
11n	Day Nursery	Roadside	454539	284932	10	NO_2	N	9	1.3	N
12n	A6 Kibworth	Roadside	468425	294314	11	NO_2	N	10.7	1.3	Y
13n	Rockingham Road	Roadside	474731	287585	12	NO_2	N	9	2.8	Y
16n	Walcote	Roadside	456810	283652	15	NO_2	N	12.5	3	Y
17n	The Square	Roadside	473373	287231	16	NO_2	N	2.5	3	Y
18n	Jazz Hair	Roadside	454443	284348	17	NO_2	N	0	3	Y
19n	Wistow Rd Kibworth	Roadside	467739	294611	14	NO_2	N	2.5	5.4	Y
22n	77 Leicester road Lutterworth	Roadside	454533	284872	9	NO_2	N	0	13.5	Y
23n	6 The Terrace Rugby Road	Roadside	454428	284274	1	NO_2	N	0	2.5	Y
24n	4-9 regent court	Roadside	454410	284326	4	NO_2	N	0	16.25	Y
25n	26 Market Street Lutterworth	Roadside	454497	284618	5	NO_2	Y	1.6	4.8	Y
26n	24 Rugby Road Lutterworth	Roadside	454432	284229	13	NO_2	N	0	2	Y
27n	17 Rugby road Lutterworth	Roadside	454476	284178	7	NO_2	N	3.7	5.2	Y
28n	Spencerdene main street theddingworth	Roadside	466535	285545	18	NO_2	N	1.2	0.2	N
29n	Homeside main street Theddingworth	Roadside	466651	285607	6	NO_2	N	0.2	1.4	Y

Figure. 6. Map of Non-Automatic Monitoring Sites



3.2 Comparison of Monitoring Results with Air Quality Objectives

3.2.1 Nitrogen Dioxide (NO_2)

3.2.1.1 Automatic Monitoring Data

Table 4. Results of Automatic Monitoring of Nitrogen Dioxide: Comparison with Annual Mean Objective of 40µgm^{-3}

Site ID		1
Site Name		Market Harborough AURN site
Site Type		Rural
Within AQMA?		N
Valid Data Capture for period of monitoring %a		69.4%
Valid Data Capture 2012 % b		69.4%
Annual Mean Concentration µgm^{-3}	2007*c	11.57
	2008* c	10.80
	2009* c	11.98
	2010* c	11.74
	2011 c	9.27
	2012 c	15.3
	2013 c	13.12

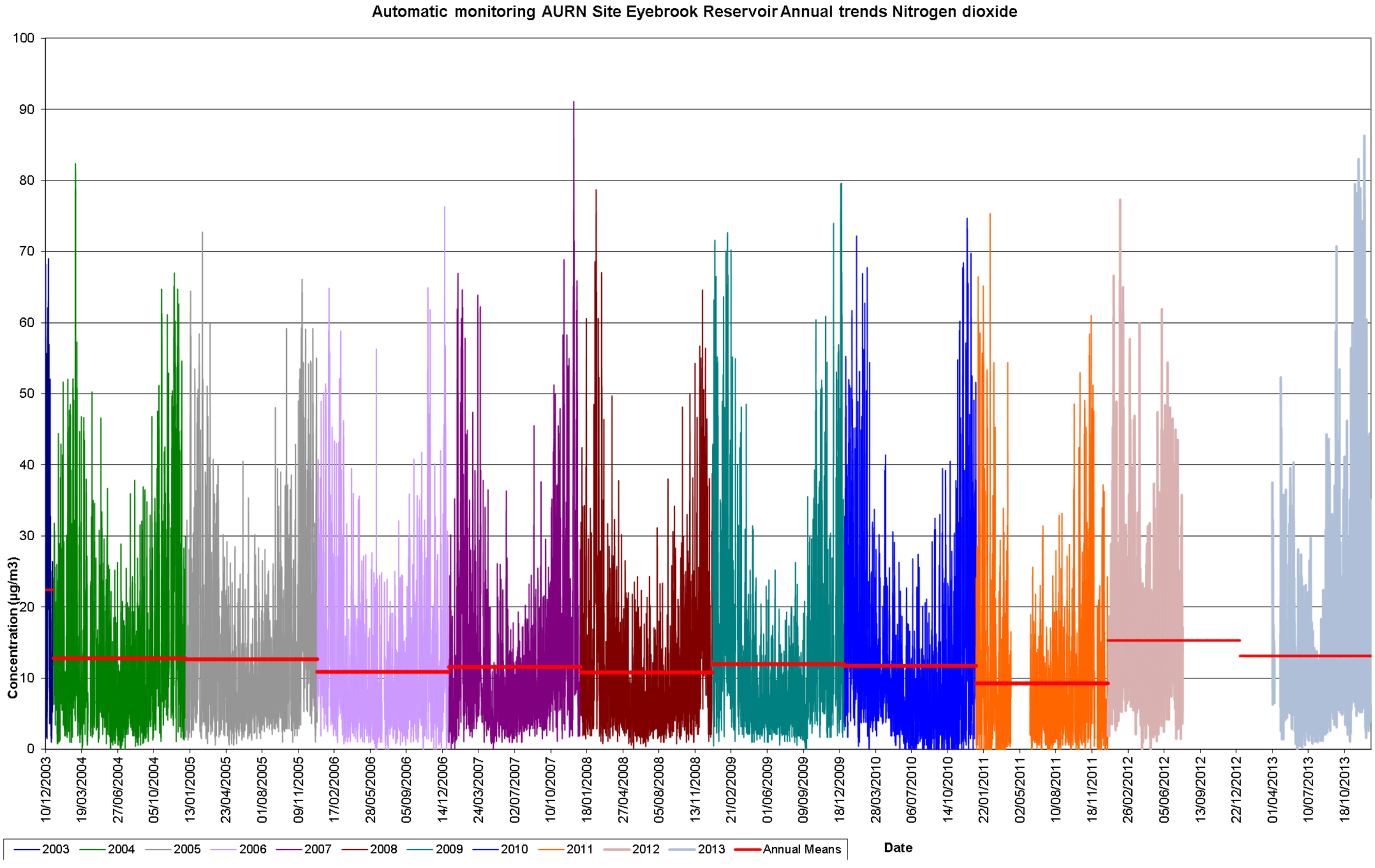
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)
[c] Means should be "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.
*Annual mean concentrations for previous years are optional.

Table 5. Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour mean Objective

Site ID		1
Site Name		Market Harborough AURN site
Site Type		Rural
Within AQMA?		N
Valid Data Capture for period of monitoring %a		94.96%
Valid Data Capture 2011 % b		94.96%
Number of Exceedences of Hourly Mean (200 µgm^{-3})	2007*c	0
	2008* c	0
	2009* c	0
	2010* c	0
	2011 c	0
	2012 c	0
	2013 c	0

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)
[c] If the period of valid data is less than 90%, include the 99.8th percentile of hourly means in brackets
*Number of exceedences for previous years are optional.

Figure. 7. Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Automatic Monitoring Site Eyebrook Reservoir



3.2.1.2 Diffusion Tube Monitoring Data

Table 6. Results of Nitrogen Dioxide Diffusion Tubes in 2011

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2013 (%)[a]	Data with less than 9 months has been annualised (Y/N)[b]	Annual mean concentration (BAF = 0.91)[b, c, d, e]	Façade corrected data
01n	Lutterworth Service Shop	Roadside	Y	N	100.0%	N	**45.51**	
03n	Brooklands (Home)	Urban background	N	N	100.0%	N	16.67	
09n	Maxwell Way	Roadside	N	N	100.0%	N	25.52	20.98
11n	Day Nursery	Roadside	N	N	100.0%	N	**36.24**	27.90
12n	A6 Kibworth	Roadside	N	N	100.0%	N	30.43	22.96
13n	Rockingham Road	Roadside	N	N	66.7%	N	22.31	21.18
16n	Walcote	Roadside	N	N	100.0%	N	23.79	22.11
17n	The Square	Roadside	N	N	100.0%	N	26.49	24.63
18n	Jazz Hair	Roadside	Y	N	75.0%	N	**42.15**	
19n	Wistow Rd Kibworth	Roadside	N	N	100.0%	N	22.48	20.50
22n	77 Leicester road Lutterworth	Roadside	N	N	100.0%	N	20.96	
23n	6 The Terrace Rugby Road	Roadside	Y	N	91.7%	N	34.18	
24n	4-9 regent court	Roadside	Y	N	100.0%	N	**47.45**	**40.63**
25n	26 Market Street Lutterworth	Roadside	Y	N	91.7%	N	**37.80**	**36.07**
26n	24 Rugby Road Lutterworth	Roadside	Y	N	100.0%	N	**41.02**	
27n	17 Rugby road Lutterworth	Roadside	Y	N	100.0%	N	32.85	30.23
28n	Spencerdene main st Thed	Roadside	N	N	100.0%	Y	19.30	16.95
29n	Homeside main st Thed	Roadside	N	N	100.0%	Y	30.36	29.82

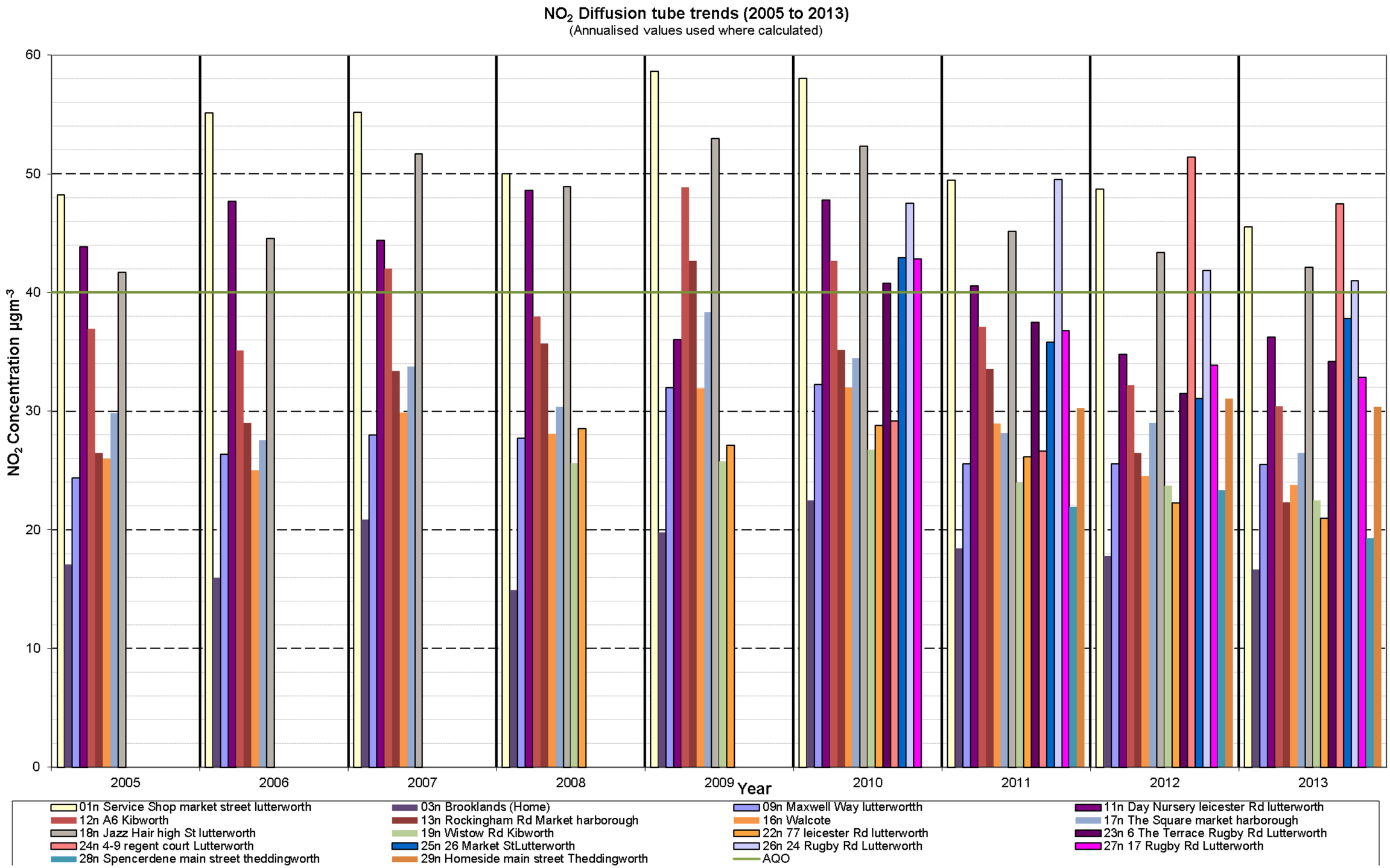
a. i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)
b. Means should be "annualised" as in Box 3.2 of TG(09) pg3-4, if monitoring was not carried out for the full year. Annualised data highlighted in green
c. Values exceeding the AQ objective are shown in red
d. Values exceeding 36 μgm^{-3} (1 standard deviation below the AQ objective) are shown in Blue.
e. BAF is Bias Adjustment Factor .

Table 7. Results of Nitrogen Dioxide Diffusion Tubes (2005 to 2011)

Site ID	Location	Within AQMA ?	Data Capture for monitoring period [a] %	Data Capture for full calendar year 2011 [b] %	Annual mean concentrations (µgm^{-3}) [c, d, e, f, g]								
					2005	2006	2007	2008	2009	2010	2011	2012	2013
					BAF = 0.81	BAF = 0.87	BAF = 0.90	BAF = 0.83	BAF = 1.02	BAF = 1.06	BAF = 1.06	BAF = 0.87	BAF = 0.83
82705- Harborough 01n	Lutterworth Service Shop	Y	100%	100%	**48.24**	**55.13**	**55.20**	**50.03**	**51.75**	**58.04**	**49.47**	**48.72**	**45.51**
82708- Harborough 03n	Brooklands (Home)	N	92%	92%	17.08	15.98	20.86	14.94	17.48	22.45	18.41	17.80	16.67
84433- Harborough 09n	Maxwell Way	N	100%	100%	24.38	26.39	27.98	27.74	28.23	32.24	25.53	25.55	25.52
84435- Harborough 11n	Day Nursery	N	100%	100%	**43.84**	**47.68**	**44.40**	**48.62**	31.80	28.80	26.15	34.80	**36.24**
84440- Harborough 12n	A6 Kibworth	N	100%	100%	**36.94**	35.09	**42.00**	**37.97**	**43.11**	**47.79**	**40.55**	32.19	30.43
84441- Harborough 13n	Rockingham Road	N	100%	100%	26.46	29.00	33.38	35.69	**37.65**	**42.67**	**37.10**	26.50	22.31
84444- Harborough 16n	Walcote	N	100%	100%	26.01	24.99	29.88	28.07	28.17	31.98	28.97	24.51	23.79
84446- Harborough 17n	The Square	N	75%	75%	29.84	27.55	33.75	30.34	33.81	34.45	28.15	29.00	26.49
84448- Harborough 18n	Jazz Hair	N	83%	83%	**41.72**	**44.54**	**51.68**	**48.90**	**46.72**	**52.33**	**45.16**	**43.34**	**42.15**
86155- Harborough 19n	Wistow Rd Kibworth	N	92%	92%				25.59	22.75	26.77	23.99	23.71	22.48
86383- Harborough 22n	77 Leicester road Lutterworth	N	100%	100%				28.54	23.93	28.80	26.15	22.26	20.96
86930- Harborough 23n	6 The Terrace Rugby Road	N	92%	92%						**41.22**	**37.49**	31.47	**34.18**
86931- Harborough 24n	4-9 regent court	N	75%	75%						29.51	26.62	**51.40**	**47.45**
86932- Harborough 25n	26 Market Street Lutterworth	Y	83%	83%						**43.41**	35.83	31.06	**37.80**
86933- Harborough 26n	24 Rugby Road Lutterworth	N	92%	92%						**48.09**	**49.53**	**41.83**	**41.02**
86934- Harborough 27n	17 Rugby road Lutterworth	N	83%	83%						**43.33**	**36.78**	33.85	32.85
????? - Harborough 28n	Spencerdene main st Thed	N	100%	75%							21.97	23.33	19.30
????? - Harborough 29n	Homeside main st Thed	N	89%	67%							30.28	31.08	30.36

a. i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
b. i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)
c. Means should be "annualised" as in Box 3.2 of TG(09) pg3-4, if monitoring was not carried out for the full year. Annualised data highlighted in green
d. Annual mean concentrations for previous years are optional.
e. Values exceeding the AQ objective are shown in red
f. Values exceeding 36 µgm^{-3} (1 standard deviation below the AQ objective) are shown in Blue.
g. BAF is Bias Adjustment Factor

Figure. 8. Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites



3.2.2 Particulate Matter (PM_{10})

This Authority Does Not Currently Monitor for this pollutant

3.2.3 Sulphur Dioxide (SO_2)

This Authority Does Not Currently Monitor for this pollutant

3.2.4 Benzene

This Authority Does Not Currently Monitor for this pollutant

3.2.5 Other Pollutants Monitored

This Authority Does Not Currently Monitor for any other pollutants

3.3 Summary of Compliance with AQS Objectives

Several of tubes located within the currently declared AQMA havel recorded exceedences of the annual mean AQS for NO_2. The tube located outside 17 rugby road has not exceeded the AQS for NO_2

There have been no exceedences outside of the AQMA

Harborough District Council has examined the results from monitoring in the district.

Concentrations within the AQMA still exceed the annual mean standard for nitrogen dioxide and the AQMA should remain.

Concentrations outside of the AQMA are all below the objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment.

4 New Local Developments

4.1 Road Traffic Sources

There are no new roads requiring assessment

4.2 Other Transport Sources

There are no other transport sources requiring assessment

4.3 Industrial Sources

There are no new industrial sources requiring assessment

4.4 Commercial and Domestic Sources

There are no new commercial and domestic sources requiring assessment

4.5 New Developments with Fugitive or Uncontrolled Sources

There are no new

- Landfill sites.
- Quarries.
- Unmade haulage roads on industrial sites.
- Waste transfer stations, etc.
- Other potential sources of fugitive particulate emissions.

requiring assessment.

Harborough District Council confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

Harborough District Council confirms that all the following have been considered:

- **Road traffic sources**
- **Other transport sources**
- **Industrial sources**
- **Commercial and domestic sources**
- **New developments with fugitive or uncontrolled sources.**

5 Local / Regional Air Quality Strategy

The Authority does not currently have an Air Quality Strategy and does not participate in a regional Air Quality Strategy.

6 Planning Applications

There are no planning applications awaiting approval that will effect the AQMA or air quality within the district.

7 Air Quality Planning Policies

There are currently no adopted Local Plan policies dealing specifically with air quality.

The emerging Local Development Framework (LDF) currently does not have any adopted Development Plan Documents. However work on establishing sites and/or broad areas for future developments is very likely to include an appraisal of whether the sites in question will adversely affect, or be adversely affected by, local air quality issues and whether particular types of development of a site could help address existing air quality issues.

8 Local Transport Plans and Strategies

Harborough District Council is currently liaising with Leicestershire County Council for inclusion of Air quality measures relating to the AQMA in LTP3.

9 Climate Change Strategies

The council is currently in the processes of drafting its climate change strategy with the aim of publishing the completed document by April 2011. The current draft has provision for the inclusion of a section on transport and air quality.

10 Implementation of Action Plans

The council has adopted a new action plan framework and is currently working with LCC Highways to design schemes which will improve Air Quality in the districts AQMA

11 Conclusions and Proposed Actions

11.1 Conclusions from New Monitoring Data

The annual mean air quality standard for NO_2 is being exceeded within the AQMA.

11.2 Proposed Actions

Create schemes inline with the council's action plan framework.

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13 Appendices

Appendix A. Raw 2013 Diffusion Tube Data and façade calculations

Site ID	location	Site Type	Grid Reference		Our Tube No.	Pollutants Monitored	In AQMA ?	Relevant Exposure?	Distance to kerb of nearest road	Worst-case Location?	Measurement Period (µgm^{-3})												BIAS =		Confidence level			confidence interval	% period coverage	% year data coverage	Façade Correction (See Box 2.3 pg 2-6 LAQM.TG(09))			
																							0.83		80%						find relevant background concentration			Façade Corrected Bias Adjusted Mean (µgm^{-3})
			X	Y							Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	arithmetic mean (µgm^{-3})	Bias adjusted arithmetic Mean (µgm^{-3})	Standard Deviation	period length	no of results				X	Y	background NO$_2$ (µgm^{-3})	
01n	Lut. Service Shop	Roadside	454475	284560	2	NO_2	Y	0	4.2	Y	62	41	53	61	50	44	52	57	58	58	67	55	54.83	**45.51**	7.42	12	12	2.75	100	100	453500	284500	17.31	
03n	Brooklands (Home)	Urban background	473418	286956	3	NO_2	N	N/A	N/A	Y	25	21	20	21	17	17	15	16	21	16	33	19	20.08	16.67	4.98	12	12	1.84	100	100	472500	286500	14.66	**Urban backgr ound**
09n	Maxwell Way	Roadside	454376	285981	8	NO_2	N	11.1	1.2	Y	44	35	41	32	26	23	26	23	33	24	38	24	30.75	25.52	7.47	12	12	2.76	100	100	453500	285500	16.20	20.98
11n	Day Nursery	Roadside	454539	284932	10	NO_2	N	9	1.3	N	62	42	48	50	43	40	32	30	38	42	61	36	43.67	**36.24**	10.13	12	12	3.75	100	100	453500	284500	17.31	27.90
12n	A6 Kibworth	Roadside	468425	294314	11	NO_2	N	10.7	1.3	Y	45	26	45	28	36	32	22	30	43	41	61	31	36.67	30.43	10.84	12	12	4.01	100	100	467500	293500	14.63	22.96
13n	Rockingham Road	Roadside	474731	287585	12	NO_2	N	9	2.8	Y	33	24	28	25	24	30		27				24	26.88	22.31	3.31	12	8	1.50	66.7	66.7	473500	287500	19.22	21.18
16n	Walcote	Roadside	456810	283652	15	NO_2	N	12.5	3	Y	32	24	34	34	25	26	25	21	35	26	40	22	28.67	23.79	6.05	12	12	2.24	100	100	455500	283500	19.83	22.11
17n	The Square	Roadside	473373	287231	16	NO_2	N	2.5	3	Y	38	36	49	37	27	28	28	24	32	28	37	19	31.92	26.49	7.96	12	12	2.94	100	100	472500	286500	14.66	24.63
18n	Jazz Hair	Roadside	454443	284348	17	NO_2	Y	0	3	Y	63	55	49	61	50	48			56	42		33	50.78	**42.15**	9.38	12	9	4.01	75.0	75.0	453500	283500	16.67	
19n	Wistow Rd Kibworth	Roadside	467739	294611	14	NO_2	N	4.4	2.6	Y	35	20	30	26	27	17	26	27	30	27	40	20	27.08	22.48	6.40	12	12	2.37	100	100	466500	294500	14.49	20.50
22n	77 leicester road lutterworth	Roadside	454533	284872	9	NO_2	N	0	13.5	Y	25	27	24	23	23	20	24	21	29	26	35	26	25.25	20.96	3.96	12	12	1.46	100	100	453500	284500	17.31	
23n	6 The Terrace Rugby Road	Roadside	454428	284274	1	NO_2	Y	0	2.5	Y	56	51	43	35	31	40	37	31		47	42	40	41.18	34.18	7.87	12	11	3.04	91.7	91.7	453500	283500	16.67	
24n	regent court	Roadside	454410	284326	4	NO_2	Y	2	1	Y	71	58	68	55	60	55	54	51	48	55	71	40	57.17	**47.45**	9.29	12	12	3.44	100	100	453500	283500	16.67	**40.63**
25n	26 Market Street Lutterworth	Roadside	454497	284618	5	NO_2	Y	1.6	4.8	Y		54	48	48	45	47	46	36	42	42	56	37	45.55	**37.80**	6.20	12	11	2.40	91.7	91.7	453500	284500	17.31	**36.07**
26n	24 Rugby Road Lutterworth	Roadside	454432	284229	13	NO_2	Y	0	2	Y	62	41	53	43	40	46	45	48	50	55	65	45	49.42	**41.02**	7.97	12	12	2.95	100	100	453500	283500	16.67	
27n	17 Rugby road Lutterworth	Roadside	454476	284178	7	NO_2	Y	3.7	5.2	Y	36	41	43	47	34	36	39	33	42	41	45	38	39.58	32.85	4.36	12	12	1.61	100	100	453500	283500	16.67	30.23
28n	Spencerdene main street theddingworth	Roadside	466535	285545	18	NO_2	N	1.2	0.2	N	32	21	27	21	18	19	23	20	16	26	36	20	23.25	19.30	5.96	12	12	2.20	100	100	465500	285500	11.38	16.95
29n	Homeside main street Theddingworth	Roadside	466651	285607	6	NO_2	N	0.2	1.4	Y	48	32	40	32	31	31	31	38	38	33	47	38	36.58	30.36	6.07	12	12	2.24	100	100	465500	285500	11.38	29.82