

2009 Air Quality Updating and Screening Assessment for Herefordshire Council

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

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Executive Summary

This report is the Updating and Screening Assessment for air quality within Herefordshire. It is the latest document (the fourth round) in a continuing process to assess, review and manage air quality within the County which began in 1999, following the implementation of The Environment Act 1995. It follows the last Updating and Screening Assessment that was completed in 2006.

The Environment Act 1995 and its statutory guidance require all local authorities to periodically assess certain pollutants against health based objectives and the relevant national timescale. This report updates any relevant changes that have occurred since the 2006 report, as required by the technical Guidance LAQM.TG (09).

The County-wide monitoring network of Nitrogen Dioxide diffusion tubes has continued to evolve since the last report to ensure any new areas of possible concern are being monitored. This monitoring programme has shown that generally air quality across the County is very good, although the UK health based standard for the pollutant Nitrogen Dioxide annual mean objective is still being breached at the following locations:

- Along a section of the A49 in Hereford, which was designated as an AQMA in 2001
- The junction of Bargates and Cursneh Road in Leominster, which was designated as an AQMA in 2006
- Along a section of the A40 South of Ross-on-Wye between Wilton and Whitchurch
- Whitecross Road, Hereford and Holme Lacy Rd, Hereford which lie just outside the Hereford AQMA

Recent measurements along the A40 from Wilton to Pencraig continue to reflect the findings of the previous detailed assessment carried out and an AQMA will need to be declared. The exact location of this proposed AQMA is still to be determined due to exceedences also being recorded at Whitchurch. Once this has been established, a consultation period will be required prior to the declaration.

Herefordshire Council has identified that a change to the current boundaries of the Hereford AQMA is required owing to Nitrogen Dioxide levels at two sites outside the AQMA now being above the Government objective.

Measurements at two sites within the AQMA at Bargates, Leominster are exceeding the Nitrogen Dioxide Objective but new sites adjacent to the current boundary of the AQMA are below the Objective, showing that no amendments are required. Following the public consultation between 2005 and 2007, a Bargates Air Quality Action Plan has been drawn up in draft and currently we are working towards the completion of this document.

A poultry unit in Lyonshall has been identified as requiring a Detailed Assessment for PM₁₀ as it meets the criteria in LAQM.TG(09). In addition, further information is required on biomass combustion in the County to assess the impact from individual units and their combined impact.

As per Defra guidance, another Updating and Screening Assessment will be undertaken in 2012 and then again in 2015, with Progress Reports completed in the intervening years, with additional Detailed Assessments, detailed above carried out where necessary.

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1 Introduction

1.1 Description of Local Authority Area

1.1.1 Location

The County of Herefordshire lies in the Marches region of the UK, to the West of central England on the Welsh border, being neighboured by the counties of Powys, Monmouthshire, Shropshire, Worcestershire and Gloucestershire. It lies 26km (16 miles) east to the Welsh border and 34km (21 miles) southwest of Worcester, covering an area of approximately 217,973 hectares. Map 1 in Appendix C shows the location of Herefordshire within the UK and Map 2 in Appendix C shows where the County is situated within the Marches region.

1.1.2 Population

Herefordshire has a relatively sparse population of about 178, 400¹, with the largest settlement being the cathedral city of Hereford, which is located approximately at the centre of the county. Map 2 in Appendix C shows the locations of the major market towns and villages within the County and table 1 below shows approximate populations for mid 2006².

Population of Hereford and County Market Towns

TABLE 1.1

Settlement	Population	Percentage
Hereford	55,000	30.83%
Leominster	11,100	6.22%
Ross-on-Wye	10,000	5.61%
Ledbury	9,800	5.49%
Bromyard	4,600	2.58%
Kington	3,200	1.79%
Villages and Rural	84,700	47.48%
TOTAL	178400	100%

The population of Herefordshire has grown approximately 10% since 1991, which compares to a 1.7% growth across the West Midlands region. Much of this growth is down to an inward migration to the region of older people from other parts of the Country, with this trend predicted to continue, resulting in a doubling of the national average of people between 65 – 85+ years old living in the County.

1.1.3 Sources

Herefordshire is a rural authority and coupled with a large proportion of older people living in the County, there is a reliance on private vehicles for transportation; this is reflected in car ownership being higher than the UK average. However, with a growing population and a reliance on private car use this is likely to impact on the air quality within the County.

Herefordshire has only one motorway within its boundaries, the M50 travels only a short distance into the County to Ross-on-Wye from the border with Gloucestershire. A two lane motorway, the M50 has fairly low traffic flow compared to other motorways and currently there are no areas of concern regarding air quality along its stretch within Herefordshire.

The main trunk roads within the County are the A40, A49 and A449, in addition to these, the A465 and A438 principle A roads also record vehicle movements as above 20,000 per day on certain stretches. However, the County has no roads that are classified as being 'very busy roads' in line with the criteria in the Guidance. Road traffic data is shown in Appendix B.

¹ Data from the Office of National Statistics (ONS) 2007 mid year estimate

² ONS Lower Layer Super Output Area Population Estimate 2006 mid year estimate

1.2 Purpose of 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.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM in England are set out in the Air Quality (England) Regulations 2000 (SI 928), The Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1.3. This table shows the objectives in units of microgrammes per cubic metre $\mu\text{g}/\text{m}^3$ (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in England.

TABLE 1.3

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene All authorities	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	5.00 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
Particles (PM₁₀) (gravimetric)	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

1.4.1 History of Air Monitoring in Herefordshire

Herefordshire Council has been monitoring air quality for over 15 years, beginning with Nitrogen dioxide diffusion tube monitoring in 1993. A chemiluminescent (Nitrogen dioxide) API Model 200 continuous analyser was installed at Edgar Street roundabout in 1995 and a BAM 1020 Beta Gauge (PM10) continuous analyser was added at this location in 1997. Appendix C, map 5 shows the location of the Edgar Street Monitoring Station.

Herefordshire Council also monitors Sulphur dioxide using diffusion tubes at Garrick House in Hereford City Centre, however these results are not directly comparable to the objectives as the minimum exposure is one month, which is not comparable to the 15 minute, 1 hour and 24 hour mean objective periods. In addition, this data has not been adjusted for bias, however, for completeness and trend reference this data has been presented in Appendix D, table 9.

Herefordshire Council also monitors Ozone levels at the city centre location at Edgar Street and a rural location in Wellington, this site is shown in Appendix C, map 23. This data has been presented in Appendix D, table 6.

Table 1.4 below shows the reports and outcomes of monitoring that has been carried out previously.

TABLE 1.4

Date	Report/ Order	Outcomes
Apr 2008	Annual Progress Report	NO2 annual mean objective breached at: Hereford AQMA Leominster AQMA A40 Wilton to Pencraig requires AQMA declaration
Jan 2008	Action Plan for Hereford City	15 action points drawn up
Apr 2006	Detailed Assessment for A40	A40 Wilton to Pencraig requires AQMA declaration
Apr 2006	Updating and Screening Assessment	Detailed Assessment required for NO2 at A40/ M50 corridor Hereford AQMA may need to be extended
Jan 2006	AQMA Order for Leominster	-
Apr 2005	Annual Progress Report	NO2 annual mean objective breached at: Hereford AQMA Bargates, Leominster requires AQMA declaration
Jul 2004	Detailed Assessment for Leominster	Designating an AQMA in Leominster is recommended
Mar 2004	Updating and Screening Assessment	Detailed Assessment required for NO2 at Bargates in Leominster
Nov 2002	Stage Four Review and Assessment	Hereford AQMA boundary is still appropriate
Nov 2001	AQMA Order for Hereford	-
Feb 2001	Third stage Review and Assessment	Designating an AQMA in Hereford for NO2 is recommended
Mar 2000	Second stage Review and Assessment	A stage three review <i>may</i> be required for: Sulphur dioxide and PM10
May 1999	First stage Review and Assessment	Further investigation is recommended into: Carbon monoxide in Hereford NO2 in Hereford, Leominster and A40 PM10 in Hereford, M50/A449/A40 corridor and Perton and Leinthall Earls Quarries

1.4.2 Air Quality Management Areas (AQMAs)

Nitrogen Dioxide is the main pollutant of concern within Herefordshire. An AQMA was declared along a stretch of the A49 through Hereford in November 2001, this area is shown in Appendix C, map 6 and a further AQMA was declared in Leominster in January 2006 at the Bargates junction with Dishley Street and Cursneh Road, as shown in Appendix C, map 7. Both AQMA's in Herefordshire have been previously declared due to Nitrogen Dioxide levels not meeting the annual mean objectives and a third AQMA will shortly be declared on a stretch of the A40 between Wilton and Pencraig. The source of pollutants in all three of these areas is mainly derived from road transport emissions, with Hereford and Leominster suffering particularly from stationary traffic within the AQMA's.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Herefordshire Council has an automatic monitoring station located on Edgar Street roundabout within Hereford city centre, the location of this site is shown in Appendix C, map 5. Unfortunately, the equipment has suffered a number of failures and malfunctions this year and the automatic monitoring data collected from this site cannot be relied upon. Due to these failures, calibration of the equipment has not taken place and the data has not been corrected, therefore the data presented in Appendix D, Table 1 has been provided for information only and not for comparison purposes.

Defra has an AURN site adjacent to the Minster school in Leominster (shown in Appendix C, map 24) and continuously monitors Nitrogen dioxide and Ozone. This data is available via the website below: www.bv-aurnsiteinfo.co.uk/viewSite.asp?pageRef=151&stationID=122

Table 2.1.1
Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location ?
Edgar Street	City Centre	X350776 Y240224	NO2 PM10	Y	N	0.5m	Y

2.1.2 Non-Automatic Monitoring

Since the 2008 Air Quality Progress Report for Herefordshire was written, 3 further diffusion tubes have been installed to monitor Nitrogen dioxide in the County. Two sites; St Thomas Cantelope and Widemarsh Street were both chosen to monitor changes to the air quality in Hereford during and following the proposed Edgar Street Grid (ESG) development. As this development has not yet progressed through planning, this data has not yet been fully utilised but the sites do give an indication of background levels within Hereford. The third tube was installed following a complaint from Leominster Town Council about the large number of heavy Goods vehicles passing through this location and their impact on air quality. The tube was situated to assess if an extension to the current AQMA at Leominster Bargates is required and although only 4 months data has been collected, the levels are some way below the Government objective. These three sites are shown in Appendix C, maps 11- 13.

In addition, since the last Updating and Screening Assessment was carried out in 2006, a further 3 diffusion tubes were placed at New Roman Road, Whitecross Road and Barton Road, all in Hereford. The New Roman Road site was chosen to compare the levels at the existing Roman Road site with those at this location on the new stretch of road to Stretton Sugwas. The levels recorded are the lowest of any main road currently monitored in the County, being comparable to the levels in suburban streets. The two other sites were chosen following concerns that the air quality objective was being breached on roads joining the A49 and that the current Hereford AQMA would require extending to fully reflect this. These sites assessed how far down Whitecross Road this enlargement may need to extend, currently both are with the Government objective of 40µg/m³. These three sites are shown in Appendix C, maps 8 - 10.

Herefordshire Council have 58 Nitrogen dioxide diffusion tubes placed at various locations around the County. Most diffusion tubes are located at house facades to correspond to relative public exposure, however some are adjacent to the roadside. The results of these tubes have been adjusted for bias

using a national correction factor derived from UWE of 0.92. Traditionally a bias factor has been calculated using triplicate tubes co-located beside the chemiluminescent analyser's inlet port in Hereford city centre however this data was unable to be used for this year due to the incomplete and unreliability of the monitoring data. All sites are shown in Appendix C, maps 14 – 22.

QA/ QC information on the company and methods used is shown in Appendix A.

Since 2001 monitoring data has been available from the Council's website at:
<http://www.herefordshire.gov.uk/environment/pollution/2264>

Table 2.1.2 Details of Non- Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
Garrick House, Hereford	Urban Centre	351007 240248	N02/ Sulphur dioxide	Y	N	2m	Y
Geoffrey Avenue, Hereford	Urban Background	351548 240924	N02	N	Y (1m)	0.8m	N
Heywood Avenue, Hereford	Urban Background	353106 240559	N02	N	Y (1m)	1.1m	N
Broad Street, Hereford	Urban Background	350890 240000	N02	N	Y (1m)	1.2m	N
Gommond Street, Hereford	Urban Background	351093 240114	N02	N	Y (1m)	25m	N
Victoria St, Hereford (duplicate 1)	Urban Centre	350688 239864	N02	Y	Y (1m)	2.3m	Y
Victoria St, Hereford (duplicate 2)	Urban Centre	350688 239864	N02	Y	Y (1m)	2.3m	Y
Victoria St, Hereford (house façade)	Urban Centre	350677 240015	N02	Y	Y (1m)	2.6m	Y
Edgar St roundabout, Hfd (triplicate 1)	Urban Centre	350776 240224	N02/ Ozone	Y	N	1.5m	Y
Edgar St roundabout, Hfd (triplicate 2)	Urban Centre	350776 240224	N02	Y	N	1.5m	Y
Edgar St roundabout, Hfd (triplicate 3)	Urban Centre	350776 240224	N02	Y	N	1.5m	Y
Newtown Rd/ Edgar Street, Hereford	Urban Centre	350948 240905	N02	Y	Y (1m)	1.8m	Y
Holme Lacy Rd/ Ross Rd lights, Hfd	Urban Centre	350700 238685	N02	N	N	1.0m	Y
Commercial St/ Railway Bridge, Hfd	Urban Centre	351681 240412	N02	N	N	1.3m	Y
Holmer Rd/ Newtown Rd island, Hfd	Urban Centre	350611 241086	N02	N	N	1.7m	Y
Edgar/ Moor St, Hfd façade (duplicate 1)	Urban Centre	350860 240615	N02	Y	Y (1m)	2.0m	Y
Edgar/ Moor St, Hfd façade (duplicate 2)	Urban Centre	350860 240615	N02	Y	Y (1m)	2.0m	Y
Whitchurch	Rural	355209 217814	N02	N	Y (20m)	2.5m	N
Greytree/ M50, Ross verge side	Rural	360115 225247	N02	N	Y (20m)	1.4m	N
Post Office, Pencraig	Rural	356328 220999	N02	N	Y (20m)	2.8m	N
Weir End house façade	Rural	357717 223736	N02	N	Y (2m)	4.2m	N

Table 2.1.2 continued

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
Wilton house façade	Rural	358506 224214	N02	N	Y (2m)	3.6m	N
Gloucester Rd, Ross	Urban Background	359963 224096	N02	N	Y (1m)	1.5m	N
Swimming Pool, Ross	Urban Background	359936 224446	N02	N	Y (1m)	29m	N
Church St, Ross	Urban Background	359819 224016	N02	N	Y (1m)	1.4m	N
Bargates, Leominster	Urban Centre	348771 258960	N02	N	Y (1m)	2.6m	N
Ebnal Close, Leominster	Urban Background	348040 258770	N02	N	Y (4m)	4.7m	N
Bearcroft, Weobley	Urban Background	340421 251766	N02	N	Y (10m)	1.1m	N
Bengry's Lights, Leominster	Urban Centre	349409 259010	N02	Y	Y (1m)	3.3m	Y
Pembridge	Urban Background	338983 258132	N02	N	Y (2m)	2.2m	Y
Kington	Urban Background	365440 254620	N02	N	N	1.5m	N
Bromyard	Urban Background	371080 237670	N02	N	Y (1m)	1.8m	Y
Ledbury Town Centre	Urban Background	359950 224104	N02	N	Y (1m)	4.0m	Y
Market Place, Ross	Urban Background	350723 239163	N02	N	N	2.5m	Y
Cross St, Belmont, Hfd house façade	Urban Background	350602 241097	N02	Y	Y (1m)	4.5m	Y
Holmer Rd, Hereford house façade	Urban Background	350801 240142	N02	N	Y (1m)	9.6	Y
Bus Station (adj to Tesco), Hereford	Urban Background	350794 240145	N02	Y	N	19.3m	N
Eign St, Hereford shop flat façade	Urban Background	351258 240136	N02	Y	Y (1m)	1.1m	Y
Union St/ Bath St, Hfd shop front façade	Urban Background	350987 240139	N02	Y	Y (1m)	2.0m	Y
Elgars Rest, Widemarsh St, Hfd façade	Urban Centre	349363 259013	N02	Y	Y (5m)	4.3m	N
Connolly's PH, Cursneh Rd, Leominster	Urban Centre	349363 259013	N02	Y	Y (5m)	4.3m	Y
29 Bargates, Leominster	Urban Centre	349365 259013	N02	Y	Y (1m)	2.0m	Y

Table 2.1.2 continued

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
46 Bargates, Leominster	Urban Centre	349221 259018	N02	N	Y (1m)	4.6m	N
85 Bargates, Leominster	Urban Centre	350362 259016	N02	N	Y (1m)	3.5m	N
106 Belmont Road, Hereford façade	Urban Centre	350086 240296	N02	N	Y (1m)	4.6m	N
96 Whitecross Road, Hereford façade	Urban Background	350086 240297	N02	N	Y (6m)	1.7m	N
Roman Road/ Three Elms, Hereford	Urban Background	329610 258520	N02	N	Y (1m)	2.1m	N
Wilton road sign	Rural	358459 224197	N02	N	Y (3m)	3.6m	N
Weir End road sign	Rural	357761 223751	N02	N	Y (10m)	4.2m	N
Pencreig sign	Rural	356288 221076	N02	N	Y (10m)	3.5m	N
Goodrich	Rural	356641 220477	N02	N	Y (3m)	3.0m	N
Daf-Y-Nant	Rural	354585 217162	N02	N	Y (20m)	4.5m	N
New Roman Road, Hereford	Rural	348071 242364	N02	N	Y (40m)	2.6m	N
Whitecross	Urban Background	349985 240334	N02	N	Y (2m)	8.8m	N
22 Barton Road, Hereford	Urban Background	350511 239740	N02	N	Y (1m)	2.0m	N
St Thomas Cantilope School	Urban Background	351130 240370	N02	N	Y (1m)	8.5m	N
Widemarsh Street	Urban Background	351110 240620	N02	N	Y (1m)	3.5m	N
46 Broad Street, Leominster	Urban Background	349599 259264	N02	N	Y (1m)	3.3m	N
Wellington	Rural	349030 248080	Ozone	N	Y (1m)	3.0m	N

The QA/ QC information is detailed in Appendix A.

2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

No automatic monitoring data has been included in this section for 2008 due to failures of the monitoring equipment throughout the year, therefore the data collected cannot be relied upon to be accurate and should not be used for comparison purposes. The data set has been included in Table 1 of Appendix D for information only.

Table 2.2.1a

Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Proportion of year with valid data 2008 %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
				2006	2007	2008
13	Edgar Street	Y	0	55.0	53.3	Not valid

Table 2.2.1b

Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2008 %	Number of Exceedences of hourly mean ($200 \mu\text{g}/\text{m}^3$) <i>If the period of valid data is less than 90% of a full year, include the 99.8th %ile of hourly means in brackets.</i>		
				2006	2007	2008
13	Edgar Street	Y	0	Not known	Not known	Not valid

Diffusion Tube Monitoring Data

The annual mean results of the 58 Nitrogen Dioxide diffusion tube locations around the County can be seen below, the full dataset of monthly results for 2008 are in Table 3 of Appendix D. The figures in bold show those which exceed the Government Objective.

Table 2.2.1c

Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Data Capture 2008 %	Annual mean concentrations
				2008 ($\mu\text{g}/\text{m}^3$) Adjusted for bias
1	Garrick House, Hereford	Y	100	42.3
3	Geoffrey Avenue, Hereford	N	83.3	21.2*
5	Heywood Avenue, Hereford	N	100	13.9
6	Broad Street, Hereford	N	100	34.3
7	Gommond Street, Hereford	N	100	17.2
8	Victoria St, Hereford (duplicate 1)	Y	100	47.6
9	Victoria St, Hereford (duplicate 2)	Y	100	50.4
10	Victoria St, Hereford (house façade)	Y	100	48.7
12	Edgar St roundabout, Hfd (triplicate 1)	Y	100	51.1
13	Edgar St roundabout, Hfd (triplicate 2)	Y	100	51.7
14	Edgar St roundabout, Hfd (triplicate 3)	Y	100	55.2
15	Newtown Rd/ Edgar Street, Hereford	Y	100	35.7
17	Holme Lacy Rd/ Ross Rd lights, Hfd	N	100	56.7

Site ID	Location	Within AQMA?	Data Capture 2008 %	Annual mean concentrations 2008 ($\mu\text{g}/\text{m}^3$) Adjusted for bias
19	Commercial St/ Railway Bridge, Hfd	N	100	39.1
20	Holmer Rd/ Newtown Rd island, Hfd	Y	100	42.4
21	Edgar/ Moor St, Hfd façade (duplicate 1)	Y	100	38.8
22	Edgar/ Moor St, Hfd façade (duplicate 2)	Y	100	40.9
23	Whitchurch	N	100	47.5
25	Greytree/ M50, Ross verge side	N	83.3	39.0*
30	Post Office, Penraig	N	100	41.4
32	Weir End house façade	N	100	44.1
33	Wilton house façade	N	100	45.4
36	Gloucester Rd, Ross	N	100	31.5
37	Swimming Pool, Ross	N	100	16.8
38	Church St, Ross	N	100	14.4
41	Bargates, Leominster	N	100	20.0
44	Ebnal Close, Leominster	N	100	9.9
45	Bearcroft, Weobley	N	100	8.1
46	Bengry's Lights, Leominster	Y	100	43.3
47	Pembridge	N	100	20.6
48	Kington	N	83.3	18.8*
49	Bromyard	N	100	28.6
50	Ledbury Town Centre	N	100	22.5
51	Market Place, Ross	N	100	32.5
53	Cross St, Belmont, Hfd house facade	Y	100	37.4
54	Holmer Rd, Hereford house façade	N	100	28.9
56	Bus Station (adj to Tesco), Hereford	Y	100	40.1
57	Eign St, Hereford shop flat façade	Y	100	41.5
58	Union St/ Bath St, Hfd shop front façade	Y	100	32.3
59	Elgars rest, Widemarsh St, Hfd façade	N	91.6	29.0
60	Connolly's PH, Cursneh Rd, Leominster	Y	91.6	28.5
61	29 Bargates, Leominster	Y	91.6	59.0
62	46 Bargates, Leominster	N	100	27.5
63	85 Bargates, Leominster	N	100	39.1
64	106 Belmont Road, Hereford façade	N	100	28.8
65	96 Whitecross Road, Hereford façade	N	100	46.7
67	Roman Road/ Three Elms, Hereford	N	100	24.4
68	Wilton road sign	N	100	33.4
69	Weir End road sign	N	83.3	36.1*
70	Penraig sign	N	100	35.7
71	Goodrich	N	100	40.6
72	Daf-Y-Nant	N	100	38.0
73	New Roman Road, Hereford	N	91.6	13.9
74	Whitecross	N	100	23.3
75	22 Barton Road, Hereford	N	100	29.2
76	St Thomas Cantilope School	N	100	22.1
77	Widemarsh Street	N	100	28.8
78	46 Broad Street, Leominster	N	33.3	29.6*

NOTE: *Figure has been adjusted to provide estimate of annual mean as less then 90% of data was available, please see appendix E for calculations.

Background Concentrations

The estimated annual mean background concentrations in rural Herefordshire generally range between 7 $\mu\text{g}/\text{m}^3$ and 10 $\mu\text{g}/\text{m}^3$. Higher background levels are estimated in Ross-on-Wye (along the M50 to the A40) with concentrations in the region of 12 – 17 $\mu\text{g}/\text{m}^3$ and Leominster (Bargates) with concentrations in the region of 8 – 13 $\mu\text{g}/\text{m}^3$, with the highest estimated backgrounds in Hereford City Centre peaking at 30 $\mu\text{g}/\text{m}^3$.

This data can be accessed at: www.airquality.co.uk/archive/laqm/tools.php

Exceedences

There are 20 sites which exceed the annual mean objective of 40 µg/m³ for Nitrogen Dioxide, with an additional 4 that could be considered to be borderline. Of those 20 sites identified, 8 are roadside measurements and do not reflect relevant public exposure. The table below shows those identified as exceeding the objective and the estimation of the concentration at the nearest receptor using the calculation in LAQM.TG (09). The calculation figures are shown in Appendix D, Calculation 2.

Table 2.2.1d
Table to show the Concentration of Nitrogen Dioxide at the nearest receptor

Site ID	Location	Representative of public exposure?	Roadside Measurement?	Estimation of concentration at nearest receptor
1	Garrick House, Hereford	N	42.3	39.7*
8	Victoria St, Hereford (duplicate 1)	Y	47.6	44.7
9	Victoria St, Hereford (duplicate 2)	Y	50.4	47.1
10	Victoria St, Hereford (house façade)	Y	48.7	48.7
12	Edgar St roundabout, Hfd (triplicate 1)	N	51.1	37.5*
13	Edgar St roundabout, Hfd (triplicate 2)	N	51.7	37.8*
14	Edgar St roundabout, Hfd (triplicate 3)	N	55.2	39.0*
17	Holme Lacy Rd/ Ross Rd lights, Hfd	N	56.7	40.9*
20	Holmer Rd/ Newtown Rd island, Hfd	Y	42.4	37.1
22	Edgar/ Moor St, Hfd façade (duplicate 2)	Y	40.9	40.9
23	Whitchurch	Y	47.5	31.8
30	Post Office, Pencraig	Y	41.4	27.6
32	Weir End house façade	Y	44.1	44.1
33	Wilton house façade	Y	45.4	45.4
46	Bengry's Lights, Leominster	Y	43.3	43.3
56	Bus Station (adj to Tesco), Hereford	N	40.1	37.9*
57	Eign St, Hereford shop flat façade	Y	41.5	41.5
61	29 Bargates, Leominster	Y	59.0	59.0
65	96 Whitecross Road, Hereford façade	Y	46.7	41.4
71	Goodrich	Y	40.6	38.8

Table 2.2.1e
Borderline Sites

Site ID	Location	Representative of public exposure?	Roadside Measurement?	Estimation of concentration at nearest receptor
19	Commercial St/ Railway Bridge, Hfd	N	39.1	35.3*
25	Greytrees/ M50, Ross verge side	Y	39.0	29.6
63	85 Bargates, Leominster	Y	39.1	39.1
72	Daf-Y-Nant	Y	38.0	33.3*

NOTE: * All concentrations with an asterisk indicate that the result should be treated with caution as the receptor is over 20 metres from the tube.

Taking into account the concentrations at the nearest receptors this indicates 11 sites are above the objective. Only four of these sites are currently outside existing AQMA's, with two sites identified as being within the proposed A40 AQMA and a further two on the boundary of the existing Hereford AQMA. In addition, there are a number of sites within the existing AQMA that are close to exceeding the objective at nearby receptors.

No sites have been identified as exceeding the 1 hour mean of 200 µg/m³.

Table 2.2.1f Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
			Adjusted for bias		
			2006	2007	2008
1	Garrick House, Hereford	Y	43.6	45.7	42.3
3	Geoffrey Avenue, Hereford	N	18.3	18.5	21.2
5	Heywood Avenue, Hereford	N	13.8	13.5	13.9
6	Broad Street, Hereford	N	37.0	37.2	34.3
7	Gommond Street, Hereford	N	20.2	21.1	17.2
8	Victoria St, Hereford (duplicate 1)	Y	53.5	54.9	47.6
9	Victoria St, Hereford (duplicate 2)	Y	56.6	52.3	50.4
10	Victoria St, Hereford (house façade)	Y	54.1	53.0	48.7
12	Edgar St roundabout, Hfd (triplicate 1)	Y	56.2	51.5	51.1
13	Edgar St roundabout, Hfd (triplicate 2)	Y	55.7	56.3	51.7
14	Edgar St roundabout, Hfd (triplicate 3)	Y	53.0	52.3	55.2
15	Newtown Rd/ Edgar Street, Hereford	Y	35.8	38.2	35.7
17	Holme Lacy Rd/ Ross Rd lights, Hfd	N	53.8	65.6	56.7
19	Commercial St/ Railway Bridge, Hfd	N	40.8	40.9	39.1
20	Holmer Rd/ Newtown Rd island, Hfd	Y	42.4	47.8	42.4
21	Edgar/ Moor St, Hfd façade (duplicate 1)	Y	43.4	42.6	38.8
22	Edgar/ Moor St, Hfd façade (duplicate 2)	Y	43.3	42.6	40.9
23	Whitchurch	N	46.0	42.8	47.5
25	Greytree/ M50, Ross verge side	N	40.6	37.9	39.0
30	Post Office, Pencraig	N	41.2	45.4	41.4
32	Weir End house façade	N	49.3	51.3	44.1
33	Wilton house façade	N	43.9	49.0	45.4
36	Gloucester Rd, Ross	N	37.3	36.1	31.5
37	Swimming Pool, Ross	N	15.3	16.8	16.8
38	Church St, Ross	N	17.2	30.4	14.4
41	Bargates, Leominster	N	50.7	22.3	20.0
44	Ebnal Close, Leominster	N	12.8	11.0	9.9
45	Bearcroft, Weobley	N	9.4	8.4	8.1
46	Bengry's Lights, Leominster	Y	45.8	49.2	43.3
47	Pembridge	N	24.8	25.2	20.6
48	Kington	N	15.1	17.1	18.8
49	Bromyard	N	30.9	33.7	28.6
50	Ledbury Town Centre	N	27.2	26.3	22.5
51	Market Place, Ross	N	38.8	37.2	32.5
53	Cross St, Belmont, Hfd house facade	Y	44.2	43.8	37.4
54	Holmer Rd, Hereford house façade	N	31.6	35.2	28.9
56	Bus Station (adj to Tesco), Hereford	Y	43.2	45.3	40.1
57	Eign St, Hereford shop flat façade	Y	37.6	42.5	41.5
58	Union St/ Bath St, Hfd shop front façade	Y	34.9	36.7	32.3
59	Elgars rest, Widemarsh St, Hfd façade	N	27.9	29.3	29.0
60	Connolly's PH, Cursneh Rd, Leominster	Y	30.7	34.4	28.5
61	29 Bargates, Leominster	Y	61.4	60.6	59.0
62	46 Bargates, Leominster	N	29.4	32.5	27.5
63	85 Bargates, Leominster	N	38.3	37.6	39.1
64	106 Belmont Road, Hereford façade	N	29.6	33.8	28.8
65	96 Whitecross Road, Hereford façade	N	44.6	49.1	46.7
67	Roman Road/ Three Elms, Hereford	N	24.7	26.8	24.4
68	Wilton road sign	N	38.3	36.9	33.4
69	Weir End road sign	N	38.3	40.6	36.1
70	Pencraig sign	N	39.4	42.9	35.7
71	Goodrich	N	45.7	45.4	40.6
72	Daf-Y-Nant	N	39.4	35.1	38.0
73	New Roman Road, Hereford	N	11.5	16.9	13.9
74	Whitecross	N	25.2	29.3	23.3

Site ID	Location	Within AQMA?	Annual mean concentrations ($\mu\text{g}/\text{m}^3$) Adjusted for bias		
			2006	2007	2008
			75	22 Barton Road, Hereford	N
76	St Thomas Cantilope School	N	-	-	22.1
77	Widemarsh Street	N	-	-	28.8
78	46 Broad Street, Leominster	N	-	-	29.6*

Trends

There appears to be a general downward trend in NO₂ concentrations in Herefordshire, albeit very slight and maybe affected by the higher levels recorded from 2007. Although an action plan to manage air quality in Hereford has been in place since January 2008, the downward trend appears to be across the County and not limited to Hereford City.

Hereford AQMA

Eleven of the exceedences recorded in 2008 are within the existing Hereford AQMA, eight of these sites show a lower concentration than 2006 or 2007, with two sites showing no significant change since 2006 and only one site, Edgar Street triplocote 3 (site 14) showed an increase from the previous two years. This may be an anomaly as Edgar Street triplocotes 1 and 2 (sites 12 and 13) in very similar locations to site 14 both had lower concentrations in 2008, than 2006 and 2007.

Both Commercial Street (site 19) and Edgar Street/ Moor Street facade, duplicate 1 (site 21) are both very close to exceeding the Nitrogen Dioxide objective, however, looking at Table 2.4b, the trend seems to indicate that levels are falling as both sites exceeded the objective in 2007 and 2006. Although site 21 is located just outside the AQMA as it has now fallen below the objective, further monitoring is required to ensure levels continue to fall.

Bargates AQMA

Bengrys Lights and 29 Bargates are both above the objective, with the latter site having the highest concentration of Nitrogen dioxide in the County, with nearly 150% of the objective measured in 2008. However, both sites recorded the lowest measured concentration for three years, which may indicate a downward trend.

Exceedences along the A40

There are four sites, Whitchurch (23), Post Office Pencraig (30), West end (32) and Wilton House (33) along the A40 that exceed the objective, with a further site Greytree/ M50 (25) also borderline. There appears to be no increasing trend for these sites with some staying reasonably constant over the last three years and one, Whitchurch (23) registering a higher concentration this year than any other. However, sites 23, 25 and 30 are all unrepresentative of public exposure and when that is taken into consideration, all three fall below the objective (Appendix E, Calculation 2).

2.2.2 PM₁₀

PM₁₀ is measured by the Council at the automatic monitoring station at Edgar Street (see Appendix C, Map 5). No automatic monitoring data for 2008 has been included in this section due to failures of the monitoring equipment throughout the year, therefore, the data collected cannot be relied upon to be accurate and should not be used for comparison purposes. The data set has been included in Tables 7 and 8 of Appendix D for information.

Table 2.2.2a

Results of PM₁₀ Automatic Monitoring: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2008 %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
				2006	2007	2008
13	Edgar Street	N	0	29.63	25.1	27.82

Table 2.2.2b
Results of PM₁₀ Automatic Monitoring: Comparison with 24-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2008 %	Number of Exceedences of hourly mean (50 µg/m ³) <i>If data capture < 90%, include the 90th %ile of hourly means in brackets.</i>		
				2006	2007	2008
13	Edgar Street	N	0	13	2	12

2.2.3 Sulphur Dioxide

Sulphur dioxide is measured by the Council at one location in Hereford city centre using a diffusion tube adjacent to the NO₂ one on the façade of the Council owned Garrick House building (see Site 1 on Map 14 of Appendix C). This site was located as a typical city centre location to give an indication of SO₂ output from local oil burning industry and domestic coal burning.

As diffusion tubes are unable to measure the 1 hour mean; monthly and annual figures are used only as a benchmark to assess trends, rather than assess compliance against the local air quality objective. In addition, the SO₂ diffusion tube is not adjusted for bias and is therefore not as accurate as those used for NO₂. However, the results do give an indication of Sulphur dioxide levels experienced within the City and offer the best local data available.

Table 2.2.3
Results of Sulphur Dioxide Diffusion Tube Monitoring

Site ID	Location	Within AQMA?	Data Capture 2008 %	Annual mean concentrations (µg/m ³)		
				2006	2007	2008
13	Edgar Street	N	100	2.79	4.35	3.67

These low levels of Sulphur dioxide measured indicate that the site is very unlikely to exceed the air quality objective of 125µg/m³ per 24hour mean. The monthly figures can be seen in Table 9 of Appendix D.

The AURN Minster site in Leominster also continuously monitors SO₂ levels. This data can be accessed at:

www.airquality.co.uk/archive/flat_files.php?site_id=LEOM&zone_id=16

2.2.4 Benzene

The main source of Benzene emissions are petrol engine vehicles, petrol refining and uncontrolled emissions from larger petrol stations. Herefordshire has no petrochemical installations and previous monitoring at petrol stations within the County in 1999/ 2000 found that even in worst case scenarios the maximum monthly mean was measured at 3.2µg/m³ and the annual average was likely to be 2 to 3µg/m³. This would not exceed either the 2003 or 2010 objective.

Government guidance states that there is no need to consider Benzene traffic emissions in this report as the stricter 2010 Air Quality Objective is likely to be exceeded only in very close proximity to busy roads, of which Herefordshire have none.

As no further action was required at the last update and screening assessment for Benzene and there have been no new processes or significant changes to existing industrial processes either in Herefordshire or its neighbouring Districts, it is presumed no exceedences of Benzene are likely within the County. Therefore, no Benzene monitoring has been undertaken within Herefordshire.

2.2.5 Ozone

Herefordshire Council monitors Ozone levels using monthly diffusion tubes at a city centre location in Hereford and a rural location in Wellington for comparison.

Table 2.2.5
Results of Ozone Diffusion Tube Monitoring: Comparison with Annual Mean Objective

Site ID	Location	2004	2005	2006	2007	2008
12	Edgar Street - City	15.3	12.02	19.24	12.74	17.25
N/A	Wellington - Rural	34.6	29.25	35.97	30.18	35.59

Table in PPB

There is no National Objective for Ozone but the EU health protection threshold which is based on an 8 hour mean average is 120 µg/m³. This would indicate that levels of Ozone in the County are not a particular concern.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Herefordshire Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic

Herefordshire Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

3.3 Roads with a High Flow of Buses and/or HGVs.

Herefordshire Council confirms that there are no new/newly identified roads with high flows of buses/HGVs.

3.4 Junctions

Herefordshire Council confirms that there are no new/newly identified busy junctions/busy roads.

3.5 New Roads Constructed or Proposed Since the Last Round of Review and Assessment

Proposals have been put forward to redevelop an area of the city of Hereford, which will mean changes to the current road network, including an entirely new stretch of road and significantly changed traffic flows along a stretch of the current AQMA. This area, known as the Edgar Street Grid is a staged project and consultants have already been employed by the developers to carry out background air quality assessments. As planning permission has not yet been approved for this project, it has not been included in this assessment.

Herefordshire Council confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

Herefordshire Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

Herefordshire Council confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

Herefordshire Council confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

Herefordshire Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

4.2.2 Moving Trains

Herefordshire Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

4.3 Ports (Shipping)

Herefordshire Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

5 Industrial Sources

5.1 Industrial Installations

The city centre 'Dalkia combined heat and power station' no longer generates electricity and instead raises only heat and steam for two adjacent food factories, Sun Valley Foods and Bulmers. Heavy fuel oil is no longer burnt and the plant is almost predominantly gas fired with the theoretical back up of gas oil. The boilers have been authorised by the Environment Agency as an IPPC process since December 2006. Carbon monoxide emissions are considered to be less than originally predicted in 2000, based on the site's reduced operation and improved combustion plant since then. Carbon monoxide emissions are therefore unlikely to exceed the objective in the city. This has been ratified by the Environment Agency (its regulator).

There are no other new or significantly expanded industrial processes within the county which are likely to significantly affect the Government objectives.

5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

Herefordshire Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been Introduced

Herefordshire Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment

Herefordshire Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.2 Major Fuel (Petrol) Storage Depots

There are no major fuel (petrol) storage depots within the Local Authority area.

5.3 Petrol Stations

Herefordshire Council confirms that there are no petrol stations meeting the specified criteria.

5.4 Poultry Farms

PM10 has been monitored previously at Edgar Street roundabout but monitoring has not been undertaken at any other sites and no action had been previously identified.

Information from the Integrated Pollution and Prevention (IPPC) public register indicates that there is one poultry farm within Herefordshire that meets the criteria set down in LAQM.TG(09), in that it has 400, 000 or more birds and where there is relevant exposure within 100m. This indicates that this site may potentially exceed the PM10 objectives.

Whitern Farms Limited is made up of three linked sites and has a capacity for 516,000 birds housed in mechanically ventilated units. Hollybush Farm, Brook Farm and Hunton Farm in Lyonshall, Kington, Herefordshire make up the three sites, with the closest receptor being located 35 metres from one of the units and a further five residential properties within 100m.

Herefordshire Council has identified a poultry farm meeting the specified criteria, and **will need to proceed to a Detailed Assessment for PM₁₀**.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

Previous air quality reviews and assessments have considered oil boilers of over 5MW for the SO₂ objective and identified only the dual burner located at the County Hospital in Hereford. SO₂ levels were found to be insignificant compared to background levels. Since 2003 the sulphur content in oil has been limited to 1%, which implies that sulphur dioxide emissions from this source are likely to remain insignificant.

Biomass burning can increase PM₁₀ and NO_x concentrations and with a recent increase in these types of plant, further consideration of their impacts is now required. Although no other significant biomass combustion processes have been identified, Herefordshire Council holds limited information on the location, type and emission rates of biomass combustion processes within the County and with a recent increase in the amount of these plants being installed, is not in a position to properly assess their full impact at the present time. Further work in this area is therefore required.

Herefordshire Council has not been able to fully assess biomass combustion plant, and concluded that **it will be necessary to proceed to a Detailed Assessment for both No₂ and PM₁₀.**

6.2 Biomass Combustion – Combined Impacts

As further work is required to initially assess the emissions from biomass combustion units, additional work will also be required to assess the combined impacts of those units.

Herefordshire Council has not been able to fully assess biomass combustion plant, and concluded that **it will be necessary to proceed to a Detailed Assessment for PM₁₀.**

6.3 Domestic Solid-Fuel Burning

Previous rounds of the review and assessment found that since gas has been made readily available to the market towns and major villages in the County, there have been no known areas in the County where there is a high density of domestic coal burning, i.e. areas of 500 x 500m with at least 100 properties burning coal. There has been no significant increase to the usage of coal or domestic solid-fuel burning in areas with higher property density and therefore no further work in this area is deemed necessary.

Herefordshire Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

7 Fugitive or Uncontrolled Sources

Two locations within the County have previously been identified as having the potential for elevated PM₁₀ concentrations, these being Perton Quarry, Stoke Edith and Leinthall Earls Quarry, Wigmore. No new sources or new sites of relevant exposure have been identified since the last round. Having reference to the screening criteria recommended in the statutory guidance, only the Leinthall Earls Quarry can be categorised as having 'near' relevant exposure (housing).

7.1 Perton Quarry

Herefordshire Council's Stage 3 Report in 2001 investigated Perton quarry's potential to exceed the PM₁₀ objectives at the nearest receptor. It was concluded that the objectives were unlikely to be breached and unless complaints were received or an extension was proposed, further work in this area was unnecessary. The situation has not changed since this time and no complaints have been recorded recently.

7.2 Leinthall Earls Quarry

This site has recently submitted a planning application to continue works at the site with changes to working hours, however a change is not proposed to the access or crushing and processing areas and therefore the dust impact and particulate concentration is likely to remain the same.

Although the quarry has 'near' relevant exposure, a detailed assessment is not considered necessary because:

- tight dust control standards are already imposed on this quarry under their Environmental Permit and
- there is an absence of complaints

The process is 195m from housing and the estimated 2005 background concentration was in the region of 14µg/m³, which is now estimated to be at a similar level.

7.3 Background PM₁₀

The estimated annual mean background concentrations for PM₁₀ can be accessed from the internet at www.airquality.co.uk/archive/laqm/tools.php.

Data from the above web site for PM₁₀ in the base year of 2008, shows that the estimated background levels in the county range from 12.7µg/m³ to 20.8 µg/m³ but most data fall in the region of 12 - 14 ug/m³.

Herefordshire Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

8.1.1 Hereford AQMA

There are 15 monitoring sites within the Hereford AQMA and 11 of these sites exceeded the objective of 40 µg/m³ in 2008. Out of the 4 sites that fell below the objective, two did so for the first time in three years, these being site 12 - Edgar/ Moor Street façade duplicate 1 and site 53 – Cross Street, Belmont. The other two sites have fallen below the objective for three years. The general trend shows that levels have reduced slightly over the last 3 years.

Two sites in Hereford that currently lie outside the AQMA exceeded the 40 µg/m³ objective in 2008. Both sites, site 17 - Holme Lacy Road and site 65 - 96 Whitecross Road have exceeded the objective for three years and indicate that the boundaries of the AQMA need amending to incorporate more of Whitecross Road and stretch further south down the A49.

However, taking into consideration public exposure, only 7 sites exceed the objective these being: Site 8 – Victoria St duplicate 1, site 9 – Victoria St duplicate 2, site 10 – Victoria Street house façade, site 17 – Holme Lacey Road, site 22 – Edgar/ Moor Street, site 57 – Eign Street and site 65 – 96 Whitecross Road. This still indicates that the current boundaries of the AQMA will need to be amended.

8.1.2 Bargates AQMA

There are 3 monitoring sites within the Leominster Bargates AQMA, with two of these exceeding the objective in 2008. The third, site 60 – Connolly's PH, continues to fall well below the objective and measured its lowest Nitrogen dioxide level for three years in 2008. Site 46 - Bengry's Lights and site 61 - 29 Bargates are both above the objective but both sites recorded the lowest measured concentration for three years, which may indicate a downward trend.

The other five sites measured in Leominster all fell below the objective and indicate no further action is required. However, the draft action plan for Bargates AQMA needs to be completed in order to manage this AQMA.

8.1.3 A40 Corridor

There are four sites, site 23 - Whitchurch, site 30 - Post Office Penraig, site 32 – Weir End and site 33 - Wilton House along the A40 that exceeded the objective in 2008, with a further site Greytree/ M50 (25) also borderline. However, sites 23, 25 and 30 are all unrepresentative of public exposure and when that is taken into consideration, only two sites exceed the objective.

A detailed assessment was carried out for this area in 2006 and identified that an AQMA needs to be declared.

8.2 Conclusions from Assessment of Sources

8.2.1 Poultry Farm

A farm within Herefordshire has been identified as meeting the criteria found in LAQM.TG(09), this being:

1. Having in excess of 400,00 birds mechanically ventilated and
2. Having relevant exposure within 100m of the units

Herefordshire Council will therefore be completing a detailed assessment to measure levels of PM₁₀ in this area.

8.2.2 Biomass Combustion

As information on biomass combustion processes within the County is limited, a detailed assessment is required on both individual units and their combined impact, to establish the full impact these units have on PM₁₀ and No₂ levels.

8.3 Proposed Actions

The Updating and Screening Assessment has identified that the following action is required:

1. A Detailed Assessment is required for PM₁₀ to assess emissions from the identified poultry unit at Whittern Farms Limited, Lyonshall, Kington, Herefordshire.
2. Further information is required regarding the impact of biomass combustion within the County from both individual units and their combined impact.
3. An AQMA needs to be declared on the A40 corridor.
4. The boundaries of the Hereford AQMA need to be amended to envelop the two sites which have been exceeding the Objective for the previous three years.
5. An Action Plan for the management of the AQMA at Bargates, Leominster needs to be formally adopted.

9 References

1. AQEG, (2005), "Particulate Matter in the UK", Defra publications
2. AQEG, (2004), "Nitrogen Dioxide in the UK", HMSO
3. Census, 2001
4. Defra, (2007) "The Air Quality Strategy for England, Scotland, Wales and Northern Ireland", HMSO
5. Defra, (2003) "LAQM.PRG(03) - Progress Report Guidance"
6. EPAQs, (1996), "Nitrogen Dioxide", Defra, HMSO
7. EPAQS, (1995),"Sulphur Dioxide", Defra publications / HMSO
8. EPAQS, (1994), "Ozone", Defra publications / HMSO
9. Herefordshire Council and The Herefordshire Partnership, (2009), "Population of Herefordshire 2009"
10. Herefordshire Council, (May 1999) "First Stage Air Quality Review and Assessment"
11. Herefordshire Council, (Mar 2000) "Second Stage Air Quality Review and Assessment"
12. Herefordshire Council, (Feb 2001) "Third Stage Air Quality Review and Assessment"
13. Herefordshire Council, (Nov 2002) "Stage Four Air Quality Review and Assessment"
14. Herefordshire Council, (Mar 2004) "Updating and Screening Assessment Report"
15. Herefordshire Council, (July 2004) "Detailed Assessment Report"
16. Herefordshire Council, (April 2005) "Annual Progress Report"
17. Herefordshire Council, (April 2006) "Updating and Screening Assessment Report"
18. Herefordshire Council, (January 2008) "Hereford City Air Quality Action Plan"
19. Herefordshire Council, Local Transport Plan 2006/07 – 2010/11

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