



COTSWOLD
DISTRICT COUNCIL

2012 Air Quality Updating and
Screening Assessment for
Cotswold District Council
(Includes Detailed Assessment for
Thames Street Lechlade)

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

May 2012

Local Authority Officer	Hilary Beach
Department	Public Protection
Address	Cotswold District Council
Telephone	01285 623000
e-mail	hilary.beach@cotswold.gov.uk
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Executive Summary

This Updating and Screening report for 2012 is the next round of reporting on air quality required of local authorities. It considers the guidance in Technical Guidance (LAQM.TG(09)) issued by Defra and the Devolved Administrations.

Cotswold District Council has continued to maintain diffusion tube monitoring sites for nitrogen dioxide across the district. The sites are representative of relevant exposure and relate to emissions from traffic. Six sites are within the Air Quality Management Area (AQMA) declared in 2008 and four sites are within an area of concern in Lechlade. The council maintains two automatic monitors one within the Air Quality Management Area and one in Thames Street Lechlade.

The levels of nitrogen dioxide remain high within the AQMA. The Action Plan has been completed and published. As part of this a working group has been set up to support this plan. Traffic management within this area is outside the control of Cotswold District Council; but the council will continue to encourage and support alternative transport and any measures considered by the Highways Agency to improve the situation.

Monitoring at Lechlade has been inconclusive and the assessment is continuing. Initial results from the analyser are annexed in this report.

The report concludes that there are no new areas of concern have been identified within Cotswold District Council's area.

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1 Introduction

1.1 Description of Local Authority Area

Cotswold District Council is predominantly a rural area, geographically the largest of the Gloucestershire local authorities and crossed by three main traffic routes:

- A419/A417, which is a trunk road crossing from northwest to southeast;
- A429 southwest to northeast; and
- A40 which crosses the district west to east.

These roads mainly pass through countryside, bypassing most of the main towns, apart from the A429 that passes through the outskirts of Stow-on-the-Wold and Moreton-in-Marsh. Large portions of the District are classified as an area of outstanding natural beauty.

There are no industrial areas within the district or close by that make a significant impact on air quality. The industries within the district that emit any of the prescribed pollutants are not located close to relevant public exposure. The scale on which they operate does not produce emissions that contribute significantly to the air quality.

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.

The objective of this Updating and Screening Assessment is to identify any matters that have changed which may lead to risk of an air quality objective being exceeded. A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment. The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

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 1.1. 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).

Table 1.1 Air Quality Objectives included in Regulations for the purpose of LAQM in England

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	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 (PM ₁₀) (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

Report Submitted	Outcome
Updating and Screening 2006	Diffusion tube monitoring carried out for NO ₂ and Benzene. No new issues identified. Monitoring continued for NO ₂ at the Air Balloon roundabout junction of the A417 at Birdlip in relation to potential exceedance identified.
Detailed Assessment 2007 for nitrogen dioxide (NO ₂) at A417 junction	Automatic monitoring undertaken of NO ₂ and dispersion modelling carried out at Birdlip confirmed need to declare AQMA.
Progress Report 2007	No new issues. Monitoring for NO ₂ continued with no changes.
Declaration of Local Air Quality Management Area April 2008	Declared in respect of nitrogen dioxide exceedance of annual mean related to traffic emissions. (See figure 1) Order amended 2010 to include 1 hourly objective.
Round 4 Updating and Screening 2009	Monitoring of NO ₂ continued across the district. Continuous monitoring was reported on from within the Air Quality Management area at Birdlip; A Further Assessment was submitted 2010 for this site.
Progress Report 2010	Identified a possible exceedance at Thames Street Lechlade. Continuous monitoring planned for this site. Diffusion tube monitoring continued across the district and continuous monitoring within the AQMA. No new areas of concern were identified.
Progress Report 2011	Diffusion tube monitoring was reported on with no new areas identified. A continuous monitoring began in Thames Street Lechlade to be reported on in 2012; continuous monitoring continued within the existing AQMA.
Action Plan for AQMA at Air Balloon Roundabout	Action Plan was published. The issue is relates to traffic on this major trunk route; controls are outside the control of the district council. The plan concludes that support and encouragement through a working party will be given to measures that may help to control traffic and encourage alternative transport.

Figure 1.1 Map of AQMA Boundaries



2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Cotswold District Council has maintained the continuous monitoring within the AQMA at the Air Balloon roundabout Birdlip. A new automatic site was set up in Thames Street Lechlade to assess nitrogen dioxide in relation to traffic. Thames Street is narrow street with slow moving traffic as identified in guidance TG(09) (Box 5.3 A.1). A Detailed Assessment for this area is included in Appendix A

QA/AC

Both analysers were installed and commissioned by the supplier. Routine calibrations are undertaken in keeping with QA/QC controls; calibration checks are undertaken least every 2 weeks. These checks are carried by out Cotswold District Council officers in accordance with the supplier's procedures. Calibration checks include replacing the filter and running checks using supplied gases at known concentrations. The supplier has serviced the analysers at six-month intervals.

Data

The raw data from the analyser within the AQMA is collected by modem and uploaded to the Environ- technology services website. www.airqualitydata.com/cgi-bin/sites.cgi?1006

The raw data for both analysers was ratified by an external contractor using the calibration data supplied by the council. The raw data was ratified by an independent contractor using the calibration data supplied. The results are included at Table 2.3 and 2.4.

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	X OS GridRef	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Relevant Exposure ? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure ?
Lechlade - Thames St	Kerbside	421378	199506	NO ₂	N	Chemiluminescence	y(<1m)	0.5m	Y
Air Balloon Roundabout A417 Junction	Roadside	393439	216024	NO ₂	Y	Chemiluminescence	Y(<1m)	8.3m	Y

2.1.2 Non-Automatic Monitoring Sites

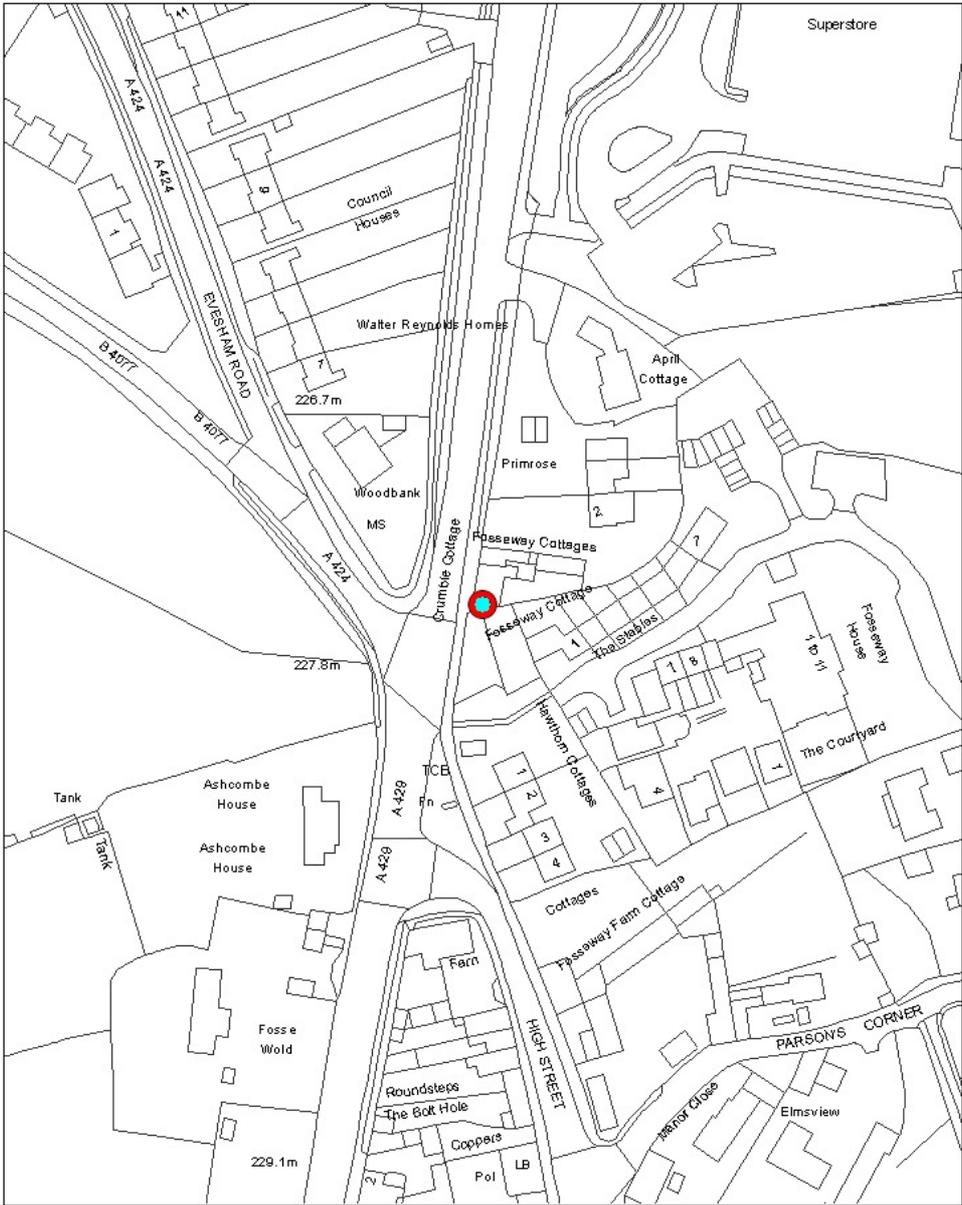
Cotswold District Council currently has seventeen diffusion tube sites for nitrogen dioxide. All sites relate to emissions from traffic and are positioned where there is relevant public exposure, in accordance with guidance in TG (09). Details of the sites are given below, see table 2.2

Table 2.2 Details of Non-Automatic Monitoring Sites

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
Stow-in-the Wold - Fosseway Cottage	Roadside	419079	226054	NO ₂	N	N	y (1m)	3m	N
Lechlade -Thames St	Kerbside	421378	199506	NO ₂	N	Y	y(<1m)	0.5m	Y
Lechlade Thames St lamppost 3	Kerbside	421359	199404	NO ₂	N	Y	Y(10)	2.7m	
Lechlade - Thames St cottage 4	Kerbside	421364	199477	NO ₂	N	N	y(<1m)	1.5m	Y
Lechlade – High St	Kerbside	421367	199532	NO ₂	N	N	y (<1m)	<1m	Y
Fairford - London Rd	Kerbside	415378	200949	NO ₂	N	N	y (1m)	1m	Y
Fairford Bridge St	Kerbside	415167	201004	NO ₂	N	N	y (1m)	1m	Y
Cirencester -Castle St	Kerbside	402222	202010	NO ₂	N	N	y(1m)	1m	Y
Cirencester – London Rd (Wagon/Horses)	Kerbside	402735	201962	NO ₂	N	N	y (<1m)	<1m	Y
Tetbury - Long St	Kerbside	389007	193197	NO ₂	N	N	y(1m)	1m	Y
Tetbury - Church St	Kerbside	389034	193110	NO ₂	N	N	y(1m)	1m	Y
Birdlip Air Balloon	Kerbside	393446	216118	NO ₂	Y	N	y(1m)	1m	Y
Birdlip - Air Balloon 1	Kerbside	393459	216124	NO ₂	Y	Y	y(1m)	4m	Y
Birdlip - Air Balloon 2	Kerbside	393459	216124	NO ₂	Y	Y	y(1m)	4m	Y
Birdlip - Air Balloon 3	Kerbside	393459	216124	NO ₂	Y	Y	y(1m)	4m	Y
Birdlip - Air Balloon, beer garden B	Kerbside	393459	216091	NO ₂	Y	N	Y(<1M)	1m	Y
Birdlip - Air Balloon, beer garden C	Kerbside	393424	216059	NO ₂	Y	N	Y(<1M)	22m	Y
Stow Lodge	Kerbside	403943	202961	NO ₂	N	N	y(5m)	0.5m	Y

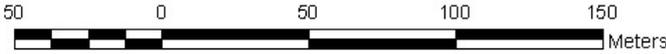
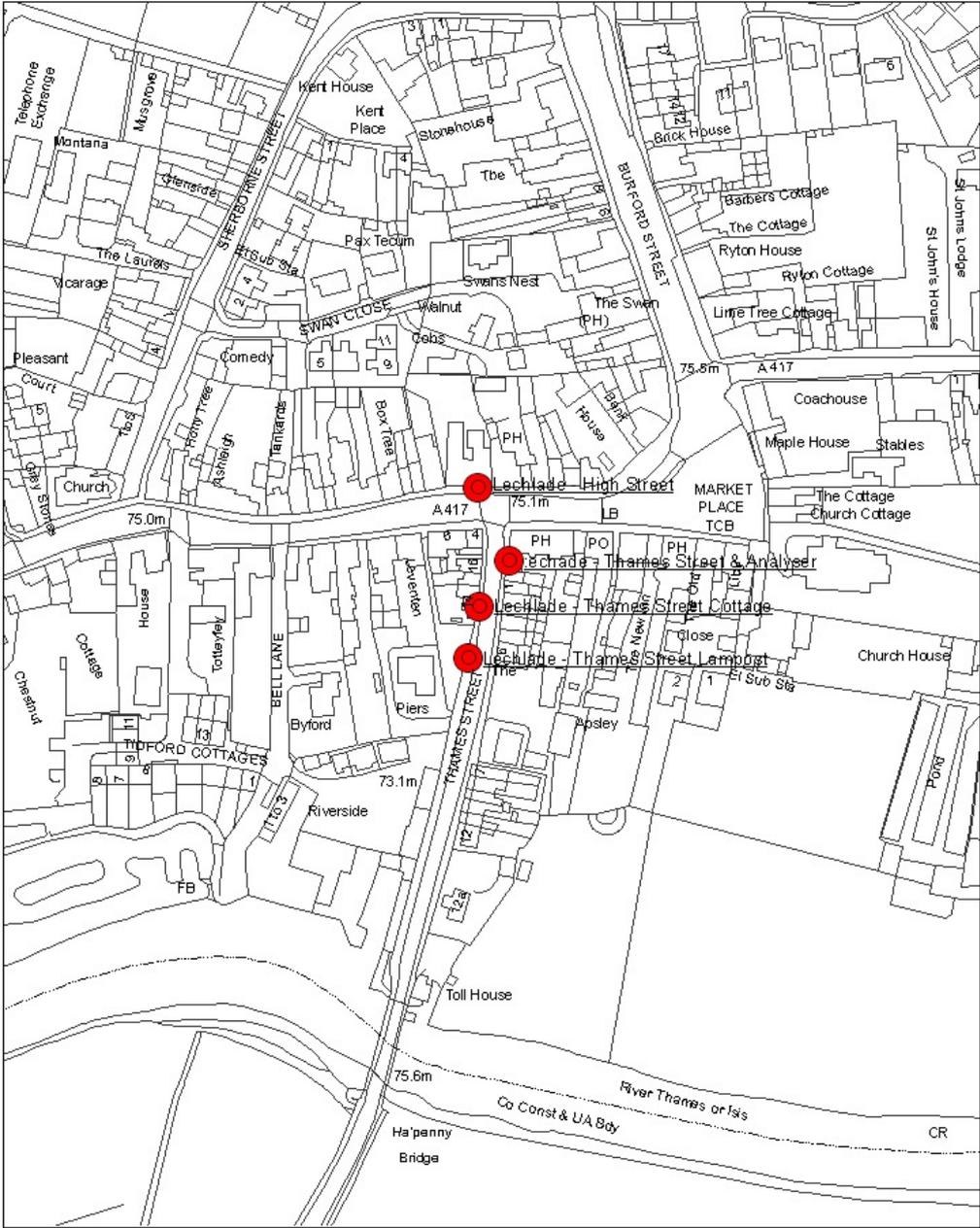
Figure 2.2 Maps of Non-Automatic Monitoring Sites

Site 2 Stow in the Wold



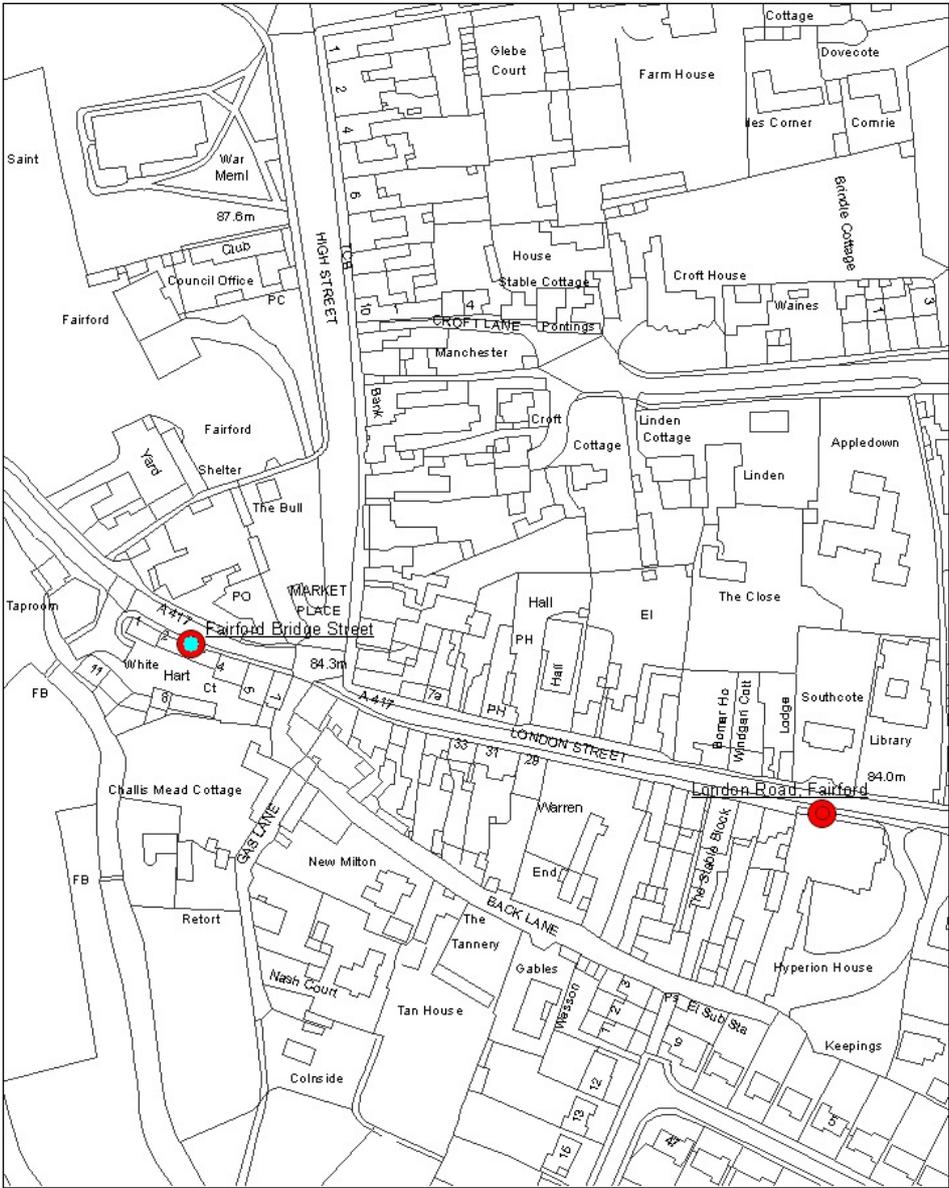
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Site 4, 4a 4b 5& analyser Thames Street , High Street Lechlade



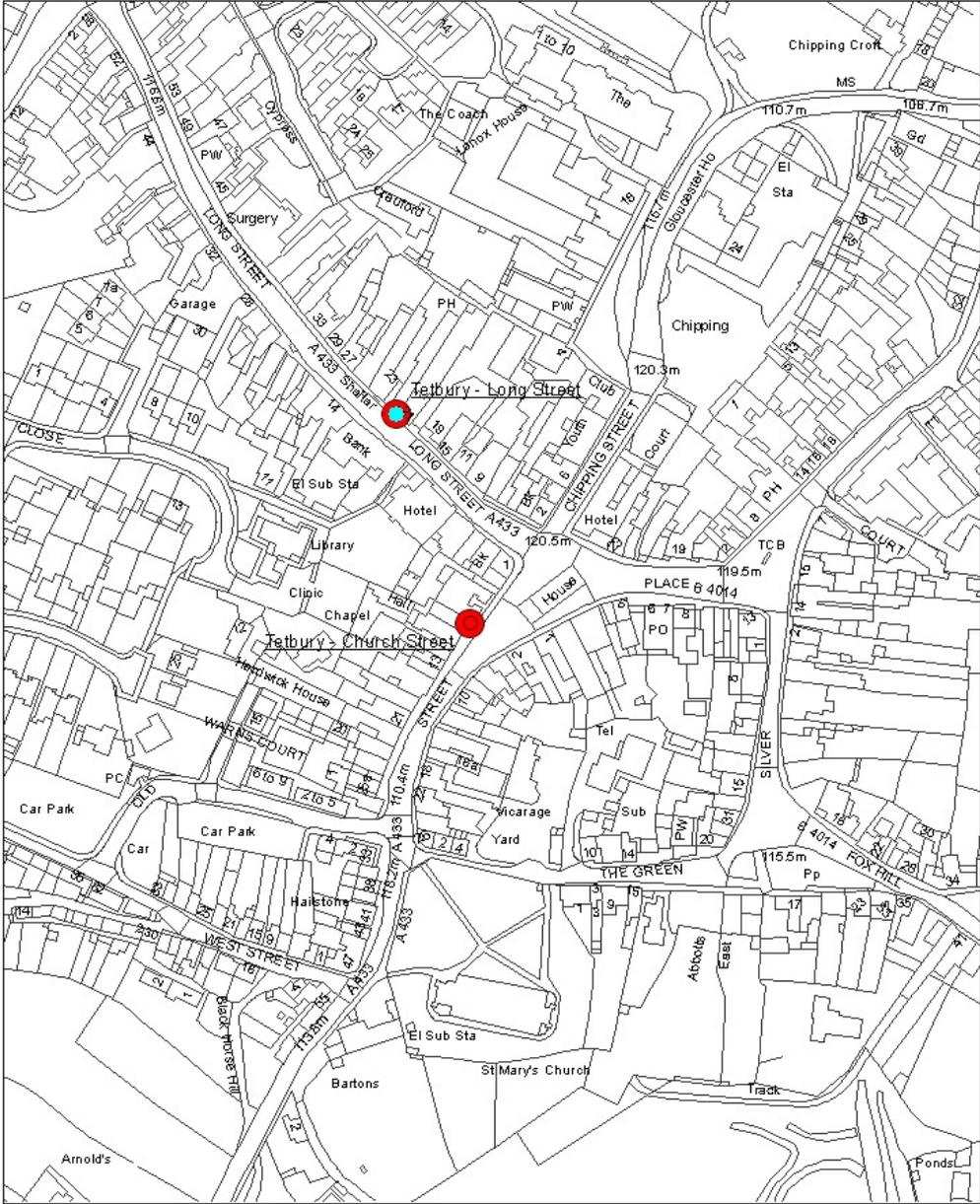
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Site 6, 7 London Road, Bridge Street Fairford



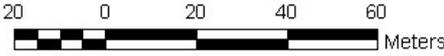
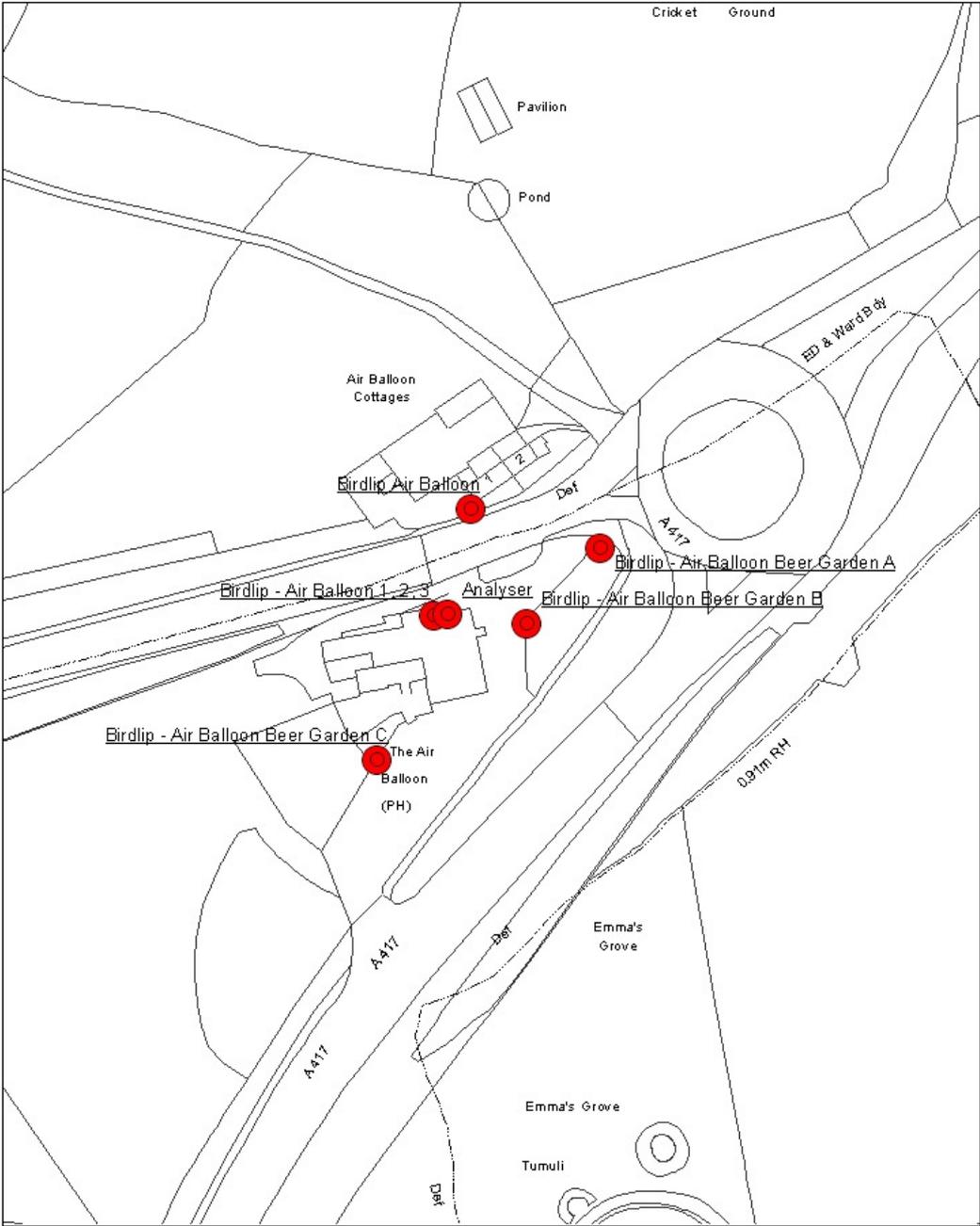
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Site 13,14 Church Street Long Street Tetbury



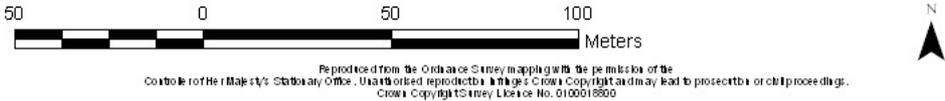
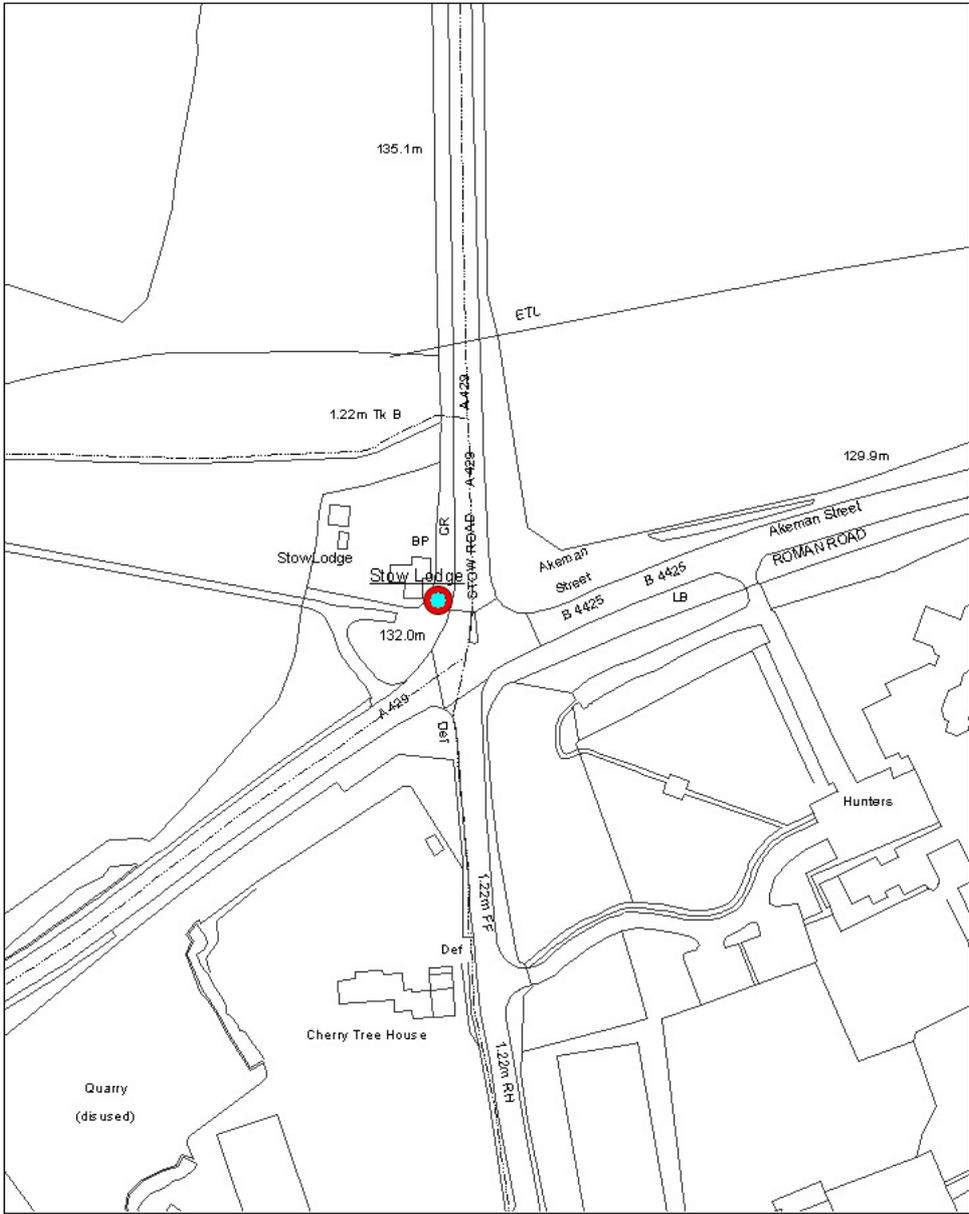
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Sites at Air Balloon Roundabout



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Site 22 Stow Lodge



2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

Continuous Monitoring within the AQMA remains high and confirms the need to maintain the declaration of the AQMA at the Air Balloon Roundabout junction. The Action Plan has been published and a working group established to monitor the situation at the consider any measures that may be introduced that may improve traffic flows or help reduce volume. The major trunk route at this junction is outside the control of the District Council.

Automatic Monitoring Data

Table 2.3 & Table 2.4 Results of Automatic Monitoring of Nitrogen Dioxide: Comparison with Annual Mean Objective and Comparison with 1-hour mean Objective

Air Balloon Roundabout AQM	Birdlip NO_x and NO₂ Data Summary, 2011 NO_x	NO₂ Roadside Within AQMA		Exceedences ^a	NO₂ Objectives
	Maximum Hourly Mean	1214.0 µg/m ₃	224.5 µg/m ₃	3	200 µg/m ₃ ; no more than 18 exceedences
	Annual Mean	144.5 µg/m ₃	50.1 µg/m ₃	-	40 µg/m ₃
	99.8th Percentile Hourly Means (µg/m₃)	-	176.1 µg/m ₃	-	200 µg/m ₃
	Data Capture 100% ^b	88.2 %	88.2 %	-	-

Lechlade Thames Street	Lechlade NO_x and NO₂ Data Summary, 22nd June to 31st December, 2011 NO_x	NO₂ Kerbside not within AQMA		Exceedences	NO₂ Objectives
	Maximum Hourly Mean	610.8 µg/m ₃	203.9 µg/m ₃	1	µg/m ₃ ; no more 18 exceedences
	Annual Mean	91.1 µg/m ₃	38.2 µg/m ₃	-	40 µg/m ₃
	99.8th Percentile Hourly Means (µg/m₃)	-	154.0 µg/m ₃	-	200 µg/m ₃
	Data Capture 50% ^b	92.9 %	92.9 %	-	-

^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%).

Diffusion Tube Monitoring Data

No new sites have been identified, monitoring has continued in existing sites. Seventeen sites have been maintained overall. Four are related to Thames Street Lechlade. Five are within the existing AQMA at Air Balloon Roundabout. The sites are all related to emissions from road traffic and where there is relevant public exposure.

There has been no significant change in the levels against previous years at the sites. Border line levels from previous years have dropped back at Stow-on-the-Wold - Fosseway Cottage and Fairford Bridge Street.

Lechlade - Thames Street Cottage the level is $41.75 \mu\text{g}/\text{m}^3$ just above the national objective. However the continuous monitor that is on the opposite side of the road to this $38.2 \mu\text{g}/\text{m}^3$ as an annual mean. Further monitoring is being carried out in this area.

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2011

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.83) 2011 ($\mu\text{g}/\text{m}^3$)
2	Stow-in-theWold - Fosseyway Cottage	Roadside	N		100	N/A	N	36.16
4	Lechlade – Thames Street	Kerbside	N		100	N/A	N	38.66
4a	Lechlade-Thames Street 3 lamppost	Kerbside	N		100	N/A	N	26.34
4b	Lechlade – Thames Street 4 cottage	Kerbside	N		100	N/A	n/a	41.75
5	Lechlade - High St	Kerbside	N		100	N/A	N	34.58
6	Fairford – London Rd	Kerbside	N		92	N/A	N	32.28
7	Fairford - Bridge St	Kerbside	N		100	N/A	N	35.45
9	Cirencester – Castle Street	Kerbside	N		100	N/A	n/a	30.43
10	Cirencester - London Rd (Waggon/Horses)	Kerbside	N		100	N/A	n/a	33.91
13	Tetbury – Church St	Kerbside	N		100	N/A	n/a	35.72
14	Tetbury - Long Street	Kerbside	N		100	N/A	n/a	28.59
15	Birdlip - Air Balloon	Kerbside	Y		100	N/A	n/a	69.44
	Birdlip - Air Balloon 1	Kerbside	Y	Triplicate	100	N/A	n/a	45.49
	Birdlip - Air Balloon 2	Kerbside	Y	Triplicate	100	N/A	n/a	43.50
	Birdlip - Air Balloon 3	Kerbside	Y	Triplicate	100	N/A	n/a	45.32
	Birdlip - Air Balloon, beer garden B	Kerbside	Y		100	N/A	n/a	28.28
	Birdlip - Air Balloon, beer garden C	Kerbside	Y		100	N/A	n/a	29.73
22	Stow Lodge	Kerbside	N		100	N/A	N	35.28

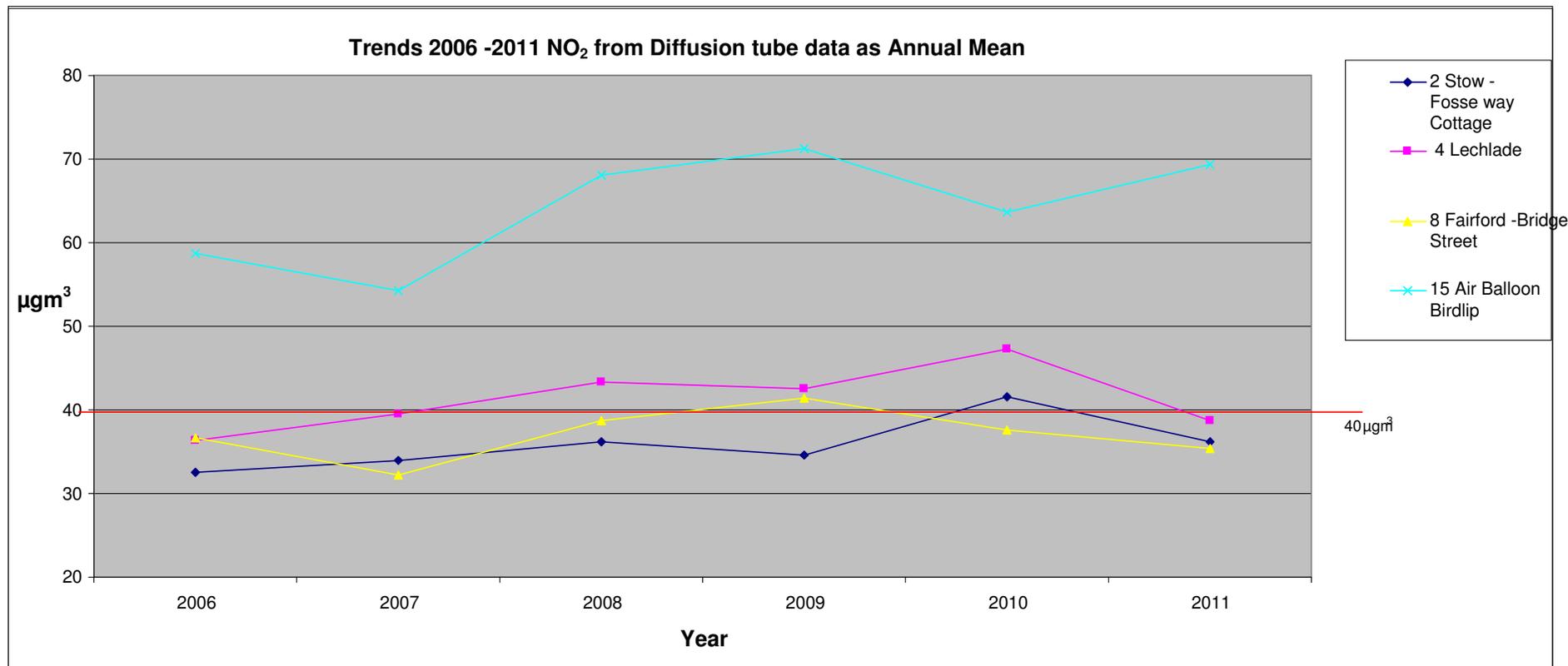
Table 2.6

Results of Nitrogen Dioxide Diffusion Tubes (2007 to 2011)

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$				
			2007* (Bias Adjustment Factor = 0.77)	2008* (Bias Adjustment Factor = 0.87)	2009* (Bias Adjustment Factor = 0.85)	2010* (Bias Adjustment Factor = 0.77)	2011 (Bias Adjustment Factor = 0.83)
2	Roadside	N	34.6	36.2	34.68	41.52	36.16
4	Kerbside	N	n/a	43.4	42.52	47.30	38.66
4a	Kerbside	N	n/a	n/a	38.50	24.76	26.34
4b	Kerbside	N	n/a	n/a	n/a	n/a	41.75
6	Kerbside	N	n/a	n/a	42.77	42.77	34.58
7	Kerbside	N	n/a	33.1	33.80	29.93	32.28
8	Kerbside	N	n/a	38.8	41.38	37.60	35.45
9	Kerbside	N	n/a	35.2	25.03	34.69	30.43
10	Kerbside	N	n/a	35.2	36.75	23.52	33.91
13	Kerbside	N	n/a	32.5	33.81	23.52	35.72
14	Kerbside	N	n/a	37	34.98	39.14	28.59
15	Kerbside	Y	n/a	68.1	71.02	63.61	69.44
22	Kerbside	N	n/a	34.1	35.85	35.49	35.28

*Optional

Figure 2.4 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites 2,4,8,15



This chart shows trends in annual mean over the last six years for those sites that have been monitored consistently and have shown levels close to the national objective at 40µgm³.

Site ID 2 Stow – Fosseway Cottage: the level here has been consistent, 2010 there was a rise in the level which may have been related to road works in the area. 2011 shows a fall back to below the level of the objective.

Site ID 4 Lechlade – Thames Street: showed a gradual increase in the level. A continuous monitor is now in place at this site. It is noted that the level for 2011 shows a slight fall below the objective. Additional diffusion tubes have been placed in this area and continuous monitoring is being carried out.

Site ID 8 Fairford – Bridge Street: the annual mean has been consistently variable over a small range under the national objective. The mean for 2011 remains within the variations of previous years and has remained below the national objective.

Site ID 15 Air Balloon – Birdlip: this site is within the AQMA and shows the levels to have remained high as expected, as traffic flows remain high as this is a strategic trunk route. The Action Plan for this AQMA has been published.

Bias Adjustment and QA/QC of diffusion tube monitoring

Calculation of the 2011 bias adjustment factor

Cotswold District Council's diffusion tubes have been supplied and analysed by Bristol Scientific Services and utilise 20% TEA in water. A national bias adjustment factor has been applied. A bias adjustment factor of 0.83 for 2011 was estimated from eight studies using the published Bias Adjustment Factors Spreadsheet (v03/12). Although in many cases, using an overall correction factor derived from as many co-location studies as possible will provide the 'best estimate' of the 'true' annual mean concentration, it is important to recognise that there will still be uncertainty associated with this bias adjusted annual mean. One analysis has shown that the uncertainty for tubes bias adjusted in this way is $\pm 20\%$ (at 95% confidence level). This compares with a typical value of $\pm 10\%$ for chemiluminescence monitors subject to appropriate quality checks

Where necessary any short term data has been adjusted to determine an annual mean.

QA/QC of diffusion tube monitoring

Cotswold District Council's diffusion tubes are supplied and analysed by Bristol Scientific Services and utilise 20% TEA in water. The tube preparation and subsequent analysis follow the procedures in the harmonised "Practical Guidance" document. The laboratory participates in the WASP scheme and its performance is classified as good.

Bristol Scientific Services laboratory follows the procedures set out in the Harmonisation Practical Guidance Procedures under the DEFRA practical guidance.

2.2.2 Summary of Compliance with AQS Objectives

Cotswold District Council has examined the results from monitoring in the district. Concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment. Assessment is however continuing at Lechlade.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Cotswold District 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

Cotswold District 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.

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

3.4 Junctions

Cotswold District 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

Cotswold District Council confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

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

Cotswold District Council has assessed new/newly identified roads with significantly changed traffic flows, and concluded that it will not be necessary to proceed to a Detailed Assessment.

3.7 Bus and Coach Stations

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

4 Other Transport Sources

There are only a small number of authorities where transport sources other than roads need to be assessed. Cotswold District Council is not required to assess for other transport sources, there have been no changes since the last USA.

4.1 Airports

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

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

Cotswold District 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

Cotswold District 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)

Cotswold District 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

5.1.1 New or Proposed Installations for which an Air Quality Assessment has been carried out

Cotswold District 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.

Cotswold District Council has assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

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

Cotswold District 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

Cotswold District 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

Cotswold District Council confirms there are no major fuel (petrol) storage depots within the Local Authority area.

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

5.3 Poultry Farms

Poultry farms are considered in relation to PM_{10} emissions. The likelihood for problems has been shown to be where the numbers of birds kept exceed certain criteria as defined in TG(09).

Cotswold District Council confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

Biomass burning can lead to PM₁₀ and NO₂ emissions. Cotswold District has assessed biomass boilers in accordance with TG(09); an example of assessment is shown below for a unit rated at 0.5MW. Effective stack height is 2.49 and the stack diameter is 0.45m

PM10

Chimney height – effective chimney height 2.49 m in accordance with Box 5.6

$$\text{Background – adjusted emission rate } *E_A = \frac{E}{(32-G)} \quad E_A = \frac{0.0128}{(32-13.70)}$$

$$= 0.0007 \text{ g/s}$$

E is emission rate of plant

G = annual average background for PM10

32 represents annual average concentration the 90th percentile 24 hr mean will exceed the objective (TG09)

Using the nomogram (Fig 5.19 TG 09)

G – Background levels for PM10

*E_A the “background-adjusted” emission rate is 0.0007 g/s, which is less than the threshold emission rate of 2.49m chimney = 0.0015 g/s

Cotswold District Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.2 Biomass Combustion – Combined Impacts

Where small biomass individually may be acceptable in combination they could lead to increased PM₁₀ concentrations. The biomass boilers within the district are in isolation. No combined sources have been identified.

Cotswold District Council confirms that there are no biomass combustion plants in the Local Authority area.

6.3 Domestic Solid-Fuel Burning

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

7 Fugitive or Uncontrolled Sources

Cotswold District 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

Cotswold District Council has not identified any new areas or significantly changed circumstances that have or would potentially lead to exceedance of the national objectives for the pollutants under consideration. Nitrogen dioxide remains the only pollutant that continues to be monitored where emissions are from road traffic vehicles where there is relevant public exposure. Levels remain high within Air Balloon roundabout AQMA as there continues to be a significant volume of traffic on this strategic trunk route. Monitoring results at Thames Street Lechlade are inconclusive at the time of writing; further information is included in Appendix

8.2 Conclusions from Assessment of Sources

There are no developments of road, other transport, industrial installations, fugitive emissions, residential or commercial that have changed or newly developed were there are likely to be any potential exceedences outside the existing AQMA.

8.3 Proposed Actions

Monitoring is continuing in Thames Street Lechlade to assess this further. There is no need to proceed to a Detailed Assessment for any pollutant.

Sites within Thames Street Lechlade are being re-located.

There are no changes to the boundary of the existing AQMA, nor will this be revoked. Cotswold District Council will submit 2013 Progress Report to included further reporting on Thames Street Lechlade.

Appendix A: QA: QC Data

Note:

Included in text.

N02 Diffusion Tube Results 2011

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Me	bias adjust
Stow-in-theWold - Fosseway Cottage	54.2	37.9	41.6	39.5	40.6	38.8	76.4	39.1	42.6	41.6		26.8	43.6	36.16
Lechlade - Thames Street	59.5	54.6	60.2	55.8	42.9			38.4	23.0	53.2	50.3	27.6	46.6	38.66
Lechlade-Thames Street 3 lamppost	29.5	32.9	39.0	35.7	23.5	27.4	45.2	29.9	28.5	35.9	23.5	29.8	31.7	26.34
Lechlade - Thames Street 4 cottage	51.6	46.8	59.0	46.6	43.7	52.2	73.9	45.9	49.7	53.3	41.0	39.7	50.3	41.75
Lechlade - High St	44.3	44.3	58.4	50.7	30.8	27.7	56.5	33.6	34.6	43.4	40.7	35.1	41.7	34.58
Fairford - London Rd	53.8	30.9	33.8		25.8		56.9		36.8	38.4	38.8	34.9	38.9	32.28
Fairford - Bridge St	48.0	39.7	54.9	47.4	26.6	42.4	36.7	35.6	39.6	49.9	53.8	37.8	42.7	35.45
Fairford - Bridge St 2				52.0	35.6								43.8	36.38
Cirencester - Castle Street	56.8	37.1	43.9	41.1	26.3	28.9	45.0	25.6	30.4	33.6	43.2	28.0	36.7	30.43
Cirencester - London Rd (Waggon/Horses)	40.2	37.9	45.4	50.4	37.6	36.8	57.3	34.2	36.2	39.2	42.8	32.2	40.9	33.91
Tetbury - Church St	53.7	32.9	46.8	45.3		39.7	54.5	40.3	33.2	43.6	40.0	43.3	43.0	35.72
Tetbury - Long Street	44.4	32.3	40.6	34.7	28.4	29.5	42.9	29.4	29.6	35.2	35.6	30.6	34.4	28.59
Birdlip - Air Balloon	96.6	74.7	73.9	94.5	75.0	81.1	102.2	70.0	84.6	104.2	69.8	77.2	83.7	69.44
Birdlip - Air Balloon 1	58.4	52.6	63.1	68.1		43.3	81.4	44.1	43.7	58.9	54.0	35.2	54.8	45.49
Birdlip - Air Balloon 2	57.6	50.3	68.4	62.9	30.9	45.5	78.9	48.0	38.9	55.8	53.3	38.4	52.4	43.50
Birdlip - Air Balloon 3 *	60.5	51.6	58.8	66.6		49.7	80.3	46.1	39.4	55.5	58.4	33.7	54.6	45.32
Birdlip - Air Balloon, beer garden B	42.0	35.2	42.2	44.5	27.4	27.0	50.5	22.4	25.9	36.2	30.5	25.0	34.1	28.28
Birdlip - Air Balloon, beer garden C	44.9	39.5	46.0	43.6	28.4	27.2	46.6	29.5	26.7	36.5	40.7	20.2	35.8	29.73
Stow Lodge	48.5	50.8	48.0	40.1	38.5	42.8	53.8	36.1	33.0	41.5	45.9	31.1	42.5	35.28

Table of diffusion Tube results 2011

Appendix A: Detailed Assessment for Thames Street Lechlade



COTSWOLD
DISTRICT COUNCIL

Detailed Assessment Thames Street Lechlade GL7 3AG

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

Date: May 2012

Executive Summary

Diffusion tube 2009 /2010 monitoring for nitrogen dioxide (NO₂) in Thames Street Lechlade indicated elevated concentrations of this pollutant above the national objective. In order to assess this further continuous monitoring was installed in the area in June 2011. The report ratifying this data concluded that the level of nitrogen dioxide is below the national objective.

As this report is based on short term monitoring of six months and as diffusion tube data within the area indicate elevated levels, the overall picture is inconclusive. At this time Cotswold District Council will not proceed to declare an Air Quality Management Area (AQMA). Monitoring will continue with additional tubes in the area and further information will be available from automatic monitoring. The situation will be re-assessed after a further period of monitoring up to December 2012 and reported in April 2013.

Introduction

Under the Part IV of the Environment Act 1995 local authorities are required to carry out monitoring and assessment of air quality in areas and submit regular reports to Defra as part of the National Air Quality Strategy. Since 1998 Cotswold District Council (CDC) has carried out monitoring of prescribed pollutants and submitted reports in accordance within statutory guidelines.

Following technical guidance issued by Defra; current version (TG (09)), the council has continued to assess and monitor where there is likely to be relevant public exposure. The only pollutant that has shown to be of concern is nitrogen dioxide related to vehicle emissions. The council maintains a series of diffusion tube sites within the district and chemiluminescence analysers at two sites.

In 2008 the council declared an Air Quality Management Area at the Air Balloon Roundabout Birdlip, an Action Plan relating to this site has been submitted to Defra. The 2012 Updating and Screening Progress report concludes that there are no other areas of concern, and that no Detailed Assessments needed to be carried out for any pollutants in any area within the District.

This report considers the monitoring that has been carried out at Thames Street Lechlade.

Thames Street Lechlade

Lechlade is a small town that lies at the south eastern corner of the district. The main routes through the town are south to north the A461 and A417 west to east. Thames Street is the route south out of Lechlade crossing the boundary of the district over the river Thames. This street has a short narrow section at the approach to the T- junction with the west/north route the A417. There are traffic lights at this junction which causes queuing and the traffic is slow moving. The average daily traffic flow is between 5000 to 10000 (*Gloucestershire Highways Traffic Flow 2004*). There are six residential properties in this narrow section of the road. Technical guidance (TG09) indicates that screening should be undertaken at such a site.

Views of Thames Street



Map of Thames Street Lechlade to show monitoring sites



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Monitoring Results

Diffusion tube monitoring has been undertaken at several different points in Thames Street and at one on the junction in the High street

The table below shows the bias adjusted diffusion data 2011:

Site ID	Location	Site Type	Within AQMA?	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.83) 2011 ($\mu\text{g}/\text{m}^3$)
4	Lechlade - Thames Street	Kerbside	N	100	N/A	38.66
4a	Lechlade-Thames Street 3 lamppost	Kerbside	N	100	N/A	26.34
4b	Lechlade - Thames Street 4 cottage	Façade	N	100	N/A	41.75
5	Lechlade - High St	Kerbside	N	100	N/A	34.58

Site 4 is at the same position as the inlet to the analyser.

Site 4a is beyond the narrow section of the road demonstrates the fall off of pollution levels as the distance between the building opens out on either side of the road.

Site 4b is closer to the junction on the façade of the building close to traffic lights.

Automatic Monitoring results from ratified data taken from report produced by Air Quality Consultants Ltd

Lechlade NO _x and NO ₂ Data Summary, 22 nd June to 31 st December, 2011 NO _x	NO ₂		Exceedences	NO ₂ Objectives
	Kerbside not within AQMA			
Maximum Hourly Mean	610.8 $\mu\text{g}/\text{m}^3$	203.9 $\mu\text{g}/\text{m}^3$	1	$\mu\text{g}/\text{m}^3$; no more 18 exceedences
Annual Mean	91.1 $\mu\text{g}/\text{m}^3$	38.2 $\mu\text{g}/\text{m}^3$	-	40 $\mu\text{g}/\text{m}^3$
99.8 th Percentile Hourly Means ($\mu\text{g}/\text{m}^3$)	-	154.0 $\mu\text{g}/\text{m}^3$	-	200 $\mu\text{g}/\text{m}^3$
Data Capture 50% ^b	92.9 %	92.9 %	-	-

An estimation of the Annual mean was made in line with guidance in TG09 (Box 3.2) for short term monitoring. A correction figure is taken from long term monitoring sites fairly nearby. This estimation is shown in the table below

Estimation of Annual Mean for Short Term Monitoring

	Am	Pm	Ratio
A-Leominster	10	7.81	1.28
B-Leamington Spa	21	20.47	1.03
C-Harwell	10.3	15.9	0.69
D- Oxford	18.0	17.34	1.04
		Av	1.01

Am - Annual mean

Pm - Period mean

Estimate: Short term figure X average = estimated annual mean

$$38.2 \times 1.01 = 38.58 \mu\text{gm}^3 \text{ annual mean}$$

Conclusions and Actions

The current diffusion tube data does not give a clear picture of the levels within the area. The estimated annual mean is 38.58 μgm^3 , the national objective is 40 μgm^3 expressed as an annual mean.

The council will increase the number of diffusion tubes in Thames Street and the automatic monitoring will continue. The results will be reported on with the next Progress Report due for April 2013.