

# Cotswold District Council

## Updating and Screening Assessment



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

July 2009



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# Executive Summary

This Updating and Screening report for 2009 is the next round of reporting on air quality required of local authorities. It considers new Technical Guidance (LAQM.TG(09)) issued by Defra and the Devolved Administrations. This guidance was produced using experience and knowledge gained from previous reporting rounds.

Cotswold District Council has continued to maintain 20 diffusion tube monitoring sites for nitrogen dioxide across the district. The sites are representative of relevant exposure and relate to emissions from traffic, with the exception of one background site which is maintained in a rural location. Diffusion tube monitoring for benzene had been carried out over a number of years, no issues were identified at any locations and with consistently low results this monitoring has now ceased.

Following the assessment of 2005 monitoring, further work was undertaken to confirm the need to declare an Air Quality Management Area (AQMA) and identify the spatial extent of the area. For this, automatic monitoring was undertaken during 2007. In April 2008 Cotswold District Council declared an AQMA at the busy junction on the A417 trunk road. This was for nitrogen dioxide from road vehicle emissions and there are residential properties in the area. A new site for automatic monitoring was established within the AQMA this will be reported on later in 2009 in a Further Assessment Report and the Council is currently working on an Air Quality Action Plan for this AQMA.

The conclusion from this round of screening assessment is that Cotswold District Council will need to proceed to a Detailed Assessment for Thames Street, Lechlade as the diffusion results indicate an exceedance of the nitrogen dioxide annual mean air quality objective.

No other areas have been identified for Detailed Assessment. The Council will submit a Progress Report and Detailed Assessment in 2010.

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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 (Figure 1). 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.

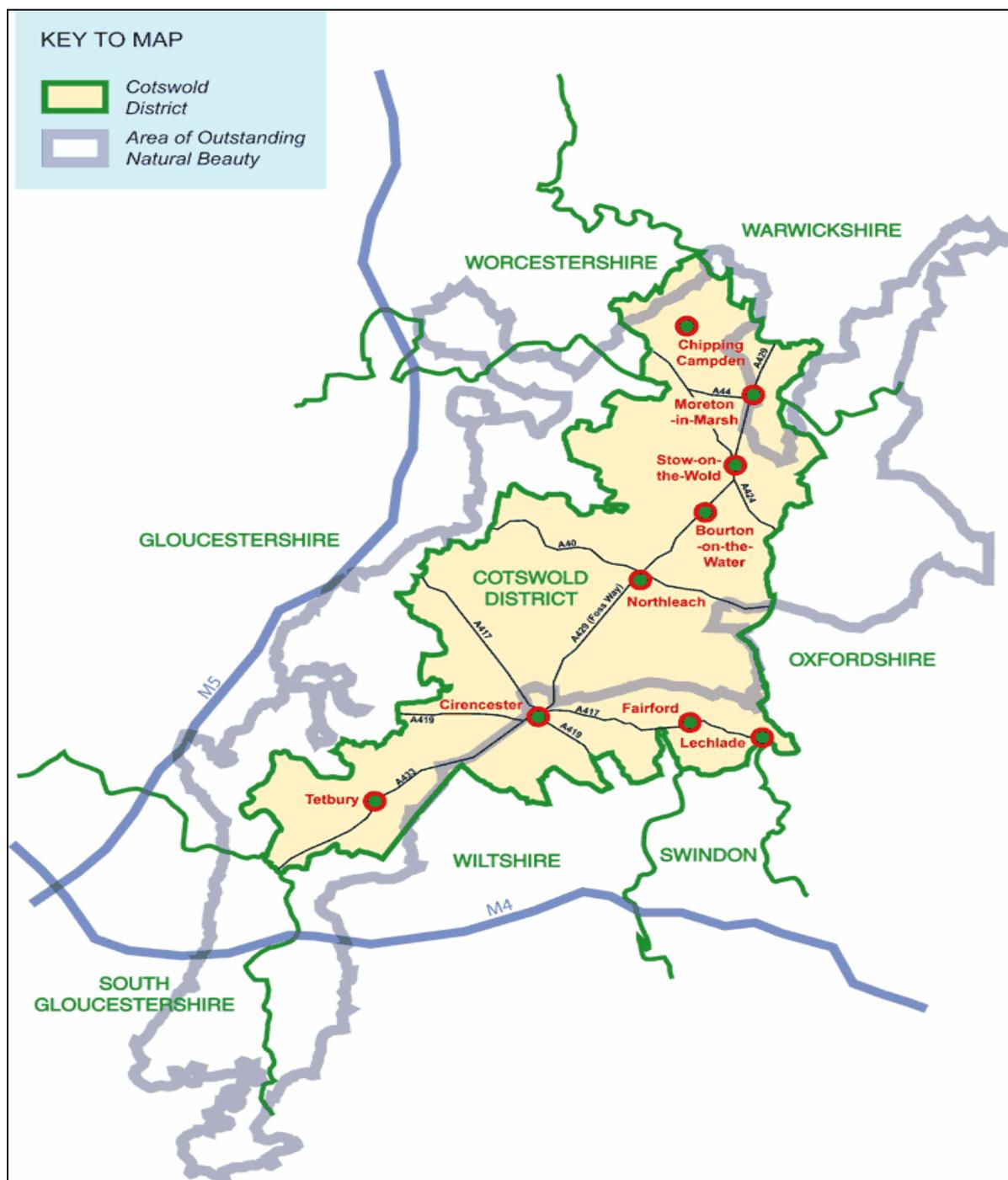


Figure 1: Map of the Cotswold area.

### 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. This table shows the objectives in units of microgrammes per cubic metre  $\mu\text{g}/\text{m}^3$  (milligrammes per cubic metre,  $\text{mg}/\text{m}^3$  for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

**Table 1: Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in England.**

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
<b>Benzene</b>	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
<b>1,3-Butadiene</b>	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
<b>Carbon Monoxide</b>	10.0 $\text{mg}/\text{m}^3$	Running 8-hour mean	31.12.2003
<b>Lead</b>	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
<b>Nitrogen Dioxide</b>	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
<b>Particles (PM<sub>10</sub>) (gravimetric)</b>	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
<b>Sulphur Dioxide</b>	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

Cotswold District Council has submitted Review and Assessment reports to the satisfaction of Defra. Round 1 and Round 2 of Review and Assessment did not identify any air quality issues. The following table summarises the outcome of Round 3 of Review and Assessment.

**Table 2: Summary of the Round 3 of Review and Assessment**

Report Submitted	Outcome
Updating and Screening 2006	Diffusion tube monitoring carried out for NO <sub>2</sub> and Benzene. No new issues identified. Monitoring continued for NO <sub>2</sub> at the Air Balloon roundabout junction of the A417 at Birdlip in relation to potential exceedance identified.
Detailed Assessment 2007 for nitrogen dioxide (NO <sub>2</sub> ) at A417 junction	Automatic monitoring undertaken of NO <sub>2</sub> and dispersion modelling carried out at Birdlip confirmed need to declare AQMA.
Progress Report 2007	No new issues. Monitoring for NO <sub>2</sub> continued with no changes.
Declaration of Local Air Quality Management Area April 2008	Exceedance of nitrogen dioxide related to road traffic emissions. Long term level from modelling 52.2µg/m <sup>3</sup> annual mean this exceeds the Air Quality Objective of 40µg/m <sup>3</sup> as annual mean. This is a major trunk route with a high number of HGV's where there are residential properties close by. See Figure 2.

Cotswold District Council  
Air Quality Management (Birdlip 2008) Area

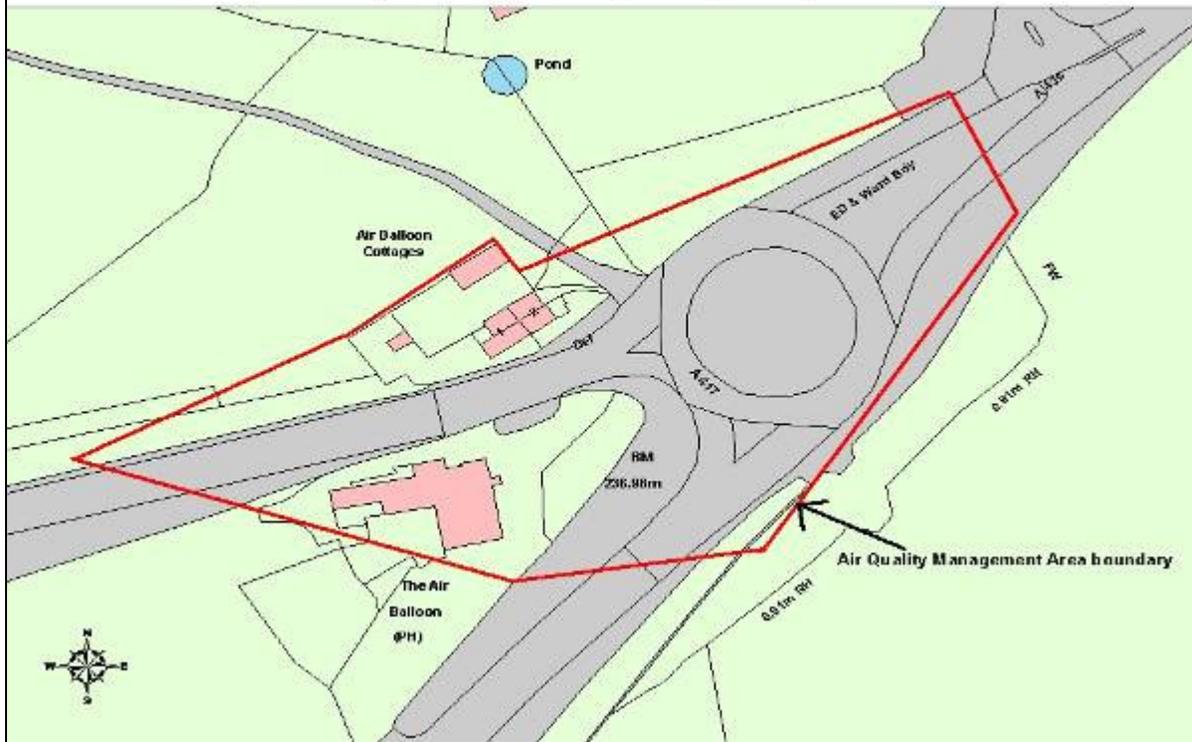


Figure 2: Birdlip Air Quality Management Area

## **2 New Monitoring Data**

### **2.1 Summary of Monitoring Undertaken**

Within the area where an exceedence of nitrogen dioxide was identified at the Air Balloon junction an automatic chemiluminescence's analyser was operated for seven months. The data from this monitoring confirmed the need to declare an AQMA. Monitoring using diffusion tubes was also used for nitrogen dioxide and benzene. Monitoring at all sites is in relation to emissions from traffic.

#### **2.1.1 Automatic Monitoring Sites**

Automatic monitoring for NO<sub>2</sub> was undertaken for seven months April to October 2006 for the Detailed Assessment. The site was maintained AEA Energy and Environment; it was sited at the cottages by the roundabout at the junction of the A419. The conclusions from the monitoring and dispersion modelling indicated that Cotswold District Council should declare an AQMA for this area near Birdlip. In April 2008 an AQMA was declared. (See Figure 2).

For 2009 Cotswold District Council is undertaking six months automatic monitoring within the AQMA at a new site; monitoring commenced in mid January 2009. Co-located diffusion tube monitoring is also being undertaken at this site, the data will be used for a Further Assessment for this AQMA.

#### **2.1.2 Non-Automatic Monitoring**

The Council manages 20 diffusion tubes for NO<sub>2</sub> within the district, in 2008 some changes were made to provide co-location monitoring within the AQMA. Tubes are supplied from Bristol Scientific Services; the laboratory prepares the tubes using 50ml of 20% triethanolamine in water. The tube preparation and subsequent analysis follow the procedures in the harmonised "Practical Guidance" document. The results of laboratory precision and WASP scheme are included as an Appendix. The tubes are exposed on a monthly basis. There is no local bias adjustment factor therefore the factor was derived from the National Bias Adjustment Spreadsheet (v05/09). The following bias adjustment factors have been utilised to adjust the data from the diffusion tubes:

- 2006: 0.90 based on 5 studies;
- 2007: 0.77 based on 5 studies; and
- 2008: 0.87 based on 4 studies.

All data has been adjusted where required according to LAQM.TG (09).

**Table 3: Details of Automatic and Non-Automatic Monitoring Sites**

Site Name	Site Type	OS Grid Reference	Pollutants Monitored	In AQMA? (Y/N)	Relevant Exposure? (Y/N and distance)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case location? (Y/N)
<b>Birdlip Automatic Analyser</b>							
Birdlip Continuous Analyser (2006)	Roadside	X393446 - Y216182	NO <sub>2</sub>	Y	Y(1m)	2m	Y
Birdlip Continuous Analyser (Current)	Roadside	X393459 - Y216124	NO <sub>2</sub>	Y	Y(<1m)	4m	Y
<b>Cotswold NO<sub>2</sub> Diffusion Tube Sites</b>							
Moreton-in-Marsh - High St CDC office	Roadside	X420495 - Y232490	NO <sub>2</sub>	N	Y (1m)	2m	Y
Moreton-in-Marsh - High St	Roadside	X420428 - Y232254	NO <sub>2</sub>	N	Y (1m)	2m	N
Stow-in-the Wold - Fosseyway Cottage	Kerbside	X419079 - Y226054	NO <sub>2</sub>	N	Y (2m)	1m	Y
Stow-in-the Wold - A429	Roadside	X419006 - Y225571	NO <sub>2</sub>	N	Y	8m	Y
Todenham Road -background site	Rural	X422611 - Y234046	NO <sub>2</sub>	N	N	N/A	N
Bourton-on-the-Water – Landsdown	Kerbside	X416146 - Y220966	NO <sub>2</sub>	N	N	0.5m	Y
Lechlade - Thames Street	Kerbside	X421378 - Y199501	NO <sub>2</sub>	N	Y (<1m)	<1m	Y
Fairford – London Rd	Kerbside	X415378 - Y200949	NO <sub>2</sub>	N	Y (1m)	1m	Y
Fairford - Bridge St	Kerbside	X415167 - Y201004	NO <sub>2</sub>	N	Y(1m)	1m	Y
Cirencester - Castle Street	Kerbside	X402222 - Y202010	NO <sub>2</sub>	N	Y (<1m)	1m	Y
Cirencester - London Rd -Waggon/Horses	Kerbside	X402735 - Y201962	NO <sub>2</sub>	N	Y(2m)	1m	Y
Cirencester- Dollar Street	Roadside	X402159 - Y202290	NO <sub>2</sub>	N	Y(2m)	2m	Y
Cirencester - Victoria Road	Kerbside	X402779 - Y201667	NO <sub>2</sub>	N	Y(1m)	1m	Y
Tetbury - Long Street	Kerbside	X389007 - Y193197	NO <sub>2</sub>	N	Y(1m)	1m	Y
Tetbury – Church St	Kerbside	X389034 - Y193110	NO <sub>2</sub>	N	Y(1m)	1m	Y
Birdlip x 3 co-located site	Kerbside	X393439 - Y216100	NO <sub>2</sub>	Y	Y(1m)	1m	Y
Birdlip x 3 co-located site	Kerbside	X393439 - Y216100	NO <sub>2</sub>	Y	Y(1m)	1m	Y
Birdlip x 3 co-located site	Kerbside	X393439 - Y216100	NO <sub>2</sub>	Y	Y(1m)	1m	Y
Birdlip Air Balloon	Kerbside	X393446 - Y216118	NO <sub>2</sub>	Y	Y(1m)	1m	Y
Stow Lodge	Kerbside	X403946 - Y202963	NO <sub>2</sub>	N	Y(5m)	0.5m	Y

## 2.2 Comparison of Monitoring Results with Air Quality Objectives

### 2.2.1 Nitrogen Dioxide

#### Automatic Monitoring Data

Cotswold District Council undertook automatic monitoring within the AQMA as part of work carried out for the Detailed Assessment for 2007. A chemiluminescence's analyser was used to collect data over 6 months. The results indicated no exceedance of the 1-hour objective through out the 2006 monitoring period. Table 4 illustrates the nitrogen dioxide concentration for this monitoring period. The AQMS monitoring data for 2006 indicated that there was an exceedance of the annual air quality objective for NO<sub>2</sub>, however the site was established in June 2006, and there are only 6 months data available. This short term data was annualised to give an annual mean in accordance the then current Technical Guidance (LAQM.TG(03)), resulting in an annual mean NO<sub>2</sub> concentration at the AQMS in 2006 of 52.2µg/m<sup>3</sup>.

New automatic monitoring began in 2009 within the AQMA this will be reported in the Further Assessment 2009 and Progress Report 2010.

#### Nitrogen Dioxide Diffusion Tube Monitoring Data

The 2008 bias adjusted nitrogen dioxide concentrations indicate the following sites exceeding of annual mean objective of 40 µg/m<sup>3</sup>:

- **BIRDLIP:** Locations within the Birdlip AQMA show exceedances. (Site 16 – Air Balloon - 68.9µg/m<sup>3</sup>). The newer sites at Birdlip are showing that they may have exceedances in future years but these sites only commenced in November 2008 – Cotswold will continue monitoring at this location and report data in subsequent Further Assessment and Progress Report 2010.
- **LECHLADE:** Site 4 - Thames Street Lechlade, reports a bias adjusted mean of 43.4 µg/m<sup>3</sup> for 2008. Relevant exposure exists at this location. This site was just below the objective in 2007 (39.5µg/m<sup>3</sup>). Cotswold District Council will be proceeding to a Detailed Assessment for this location in 2010.

**Table 4: Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with Annual Mean Objective**

Statistic	Period Mean (April 06 – October 06)	Estimated Annual Mean <sup>A</sup>	Projected Annual Mean 2010
Mean NO <sub>2</sub>	46.0	52.2	45.2
Maximum 1-hour NO <sub>2</sub>	145	-	-
99.8 <sup>th</sup> percentile of hourly means	130	-	-
Data Capture (%) NO <sub>2</sub>	86%	-	-

A: (adjusted for short term data capture)

**Table 5: Results of Nitrogen Dioxide Diffusion Tubes**

Ref	Location	Within AQMA?	Proportion of year with valid data, 2008 (%)	Annual Mean Concs (µg/m <sup>3</sup> ) Bias adjusted		
				2006	2007	2008
1	Moreton-in-Marsh - High St	N	100	27.2	26.2	30.5
2	Stow-in-the Wold - Fosseyway Cottage	N	92	32.6	34.0	36.2
3	Todenham Road (background site)	N	100	12.2	10.8	12.2
-	Bourton-on-the-Water - Landsdown	N	100	14.6	end	-
4	Lechlade - Thames Street	N	92	36.9	39.5	43.4
5	Fairford - London Rd	N	92	32.1	26.0	38.8
6	Fairford - Bridge St	N	100	36.7	32.3	33.1
7	Cirencester - Castle Street	N	100	32.7	29.8	35.2
8	Cirencester -London Rd (Waggon/Horses)	N	100	31.8	31.9	35.2
9	Cirencester- Dollar Street	N	100	24.2	23.2	24.5
10	Cirencester - Victoria Road	N	100	19.2	19.7	22.1
11	Tetbury - Long Street	N	100	29.2	29.8	32.5
12	Tetbury - Church St	N	100	32.5	32.1	37.0
13	Birdlip x 3 co-located site	Y	100	61.2	end	-
14	Birdlip x 3 co-located site	Y	100	63.8	end	-
15	Birdlip x 3 co-located site	Y	100	56.2	end	-
16	Birdlip -Air Balloon	Y	100	58.7	54.3	68.1
17	Stow Lodge	N	100	33.9	29.2	34.1
18a	Birdlip - Air Balloon 1	Y	New site	n/a	n/a	45.9
18b	Birdlip - Air Balloon 2	Y	New site	n/a	n/a	40.4
18c	Birdlip - Air Balloon 3	Y	New site	n/a	n/a	43.2
19a	Birdlip - Air Balloon, beer garden A	Y	New site	n/a	n/a	41.6
19b	Birdlip - Air Balloon, beer garden B	Y	New site	n/a	n/a	30.8
19c	Birdlip - Air Balloon, beer garden C	Y	New site	n/a	n/a	34.0

### 2.2.2 PM<sub>10</sub>

Cotswold District Council has not undertaken any PM<sub>10</sub> monitoring since the last round of Updating and Screening Assessments.

### 2.2.3 Sulphur Dioxide

Cotswold District Council has not undertaken any SO<sub>2</sub> monitoring since the last round of Updating and Screening Assessments.

### 2.2.4 Benzene

Cotswold District Council has undertaken Benzene monitoring at one site since the last round of Updating and Screening Assessments using a diffusion tube. Concentrations have been consistently low concentration, therefore the monitoring at this site has ceased.

**Table 6: Results of Benzene Diffusion Tube**

Ref	Location	Within AQMA?	Annual Mean Concentrations (µg/m <sup>3</sup> )		
			2006	2007	2008
3	Todenham Road	N	0.17	0.19	-

### 2.2.5 Other pollutants monitored

Cotswold District Council has not undertaken any Carbon Monoxide monitoring since the last round of Updating and Screening Assessments.

Cotswold District Council has not undertaken any Lead monitoring since the last round of Updating and Screening Assessments.

Cotswold District Council has not undertaken any 1,3-butadiene monitoring since the last round of Updating and Screening Assessments.

Cotswold District Council has not undertaken any Ozone monitoring since the last round of Updating and Screening Assessments.

Cotswold District Council has measured concentrations of NO<sub>2</sub> above the annual mean objective at relevant locations outside of the existing AQMA, and **will need to proceed to a Detailed Assessment** for Thames Street, Lechlade.

### 3 Road Traffic Sources

Assessment of air quality is made at locations where experience from earlier rounds of reporting has shown that there is a risk of the national objective being exceeded. The Technical Guidance (LAQM.TG(09)) identifies the areas that should be considered.

#### 3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

A narrow congested street will be one with slow moving traffic that is frequently stopping and starting through much of the day, where the average speed is likely to be about 25 mph. A narrow street will be one with residential properties within 2m of the kerb with buildings on both sides of the road. The average daily traffic flow will be around 5,000 vehicles a day or more. (For more information see Box 5.3, LAQM.TG(09))

Thames Street, Lechlade meets these criteria. It is a narrow street with residential properties and slow moving traffic due to traffic control lights close together. Traffic flow is likely to be around 5,000 vehicles a day. Monitoring is already being undertaken and exceedance identified in 2008 for NO<sub>2</sub>. Cotswold District Council is proceeding to a Detailed Assessment at this location.

Cotswold District Council has identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, not adequately considered in previous rounds of Review and Assessment, and **will need to proceed to a Detailed Assessment.**

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

There will be some streets locations where individuals may regularly spend 1-hour or more, for example where there are many shops and outdoor cafes or bars. Assessment needs to consider only NO<sub>2</sub>. Traffic flows would be in excess of 10,000 vehicles per day. (For more information see Box 5.3, LAQM.TG(09))

Within the AQMA declared for Birdlip at the Air Balloon roundabout there is a pubic house with a beer garden. Automatic monitoring is being undertaken at this site in 2009 as part of the Further Assessment and the 1-hour will be assessed. Diffusion tube monitoring is also being undertaken.

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 has declared an AQMA for NO<sub>2</sub> at the Air Balloon Roundabout a busy junction of the A417. This busy junction is the worst location in the district with a high number of HGV's at 11% of the total daily average traffic flow.

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

### **3.4 Junctions**

A "busy" junction is taken to be one with more than 10,000 vehicles per day. Cotswold District Council identified a busy junction on the Fosseway at Stow on the Wold and monitors for NO<sub>2</sub> by a cottage at this junction. AADT information identifies traffic flow at this location of 5,000 – 10,000. This is a diffusion tube at this location which reported a 2008 annual mean concentration of 36.2µg/m<sup>3</sup>. No further work is required at this site.

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**

There have been no new roads and none planned that have not been considered.

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

### **3.6 Roads with Significantly Changed Traffic Flows**

Roads that have significantly changed traffic flows that have not been considered in the previous sections are considered here.

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

### **3.7 Bus and Coach Stations**

This sections applies to bus or coach stations that are not enclosed and where there is relevant exposure.

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

## 4 Other Transport Sources

A small number of local authorities had to consider other transport sources in previous rounds of reporting and any new work is required where there have been any significant changes.

### 4.1 Airport

Aircraft are considered to be potentially a significant source of NO<sub>2</sub>. They have to be considered where there is relevant exposure and where there is high throughput of passengers in a year.

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

### 4.2 Railways (Diesel and Steam Trains)

Railways with heavy traffic of diesel passenger trains have been identified in the Technical Guidance and supporting FAQ. Cotswold District does not have any of the busy railway lines within the district or any locations where there are stationary trains for any length of time.

#### 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)

Screening for shipping relates to large ships and busy ports. Cotswold District is land locked area.

Cotswold District Council confirms that there are no ports or shipping that meet the specified criteria within the administrative area.

## **5 Industrial Sources**

### **5.1 Industrial Installations**

Industrial sources are unlikely to make a significant local contribution to annual mean concentrations of pollutants; but may be significant in terms of the short term objectives district. There are no industrial areas within the district or close by that make a significant impact on the air quality. The industries within the district that emit any of the prescribed pollutants are not situated at locations of relevant public exposure.

#### **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.

#### **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**

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

### **5.3 Petrol Stations**

This section assesses petrol stations that have an annual through put of more than 2000m<sup>3</sup> of petrol and also have a busy road nearby (more than 30,000 vehicles per day). There are no petrol stations with a throughput of petrol that exceeds the prescribed amount.

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

## 5.4 Poultry Farms

This is a new area for consideration, PM<sub>10</sub> objectives have to be considered in the vicinity of poultry farms with a specified number of birds, a specific ventilation system and where relevant exposure exists.

Three poultry farms have been identified within the district; however they do not meet the criteria that would require further work. These are:

- A. Cedar Cable - 100,000 places, two poultry houses cages for pullets;
- B. Clarke's Hill - 90,000 poultry places-broiler chickens; and
- C. Leafield Farm Lechlade - 200,000 places-broilers - mechanically ventilated

Unit A and Unit B - the numbers of birds are below the threshold. Unit C - The method of ventilation is mechanical

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 increased PM<sub>10</sub> and NO<sub>2</sub> emissions. Cotswold District Council has identified one biomass boiler that has been installed. The unit is rated at 0.38MW. The unit is a BG100 type biomass generator using Talbott's C4 compression and is rated at 0.38MW. The stack height is 8.5m and the stack diameter is 0.4m. Particulate emissions have been provided as: 0.05g/s. Using the calculations from TG(09):

#### \* Calculations

PM<sub>10</sub>

Chimney height -used actual 8.5m in accordance with Box 5.6

$$\text{Background –adjusted emission rate } * E_A = \frac{E}{(32-G)} \quad E_A = \frac{0.05}{(32-14.58)} = 0.00287\text{g/s}$$

E is emission rate of plant =50mg/m<sup>3</sup> =0.05g/s    G= annual average background 32µg/m<sup>3</sup>= annual average concentration at which the 90<sup>th</sup> percentile of 24hrs is likely to exceed the objective.    background emission for location from AQ archive for 2009: 14.75µm<sup>3</sup>

Using the nomogram (Fig. 5.19 TG (09)):

\*E<sub>A</sub> – the “background–adjusted” emission rate is 0.00287g/s, which is less than the threshold emission rate for 8.5m chimney height = 0.0045 g/s. Therefore it will not be necessary to proceed to a detailed assessment.

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

#### 6.1.1 Biomass Combustion – Combined Impacts

Many small biomass combustion installations could in combination lead to unacceptably high PM<sub>10</sub> concentrations. Reviewing the criteria in the Technical Guidance and supporting FAQ there are no locations of concern within Cotswold District.

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

### 6.2 Domestic Solid-Fuel Burning

No areas have been identified where domestic solid fuel gives rise to exceedences of the objective for SO<sub>2</sub> in previous Reviews and assessment. There are no areas of excessive domestic fuel use within the district that have been identified.

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

## 7 Fugitive or Uncontrolled Sources

Fugitive emissions of dust where they would give rise to elevated concentrations of  $PM_{10}$  have not been found in the district. No new sites have received planning approvals that are potential source of fugitives or uncontrolled source since the last assessments. No complaints have been received regarding any dust 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**

The conclusions from the monitoring data are that the Council will have to proceed to a Detailed Assessment for Thames Street, Lechlade as the annual mean concentration for 2008 is 43.4µg/m<sup>3</sup>. There is relevant exposure at this location as Thames Street is a narrow street with residential properties close to the kerb. Cotswold District Council will be submitting the results of the automatic and diffusion tube monitoring for 2009 currently being undertaken within the AQMA in the 2009 Further Assessment and 2010 Progress Report.

### **8.2 Conclusions from Assessment of Sources**

There are no new local developments: road transport, other transport, industrial installations, commercial/domestic, fugitive emissions, residential and commercial that are likely to impact on the air quality in the district.

### **8.3 Proposed Actions**

Cotswold District Council will be undertaking a Detailed Assessment for nitrogen dioxide in Thames Street Lechlade in 2010

Cotswold District Council will also undertake a Progress Report in 2010

Cotswold District Council will be submitting their Further Assessment towards the end of 2009.

Cotswold District Council is currently working on their AQAP aim to submit a draft at the end of 2009.

## **9 Appendix A: QA:QC Data**

### **9.1 Diffusion Tube Bias Adjustment Factors**

Diffusion tubes are supplied and analysed by Bristol Scientific Services. Tube preparation for nitrogen dioxide: are prepared using 50ul of 20% triethanolamine in water.

Benzene tubes are the Perkin Elmer type (length 89mm x 6.4mm o.d.) packed with Tenax TA. The uptake rate for benzene is taken to be 0.76 ng/ppm/min.

Cotswold District Council has not undertaken a co-location study, and used the national data base (Version 05/09). The bias adjustment factors utilised are:

- 2006 0.9 based on 5 studies,
- 2007 0.77 based on 5 studies,
- 2008 0.87 based on 4 studies.

### **9.2 QA/QC of automatic monitoring**

Chemiluminescence analyser was supplied and maintained by AEA Energy and Environment. It was regularly calibrated by AEA staff using calibration gases certified to ISO17025. The data was collected and checked daily and was ratified at the end of the monitoring period by AEA. The type of analyser used has an expected accuracy of  $\pm 10\%$  with precision of  $\pm 5\mu\text{gm}^{-3}$ . There was some loss of data capture due to a failure and some intermittent with communication problems the data capture was 86%.

### **9.3 QA/QC of diffusion tube monitoring**

Diffusion tubes are supplied and analysed by Bristol Scientific Services. Tube preparation for nitrogen dioxide: are prepared using 50ul of 20% triethanolamine in water. Benzene tubes are the Perkin Elmer type (length 89mm x 6.4mm o.d.) packed with Tenax TA. The uptake rate for benzene is taken to be 0.76 ng/ppm/minu

The laboratory participates in WASP scheme for nitrogen dioxide and benzene the result are given below (Table 7) and in field comparison studies with AEA Energy and Environment. The tube preparation and subsequent analysis follows the procedures in the harmonised "Practical Guidance" document.

**Table 7: WASP results for Bristol Scientific Services**

WASP Results Lab 152 Round 97 onwards:

Round	97	98	99	100	101	102	103	104
Tube 1 (µg NO <sub>2</sub> )	0.890	1.865	2.085	1.358	0.949	1.489	1.178	1.179
Tube 2 (µg NO <sub>2</sub> )	1.573	1.228	2.093	1.474	2.576	1.431	0.916	1.108
Tube 3 (µg NO <sub>2</sub> )	1.582	1.857	0.885	1.354	1.813	2.307	0.934	1.840
Tube 4 (µg NO <sub>2</sub> )	0.914	1.217	0.879	1.467	0.914	1.960	1.071	1.960
Spike tube 1 (µg NO <sub>2</sub> )	0.890	1.830	2.150	1.360	0.920	1.370	1.220	1.220
Spike tube 2 (µg NO <sub>2</sub> )	1.580	1.190	2.150	1.470	1.860	1.370	0.940	1.220
Spike tube 3 (µg NO <sub>2</sub> )	1.580	1.830	0.840	1.360	1.860	2.280	0.940	2.020
Spike tube 4 (µg NO <sub>2</sub> )	0.890	1.190	0.840	1.470	0.920	2.280	1.220	2.020
Standardised result tube 1	1.000	1.019	0.970	0.999	1.032	1.087	0.966	0.966
Standardised result tube 2	0.996	1.032	0.973	1.003	1.385	1.045	0.974	0.908
Standardised result tube 3	1.001	1.015	1.054	0.996	0.975	1.012	0.994	0.911
Standardised result tube 4	1.027	1.023	1.046	0.998	0.993	0.860	0.878	0.970
Performance index	1.87	5.29	16.61	0.08	374.65	73.42	41.98	45.95
Rolling performance index (NOT best of 4 out of 5)				5.96	99.16	116.19	122.53	134.00
Rolling performance index (best 4 out of 5)				5.96	5.96	23.85	33.02	40.36
Performance classification (criteria from April 2009) Good =<56.25 Acceptable =<225 Unacceptable >225				Good	Good	Good	Good	Good

# 10 Appendix B: List of Registered Processes

**Table 8: List of LAPPC Permitted Installations on the Public Register**

A2/01	Northcot Brick Ltd Blockley	Brickworks
B1/04	Berite (Sawmills) Ltd Broadway Lane	Timber
B1/06	South Cernev Cotswold Garage Sheep Street	Waste Oil Burner
B1/07	Chinning Camden Peglars Garage London Road	Waste Oil Burner
B1/08	Tethbury Ivor Webb & Sons Cherry Tree Lane	Waste Oil Burner
B1/09	Cirencester N M Motors Bourton Industrial Estate	Waste Oil Burner
B1/11	Bourton on the Water RS Autos Querns Lane	Waste Oil Burner
B1/14	Cirencester Pulham & Son Coaches Ltd Station Road	Waste Oil Burner
B1/16	Bourton on the Water Chris Keen Old Staion Yard	Waste Oil Burner
B1/19	Ebrinton Road Systematic Servicing Field House	Waste Oil Burner
B1/20	Willerslev N & N Autoworld Wilkinson Road	Waste Oil Burner
B1/22	Cirencester Transco Siddington	Natural Gas Odourisation
B1/23	Cirencester Bourton Vale Garage/Filling Station Station Road	Petrol Vapour Recovery
B1/24	Bourton on the Water Abbey Road Garage/Filling Station Gloucester Road	Petrol Vapour Recovery
B1/25	Cirencester Malthurst Filling Station Station Road	Petrol Vapour Recovery
B1/26	Stow-on-the-Wold Tesco Filling Station Kingsmeadow	Petrol Vapour Recovery
B1/28	Cirencester Barrington Filling Station A40	Petrol Vapour Recovery
B1/29	Barrinton Malthurst Filling Station Burford Road	Petrol Vapour Recovery
B1/30	Cirencester Oldbury Hill Garage Didmarton	Petrol Vapour Recovery

B1/32	Shell Filling Station Fairford	Petrol Vapour Recovery
B1/33	Manor Filling Station A40	Petrol Vapour Recovery
B1/34	Shinton Oliffe Marsh Service Station Stow Road (A429) Moreton in Marsh	Petrol Vapour Recovery
B1/36	New Quarry Motors Filling Station (Bridges Nissan) Chesterton Lane	Petrol Vapour Recovery
B1/38	Centurion Services Gloucester Road (A417)	Petrol Vapour Recovery
B1/39	Duntishourne Abbots Fosseway Service Station A429	Petrol Vapour Recovery
B1/40	Lower Slaughter Northfield Garage London Road	Petrol Vapour Recovery
B1/41	Tetbury Trooper's Lodge Filling Station A44	Petrol Vapour Recovery
B1/43	Bourton on the Hill Somerfield / BP Service Station Harebushes	Petrol Vapour Recovery
B1/44	Burford Road Quarry Hill Service Station Bourton-on-the-Hill	Petrol Vapour Recovery
B1/45	Cotswold Garage Sheep Street	Petrol Vapour Recovery
B1/46	Chinning Camden White Horse Filling Station A419	Petrol Vapour Recovery
B1/48	Frampton Mansell Equine and Pet Services Ltd Fosse Cross Industrial Estate	Animal Incinerator
B2/02	North Cernev Hanson Premix Claydon Pike	Cement
B2/05	Lechlade Hanson Quarry Products Europe Ltd Daglingworth Quarry	Quarrying
B2/06	Darlhworth Lafarge Roofing Ltd Broadway Lane	Cement
B2/08	South Cernev Longborough Concrete The Sitch	Cement
B2/09	Longborough Huntsmans Quarries Ltd Buckle Street	Quarrying
B2/17	Naunton Shorcote Quarry Somerford Keynes	Mobile Crusher
B3/02	Agricultural Supply Company Ltd Welsh Way	Mushroom Substrate
B3/03	Sunhill, Cirencester SIAC Tetbury Steel Ltd London Road	Metal Coating
B3/05	Tetbury Aggregate Industries Building Products Broadway Lane South Cernev	Di-isocyanate

B3/06	K L Evesham Ltd Weston Trading Estate <del>Weston-sub-Edon</del>	Wood Coating
B3/09	Mitsubishi Motors Ltd Elliot Road Cirencester	Vehicle Coating
B3/13	Haines & Strange (Cirencester) Ltd Midland Road Cirencester	Vehicle Coating
B3/17	Industrial Shotblast & Spraying Ltd, Tetbury	Coating of Metal
B3/18	Mary's Laundry, High Street, Bourton on the Water	Dry Cleaning
B3/19	Cotswold Concrete Ltd, Shornecote, Somerford Keynes	Cement
B3/20	Johnson Cleaners, 14 Market Place, Cirencester	Dry Cleaning
B3/21	Waterloo Dry Cleaners Ltd. 6 The Waterloo. Cirencester	Dry Cleaning
B3/22	Martins Dry Cleaners Cricklade Street	Dry Cleaning
B3/23	Russells Dry Cleaner	Dry Cleaning
B3/24	Hanson Premix, Coln Gravel Clavdon Pike. Lechlade	Bulk Cement
B3/25	The Dry Cleaning Co, Unit 1 Hospital Road, Moreton-in-Marsh	Dry Cleaning

# 11 Appendix C - Maps of monitoring locations

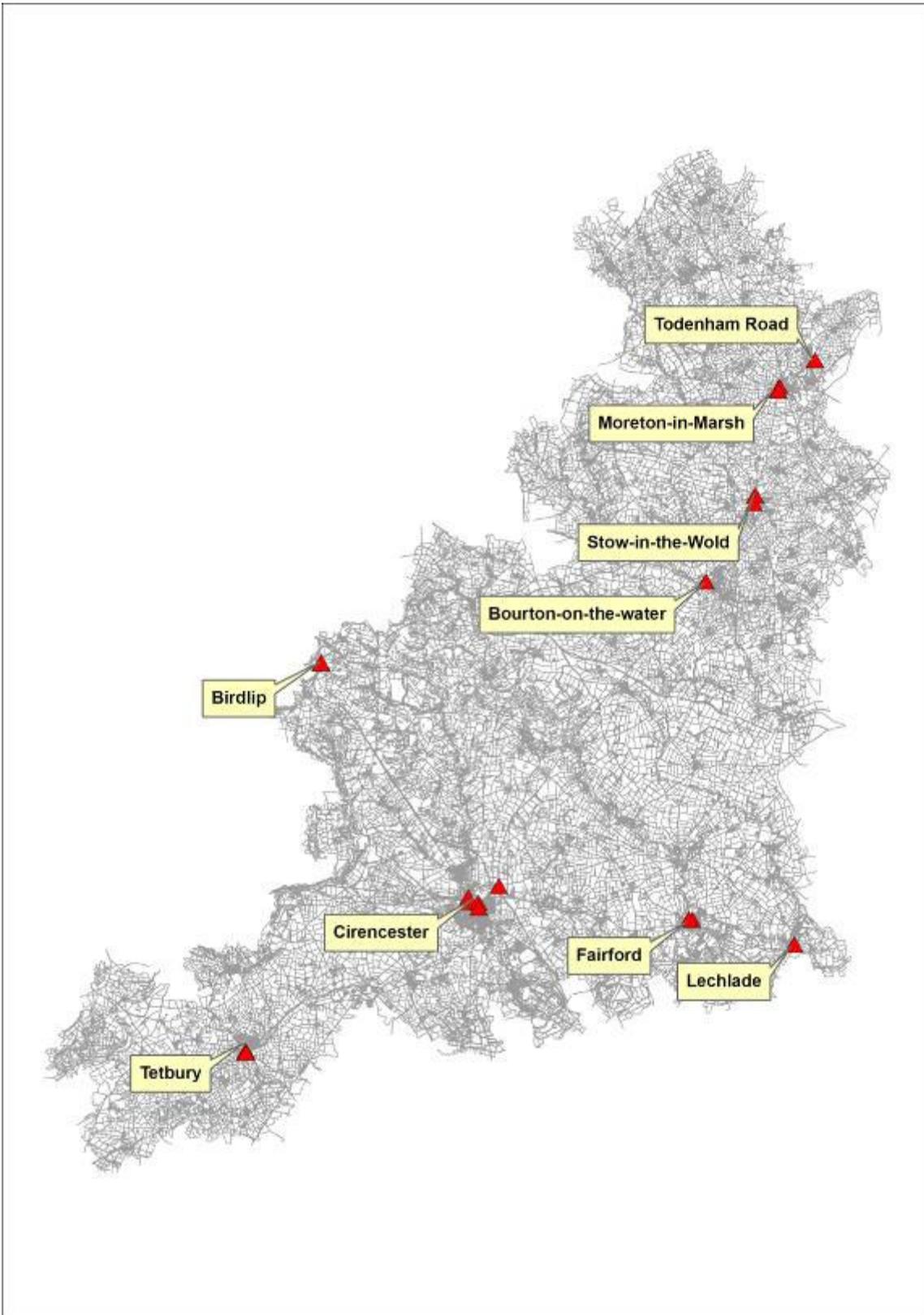
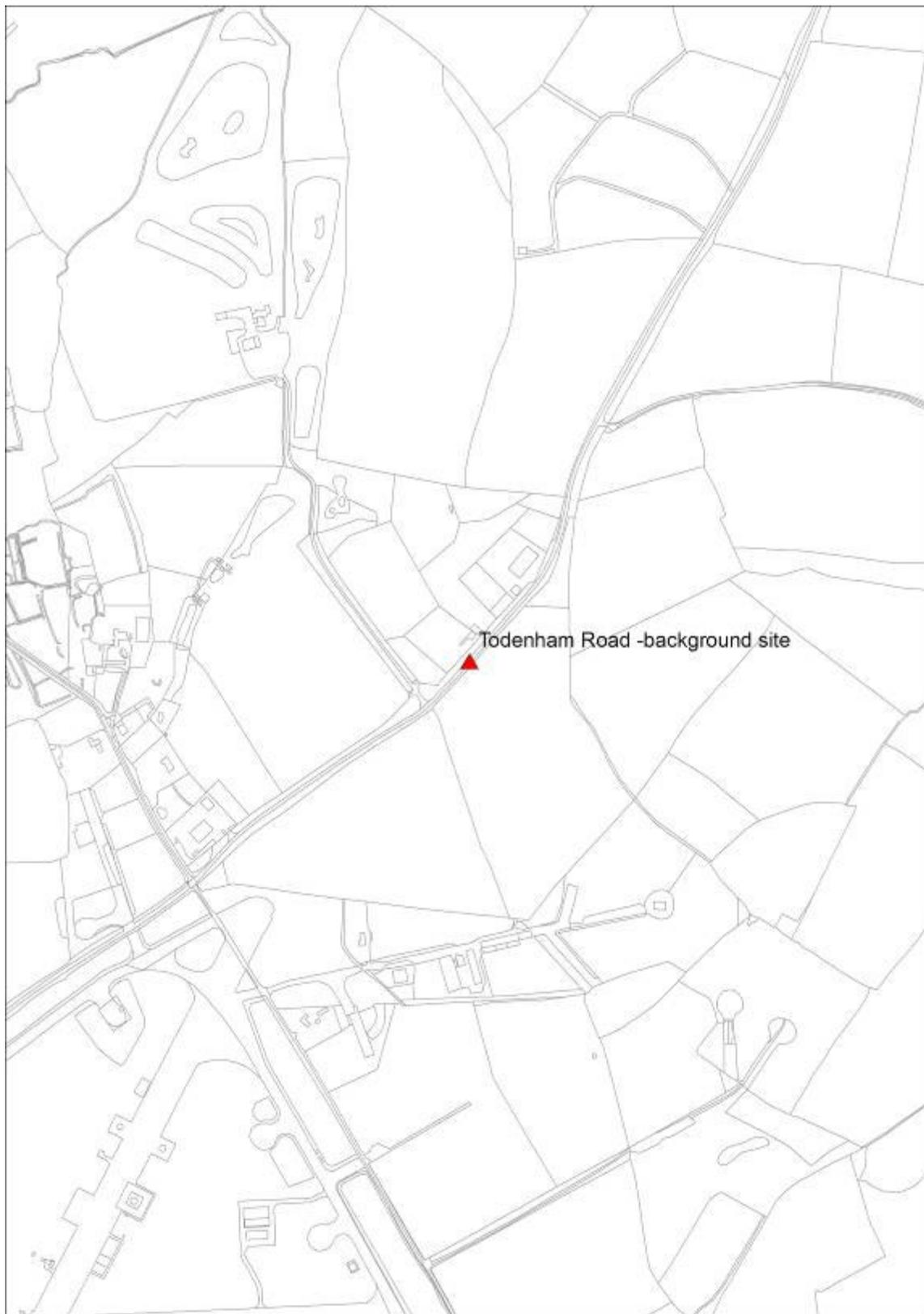
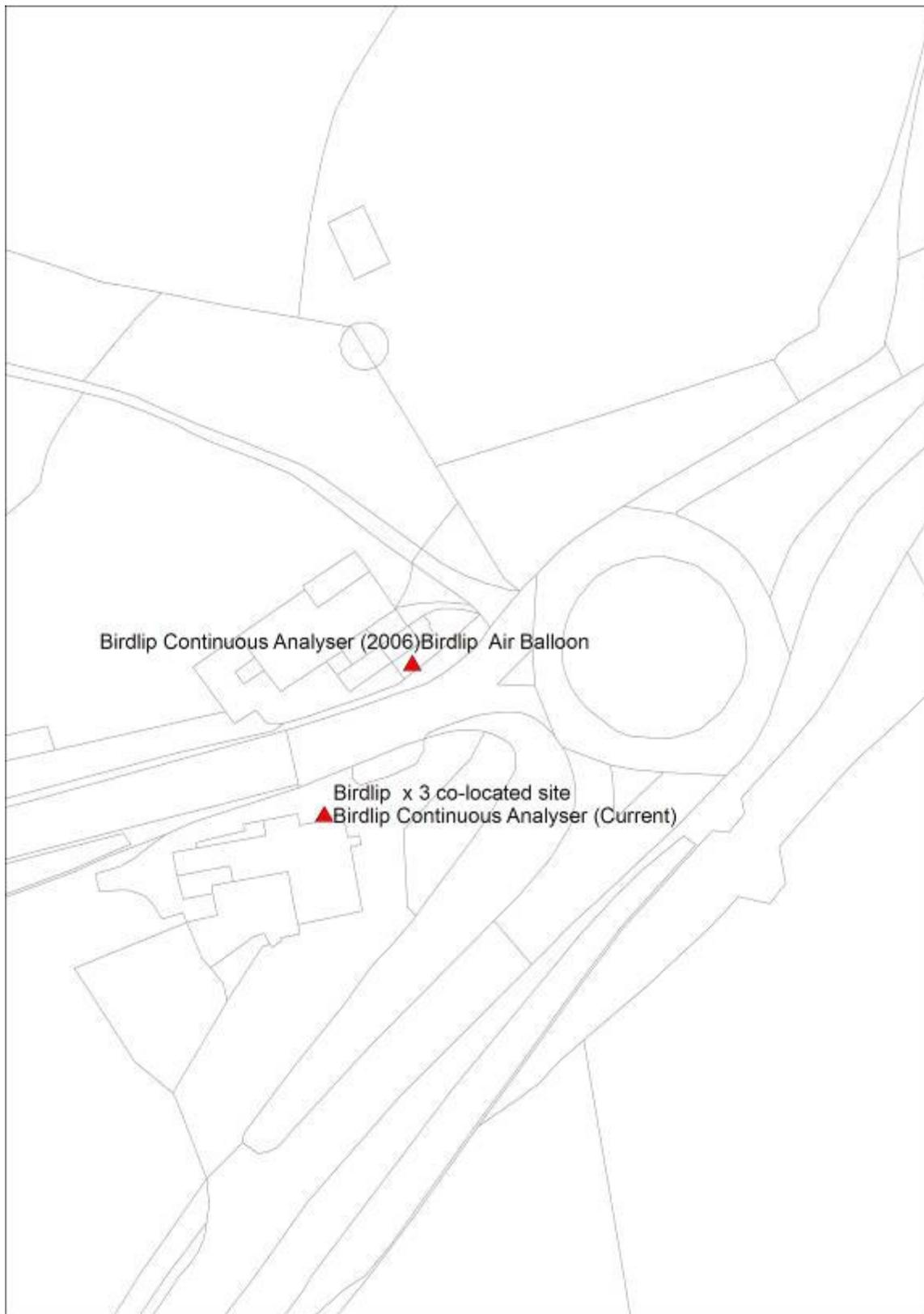


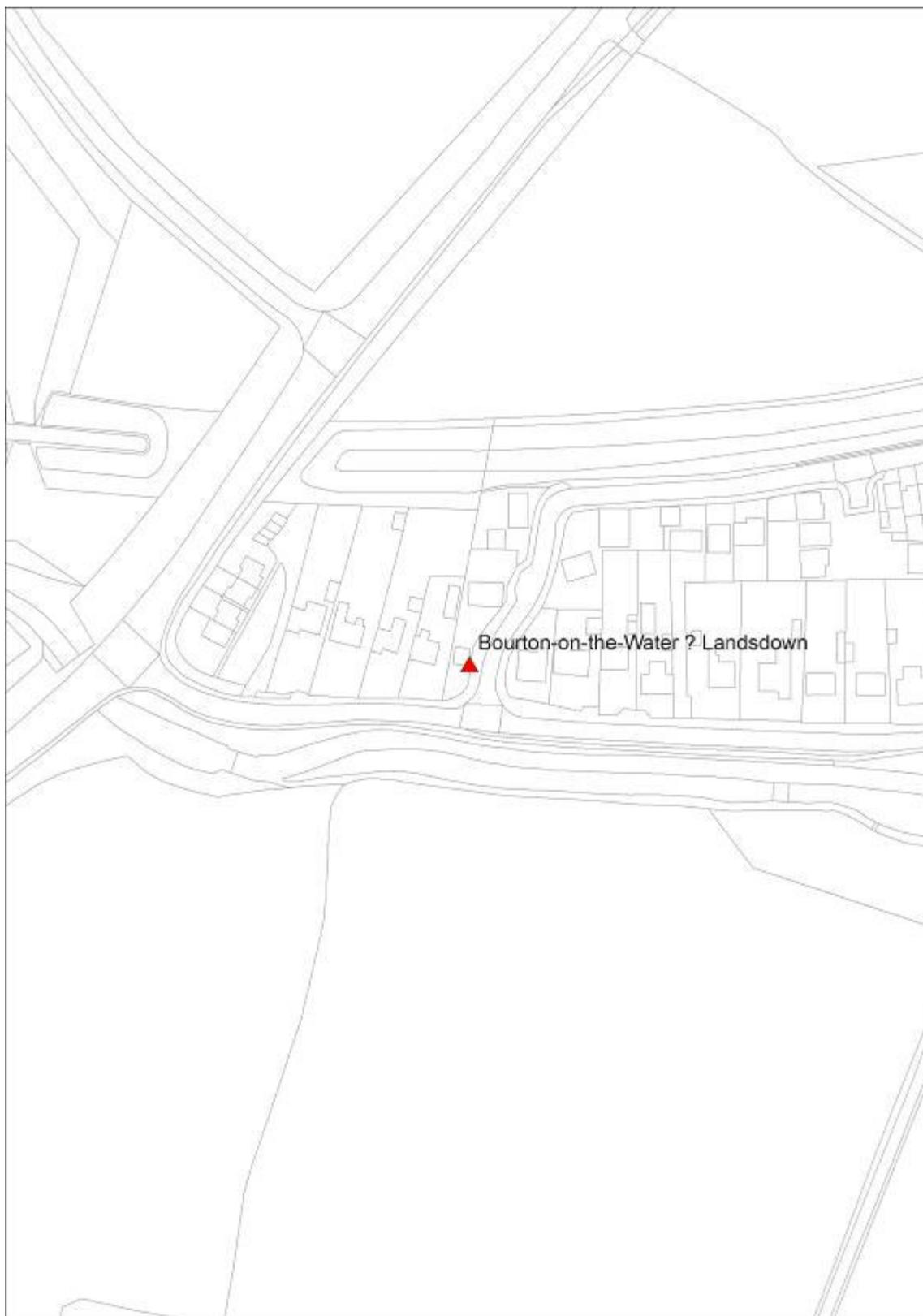
Figure 3: Cotswold monitoring sites



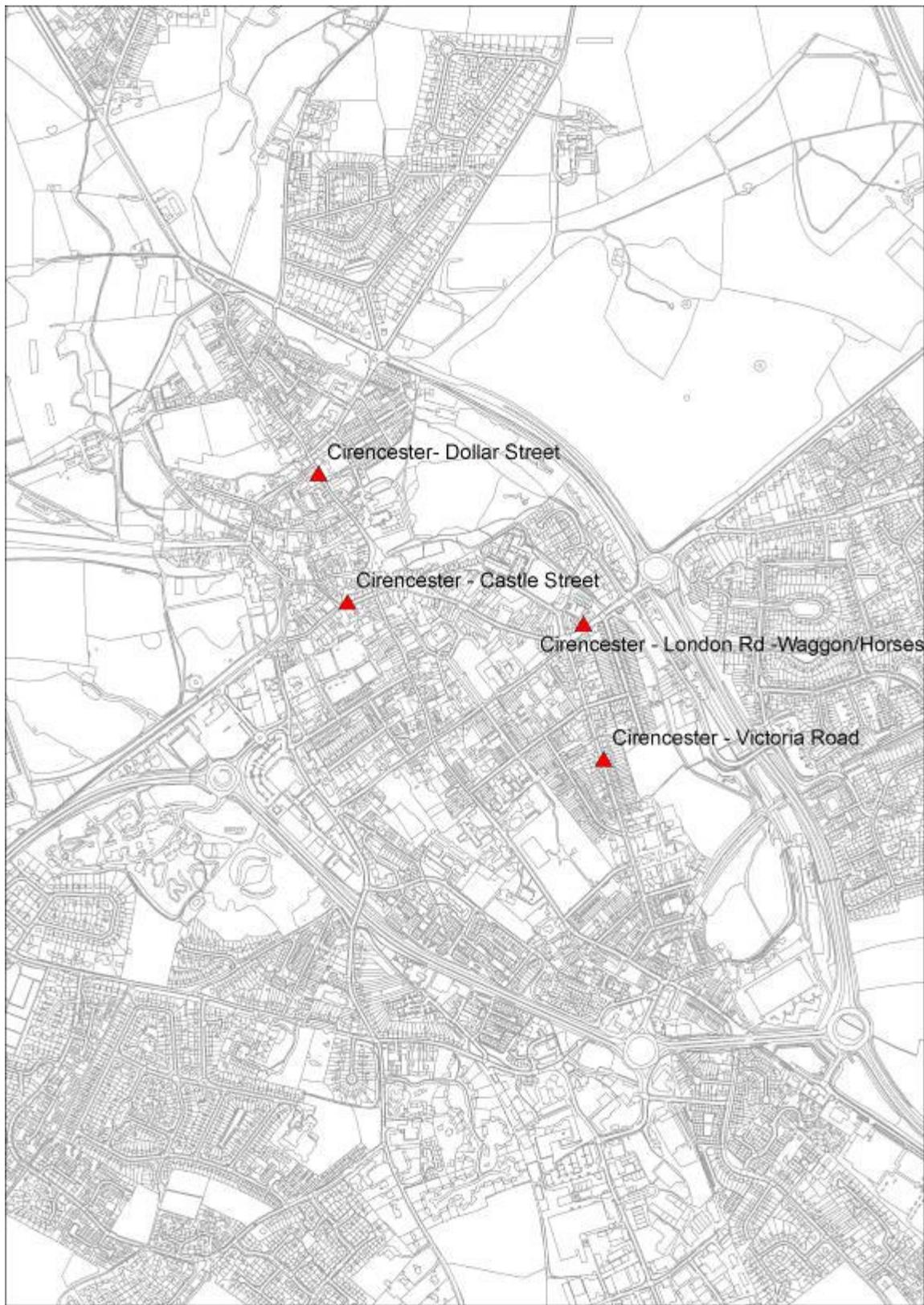
**Figure 4: Todenham Road monitoring site**



**Figure 5: Birdlip monitoring sites**



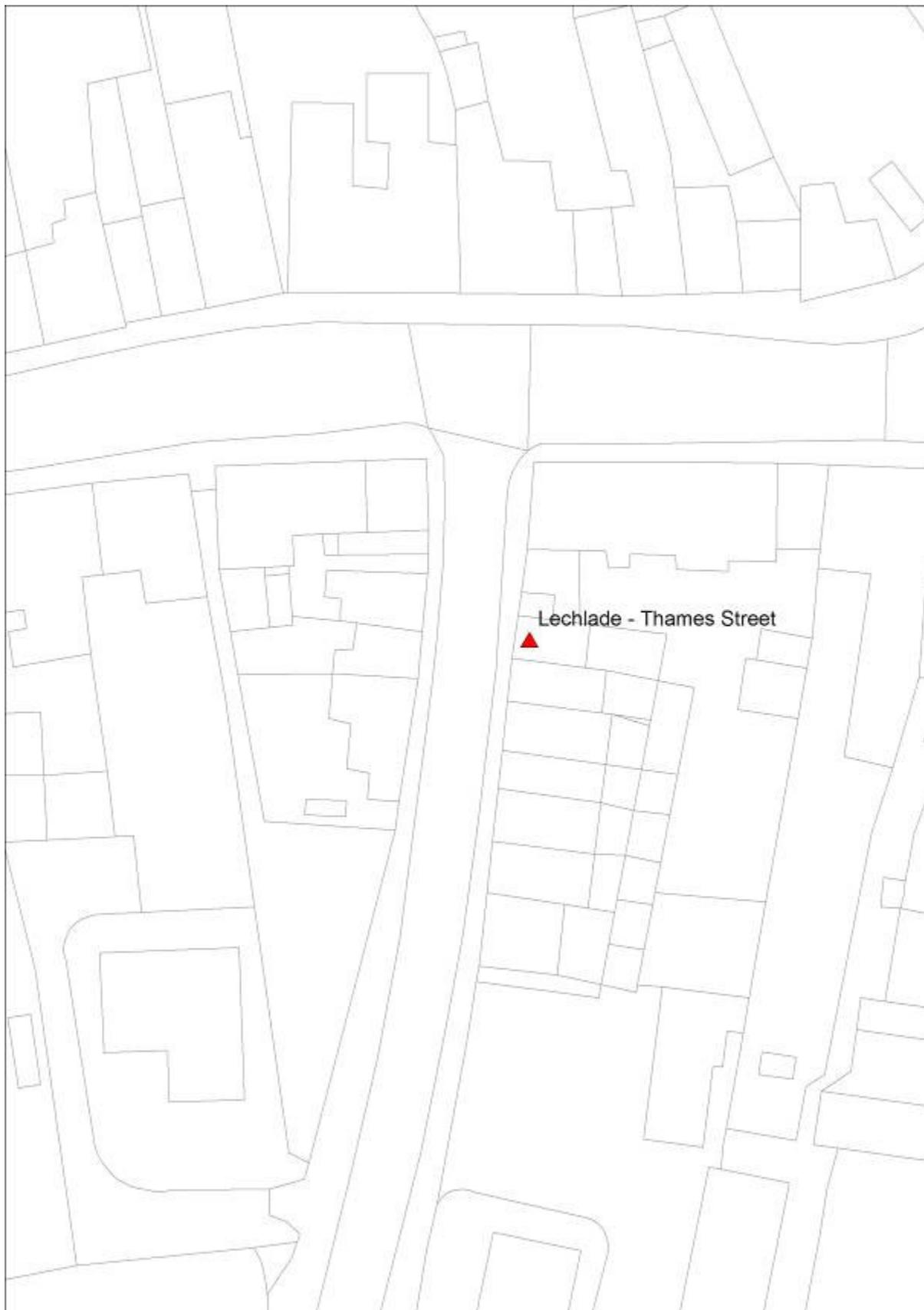
**Figure 6: Bourton-on-the-Water monitoring site**



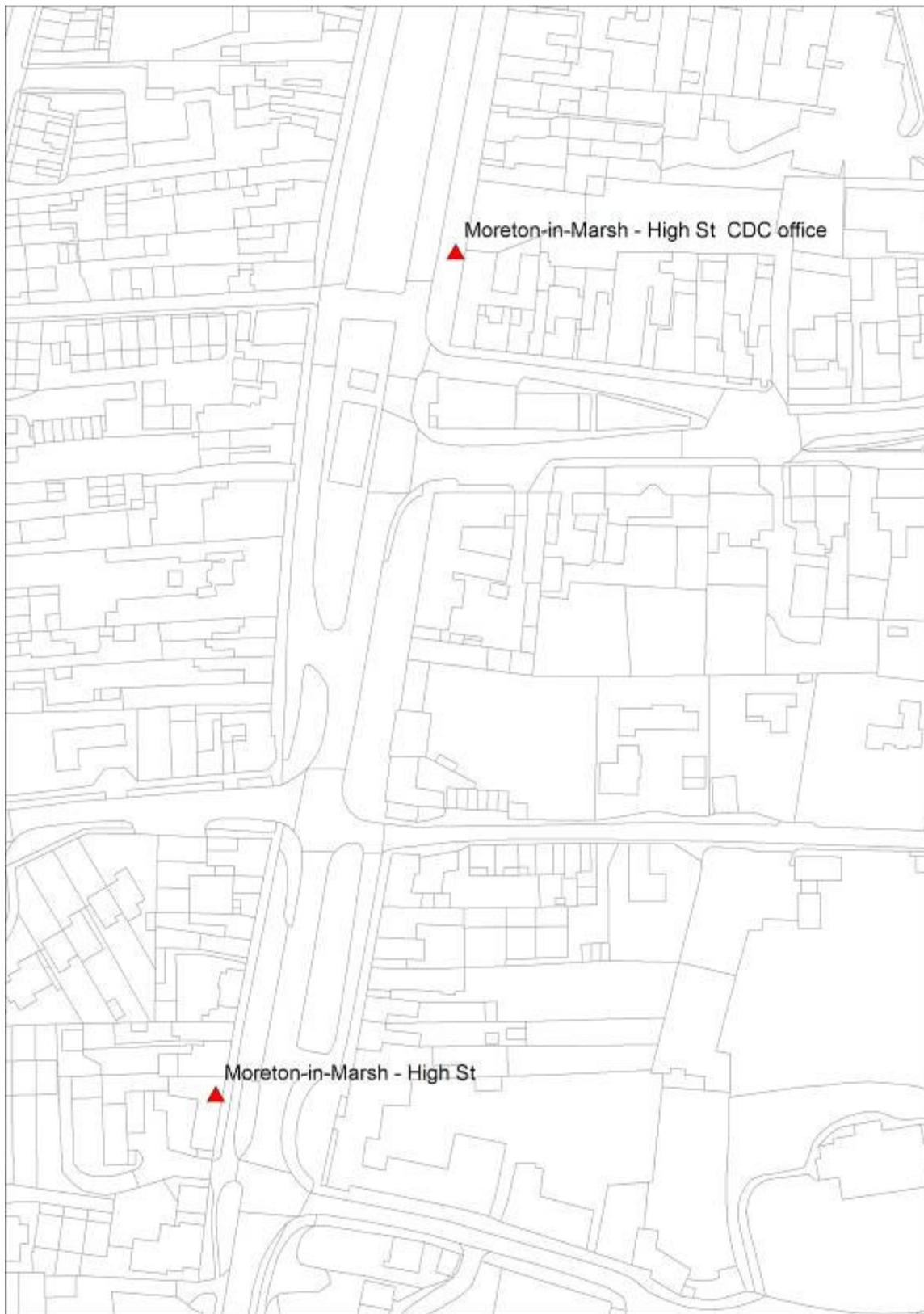
**Figure 7: Cirencester monitoring sites**



**Figure 8: Fairford monitoring sites**



**Figure 9: Lechlade monitoring site**



**Figure 10: Moreton-in-Marsh monitoring site**



**Figure 11: Stow Lodge monitoring site**



**Figure 12: Stow-in-the-Wold monitoring site**



**Figure 13: Tetbury monitoring site**