

Stroud District Council
Updating and Screening Assessment, 2009



In fulfillment of Part IV of the Environment Act 1995
Local Air Quality Management
June 2009

Stroud District Council – Updating and Screening Assessment, 2009

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Executive Summary

Stroud District Council has been conducting its Review and Assessment of air quality since 1996. Following this present review it is evident that as in the past the only air quality objective of concern is Nitrogen Dioxide (NO₂) from traffic emissions.

One location from the diffusion tube network – Cainscross, Stroud – has been identified as a potential location of exceedances of the annual mean objective for NO₂ with a bias adjusted annual result for 2008 of 40.7µg/m³. However, the diffusion tube location is on a traffic island within a roundabout complex and is not therefore representative of relevant exposure. Also there no traffic data available for the road junction in question and the authority has therefore been unable to carry out DMRB ^(Ref1) predictions.

Stroud will be reviewing its diffusion tube network at the end of 2009 and will investigate relocating this tube (and others) to a more representative location. Progress with this course of action will be reported in future review and assessment reports.

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1 Introduction

1.1 Description of Local Authority Area

The Stroud District has an area of 453km², a population of approximately 108,000 and lies in South West England immediately to the south of Gloucester City, bordering the River Severn on its western edge. The district is divided from the south west to the north east by the M5 motorway. It shares boundaries with Gloucester City Council, Tewkesbury Borough Council, Cotswold District Council, South Gloucestershire Council and across the Severn, The Forest Of Dean District Council. It contains 6 distinct market towns – Berkeley, Dursley, Nailsworth, Stonehouse, Stroud and Wotton under Edge. The city of Bristol is located some 15 miles from the southern boundary.

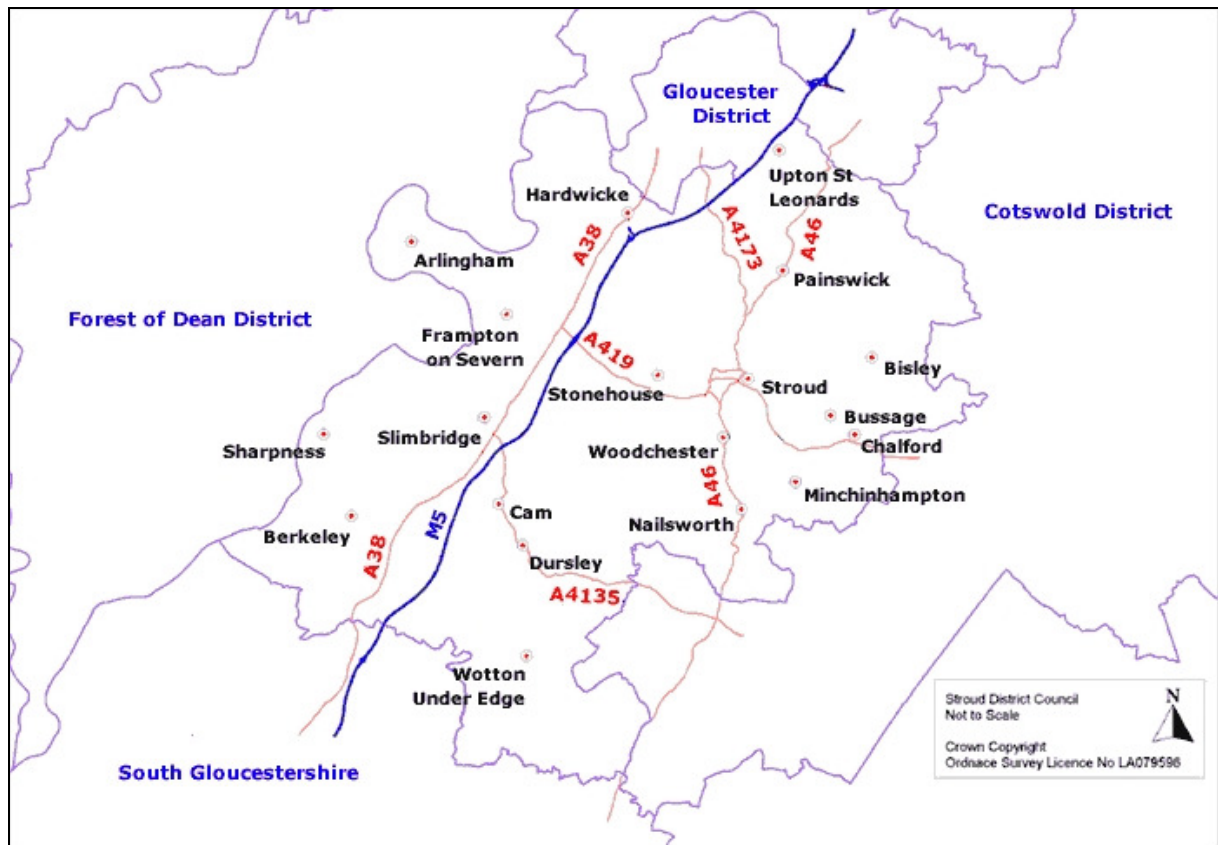
It is predominantly a rural area and thus attracts tourists and wealthy migrants, often retirees. Three quarters of its population live in the settlements of the Stroud Valleys and the market towns of Cam, Dursley and Wotton under Edge. It also has an industrial heritage, originally based on wool, which has left a strong engineering and manufacturing legacy albeit with no heavy industry.

The most significant influence on air quality within the district is from local road traffic. There are also a number of 'prescribed processes' located within the district. These are industrial processes regulated by the Environment Agency Part A(1) processes and by the District Council Part A(2) and Part B processes. These are listed in Appendices A, B and C. None are considered to be of any major influence on local air quality.

Figure 1: Map of Stroud District Council Location



Figure 2: Map of Stroud District Council Boundary



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. 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: 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	
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 (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

Stroud District Council has previously undertaken the following Review and Assessment reports (all of which are available at www.stroud.gov.uk/docs/environment/air_quality.asp):

- Updating and Screening Assessment 2003
- Progress Report 2004
- Progress Report 2005
- Updating and Screening Assessment 2006 ^(Ref 2)
- Progress Report 2007 ^(Ref 3)
- Progress Report 2008 ^(Ref 4)

None of these reports have identified any locations of potential concern for any of the air quality objectives as specified in Table 1 and there are no current AQMAs within their administrative area. A brief summary of the Review and Assessment reports from Round 3 are below.

Conclusions of Updating and Screening Assessment 2006:

- This assessed that the objectives for Carbon Monoxide, Benzene, 1,3-butadiene, Lead, PM₁₀, Sulphur Dioxide were unlikely to be exceeded at any location within the administrative area of Stroud District, and therefore no Detailed Assessments were required.
- The assessment has indicated that the 2005 Nitrogen Dioxide annual mean objective will not be exceeded at any location within the administrative area of Stroud District Council, and therefore a Detailed Assessment will not be required. The assessment also indicated that the 2005 NO₂ hourly objective is unlikely to be exceeded, and therefore a Detailed Assessment will not be required with respect to the hourly mean.
- No new roads or roads with significantly changed flows within the administrative area of Stroud District Council were identified since the last round of Review and Assessment.
- Seven additional small waste oil burners (PG 1/1 (95)) had been permitted in Stroud District Council since the last round of Review and Assessment. It is not considered that these processes would have a significant influence on local air quality within the authority.

Conclusions of Review and Assessment Progress Report 2007:

- From the evidence provided in this report, no exceedences of the air quality objectives are likely to occur at any location within Stroud District Council's area. As a

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result of this it was recommended that Stroud District Council undertake a Progress Report in 2008.

- No other exceedences of the air quality objectives for Ozone and Sulphur Dioxide are likely.
- Stroud District Council currently carries out no monitoring for Carbon Monoxide, Benzene, Lead and 1,3-butadiene.
- There are no new developments of significance that will influence air quality in the Stroud District Council area.

Conclusions of Review and Assessment Progress Report 2008:

- From the evidence provided in this report, no exceedences of the air quality objectives are likely to occur at any location within Stroud District Council's area. Therefore, Stroud District Council will undertake an Updating and Screening Assessment 2009.
- Stroud District Council currently carries out no monitoring for Carbon Monoxide, Benzene, Lead, 1,3-butadiene, PM₁₀, SO₂ and Ozone.
- There are no new developments of significance that will influence air quality in the Stroud District Council area.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Stroud District Council does not undertake any continuous monitoring within their administrative area.

2.1.2 Non-Automatic Monitoring

Stroud District Council undertook NO₂ monitoring with diffusion tubes at 21 sites in 2008. The diffusion tubes were supplied and analysed by Bristol Scientific Services (QA/QC data can be found in Appendix D). Tubes were prepared using 50µl of 20% triethanolamine in water. The tube preparation and subsequent analysis follow the procedures in the harmonised "Practical Guidance" document ^(Ref5). All diffusion tubes are stored, handled and exposed in accordance with the relevant guidance. All diffusion tubes have a monthly exposure period. Where necessary diffusion tubes with less than 75% (nine months) data has been annualised using the methodology outlined in Box 3.2 of the Technical Guidance (LAQM.TG(09)).

Stroud District Council does not undertake any co-location studies, so bias adjustment factors were obtained from the National Bias Adjustment Factor Spreadsheet (Version v05/09) (Appendix E).

- 2006 – 0.90 for 5 studies
- 2007 – 0.77 for 5 studies
- 2008 – 0.87 for 4 studies

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Table 2: Details of Non- Automatic Monitoring Sites Diffusion Tubes

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?
Bevington – M5 Survey	Rural	365780	196898	NO ₂	N	N	2m	N/A
Brookthorpe – North View	Roadside	383410	212570	NO ₂	N	Y(19.8m)	1m	Y
Cainscross - Tricorn	Kerbside	383514	205023	NO ₂	N	N	1.5m	N
Chalford – Manor Farm	Kerbside	389348	203666	NO ₂	N	N	1.5m	Y
Dursley – Town Hall	Kerbside	375627	198118	NO ₂	N	N	0.5m	Y
Hardwicke – Westland Road	Kerbside	380124	213183	NO ₂	N	Y(4.6m)	1.5m	Y
Kingswood – M5 Survey	Rural	374995	190954	NO ₂	N	N	0.5m	N/A
Michaelwood – M5 Survey	Other	369975	195342	NO ₂	N	N	2.5m	Y
Nailsworth – Bath Road	Kerbside	385016	199727	NO ₂	N	N	3.4m	Y
Painswick – High Street Lights	Kerbside	386677	209768	NO ₂	N	Y(3.2m)	0.5m	Y
Rod – Golden X Junction	Kerbside	384089	204457	NO ₂	N	N	1.4m	Y
Stonehouse Roundabout	Roadside	380982	204755	NO ₂	N	N	1.2m	Y
Stroud - Bowbridge	Kerbside	385817	204342	NO ₂	N	N	0.4m	Y
Stroud – London Road	Roadside	385442	204796	NO ₂	N	Y(3.2m)	1.3m	Y
Stroud – Taxi Rank	Kerbside	385000	205215	NO ₂	N	N	1.3m	Y
Tresham – M5 Survey	Rural	380121	190760	NO ₂	N	N	1.6m	N/A
Upton St Leonards – Ash Path Bridge	Roadside	386187	215144	NO ₂	N	N	1.6m	Y
Upton St Leonards – 26 Woodland Green	Kerbside	386386	215378	NO ₂	N	Y(12.5m)	0.6m	Y
Upton St Leonards – 50 Woodland Green	Kerbside	386301	215294	NO ₂	N	Y(8.8m)	0.5m	Y
Upton St Leonards – 10 Ash Grove	Kerbside	386389	215222	NO ₂	N	Y(4.6m)	1.4m	Y
Wotton – Old Town	Kerbside	375894	193369	NO ₂	N	N	0.8m	Y

2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

As outlined in Table 3, in 2008, one site exceeded the annual mean objective of 40µg/m³ for NO₂. This site was Cainscross Stroud with a bias adjusted annual mean concentration of 40.7µg/m³. This diffusion tube is location on a traffic island beside a busy roundabout and is not representative of relevant exposure. Stroud District Council have investigated trying to assess this location using DMRB however there is no traffic data available. Stroud District Council are now undertaking a review of their diffusion tube network and it is proposed that this diffusion tube (and others) be relocated to a site which is more representative of relevant exposure. Stroud District Council will review this site again in their Progress Report 2010 and should concentrations exceed the annual mean objective the Council will proceed to a Detailed Assessment immediately.

Table 3: Results of Nitrogen Dioxide Diffusion Tubes 2008

Site ID	Location	Within AQMA?	Data Capture 2008 %	2008 NO ₂ Concentrations (µg/m ³) Adjusted for bias
1	Bevington – M5 Survey	N	91.7	12.36
2	Brookthorpe – North View	N	100	34.02
3	Cainscross - Tricorn	N	83.3	40.71
4	Chalford – Manor Farm	N	100	17.77
5	Dursley – Town Hall	N	91.7	25.21
6	Hardwicke – Westland Road	N	100	21.57
7	Kingswood – M5 Survey	N	91.7	14.86
8	Michaelwood – M5 Survey	N	100	21.69
9	Nailsworth – Bath Road	N	100	29.62
10	Painswick – High Street Lights	N	100	36.45
11	Rod – Golden X Junction	N	100	29.23
12	Stonehouse Roundabout	N	100	33.46
13	Stroud - Bowbridge	N	100	36.18
14	Stroud – London Road	N	58.3	34.06*
15	Stroud – Taxi Rank	N	100	28.64
16	Tresham – M5 Survey	N	83.3	15.50
17	Upton St Leonards – Ash Path Bridge	N	91.7	32.46
18	Upton St Leonards – 26 Woodland Green	N	100	28.87
19	Upton St Leonards – 50 Woodland Green	N	50	22.52**
20	Upton St Leonards – 10 Ash Grove	N	100	23.18
21	Wotton – Old Town	N	100	19.08

* Short term adjusted 1.02

** Short term adjusted 0.86

Table 2.3 Results of Nitrogen Dioxide Diffusion Tubes 2006 - 2008

Site ID	Location	Within AQMA?	NO ₂ Concentrations (µg/m ³) Adjusted for bias		
			2006	2007	2008
1	BEVINGTON - M5 SURVEY	N	10.6	7.4	12.4
2	BROOKTHORPE -NORTH VIEW	N	30.3	19.7	34.0
3	CAINSCROSS - TRICORN	N	33.2	23.0	40.7
4	CHALFORD -MANOR FARM	N	13.3	10.8	17.8
5	DURSLEY - TOWN HALL	N	22.7	15.4	25.2
6	HARDWICKE - WESTLAND ROAD	N	17.7	12.8	21.6
7	KINGSWOOD - M5 SURVEY	N	12.6	8.6	14.9
8	MICHAELWOOD - M5 SURVEY	N	17.8	12.4	21.7
A	MINCHINHAMPTON CENTRE	N	10.7	-	-
9	NAILSWORTH - BATH RD	N	24.9	18.2	29.6
10	PAINSWICK -HIGH ST LIGHTS	N	33.9	22.4	36.5
11	ROD - GOLDEN X JUNCTION	N	23.2	17.9	29.2
12	STONEHOUSE ROUNDABOUT	N	26.5	21.4	33.5
13	STROUD - BOWBRIDGE	N	32.5	22.3	36.2
B	STROUD – MUSIC CENTRE	N	27.2	-	-
14	STROUD - LONDON ROAD	N	-	9.4	33.4
15	STROUD - TAXI RANK	N	27.2	18.9	28.6
16	TRESHAM -M5 SURVEY	N	11.6	9.0	15.5
17	UPTON ST LEONARDS-ASH PATH BRIDGE	N	26.9	17.9	32.5
18	UPTON ST LEONARDS-26 WOODLAND GREEN	N	23.7	17.4	28.9
19	UPTON ST LEONARDS-50 WOODLAND GREEN	N	28.0	19.3	22.5
20	UPTON ST LEONARDS-10 ASH GROVE	N	20.8	15.6	23.2
C	UPTON ST LEONARDS-12/14 WOODLANDS	N	25.9	-	-
D	UPTON ST LEONARDS-TORSHAVEN	N	23.0	-	-
21	WOTTON - OLD TOWN	N	17.6	12.6	19.1

2.2.2 PM₁₀

Stroud District Council has not undertaken any PM₁₀ monitoring within their administrative area since the last Updating and Screening Assessment in 2006.

2.2.3 Sulphur Dioxide

Stroud District Council has not undertaken any SO₂ monitoring within their administrative area since the last Updating and Screening Assessment in 2006.

2.2.4 Benzene

Stroud District Council has not undertaken any Benzene monitoring within their administrative area since the last Updating and Screening Assessment in 2006.

2.2.5 Other pollutants monitored

- Stroud District Council has not undertaken any carbon monoxide monitoring within their administrative area since the last Updating and Screening Assessment in 2006.

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- Stroud District Council has not undertaken any lead monitoring within their administrative area since the last Updating and Screening Assessment in 2006.
- Stroud District Council has not undertaken any 1,3-butadiene monitoring within their administrative area since the last Updating and Screening Assessment in 2006.
- Stroud District Council has not undertaken any ozone monitoring within their administrative area since the last Updating and Screening Assessment in 2006

Stroud District Council has measured concentrations of Nitrogen Dioxide above the annual mean objective at one location. However, this location is not representative of relevant exposure. Stroud District Council will not be proceeding to a Detailed Assessment at this time.

3 Road Traffic Sources

Emissions from road traffic are the most significant source of influence on air quality within Stroud District. Previous reviews have established that levels of NO₂ may be of concern and therefore nitrogen dioxide diffusion tube monitoring takes place at 21 sites throughout the district. There are no roads within the district with a significant percentage of bus or HGVs. There are seven specific areas of concern, assessments of which follow Box 5.3 LAQM.TG(09)^(Ref6).

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Concentrations of NO₂ are often higher where traffic is slow moving, with stop/start driving, and where buildings on either side reduce dispersion - Section A.1 of Box 5.3 of LAQM TG(09). One location of potential concern was identified by Stroud District Council. This is the High Street Painswick where the A46 passes through and due to the narrowness of the road there is traffic light control. This stretch of street exhibits all the characteristics of a canyon with residential property each side and very slow moving traffic ie <30mph. The 24hr work day flow is 6000-10000 with only 151-300 HGVs. Stroud District Council monitor NO₂ at this location with a diffusion tube. For 2008 this diffusion tube location has reported a bias adjusted annual mean concentration of 36.4µg/m³. Therefore, no further work is required. However, monitoring will continue at this location.

Stroud 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

There are some street locations where individuals may regularly spend 1-hour or more, for example, streets with many shops and streets with outdoor cafes and bars - Section A.2 of Box 5.3 of TG(09). Having reviewed potential locations within Stroud District Council's administrative area, no busy streets of concern have been identified since the last round of Updating and Screening Assessment in 2006 where people may spend 1-hour or more close to traffic.

Stroud 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.

Levels of NO₂ and PM₁₀ need to be considered where there is an unusually high proportion of buses and/or HGVs - Section A.3 of Box 5.3 of LAQM TG(09). Having reviewed potential locations within Stroud District Council's administrative area, no busy streets of concern have been identified since the last round of Updating and Screening Assessment in 2006. For example the two busy roads through the district have 24hr work day flows of 10000-15000 but an HGV flow of only 501-800 (this equates to 5% HGV). There are no roads with bus only lanes and no major industrial estates.

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

3.4 Junctions

Levels of NO₂ and PM₁₀ need to be considered at "busy" junctions due to the combined impact of traffic emissions from more than one road and the resultant higher emissions due to stop/start driving. - Section A.4 of Box 5.3 of TG(09). Having reviewed potential locations within Stroud District Council's administrative area, no busy junctions of concern have been identified since the last round of Updating and Screening Assessment in 2006.

Stroud 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

Levels of NO₂ and PM₁₀ need to be considered for newly constructed or proposed roads - Section A.5 of Box 5.3 of LAQM TG(09). Having reviewed potential locations within Stroud District Council's administrative area, no new roads constructed or proposed since the last round of Updating and Screening Assessment in 2006.

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

3.6 Roads with Significantly Changed Traffic Flows

Levels of NO₂ and PM₁₀ need to be considered for any roads where there has been a "large" increase in traffic flow. An increase of more than 25% is considered "large" - Section A.6 of Box 5.3 of LAQM TG(09). Having reviewed traffic flow data within Stroud District Council's administrative area, no roads with a large increase in traffic flow have been identified since the last round of Updating and Screening Assessment in 2006.

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

3.7 Bus and Coach Stations

Levels of NO₂, both the annual mean and the 1-hour objective, must be considered for bus stations or sections of bus stations that are not enclosed, and where there is relevant exposure, including at nearby residential properties. - Section A.7 of Box 5.3 of LAQM TG(09). Stroud District Council has no bus or coach station that meets the assessment criteria.

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

4 Other Transport Sources

4.1 Airports

Levels of NO₂ from airports must be considered as aircraft are potentially significant sources of nitrogen oxides (NO_x) emissions, especially during takeoff - Section B.1 of Box 5.4 of LAQM TG(09). Stroud District Council have no airports within their administrative area.

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

4.2 Railways (Diesel and Steam Trains)

Stationary locomotives, both diesel and coal fired, can give rise to high levels of SO₂ close to the point of emission. Recent evidence suggests that moving diesel locomotives, in sufficient numbers, can also give rise to high NO₂ concentrations close to the track. These two potentially significant sources are considered separately below - Section B.2 of Box 5.4 of LAQM TG(09).

4.2.1 Stationary Trains

Measurements were made on the Council's GIS mapping system to establish that there are no relevant exposure sites within 15m of the track at Stroud station. Trains are also not regularly stationary for 15 minutes or more.

Stroud 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

National Rail's Timetable Map 2009 ^(Ref7) shows that none of the rail lines with a heavy traffic of diesel passenger trains, as listed in Table 1 of the FAQ Guidance on Assessing Emissions from Railway Traffic ^(Ref8), pass through its district. Nor is Stroud District Council one of the authorities listed in Table 2 of this document.

Stroud 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)

Large ships generally burn oils with a high sulphur content in their main engines (bunker oils). If there are sufficient movements in a port they can give rise to a sufficient number of 15-minute periods above 266 µg/m³, as to exceed the 15-minute objective for SO₂. Auxiliary

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engines used while berthed (hotelling) usually use a lower sulphur fuel, and are unlikely to be significant. - Section B.3 of Box 5.4 of LAQM TG(09). Sharpness Docks are located in the south west corner of the district, situated on the River Severn and linked by canal to Gloucester Docks. There are approximately 600 movements per year, none of which are by large ships, as defined in Section B.3 of Box 5.4 of LAQM TG(09).

Stroud 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

Although Industrial sources are unlikely to make a significant local contribution to annual mean concentrations they may be significant in terms of the short-term objectives, especially if there is an impact from several sources. All of the regulated pollutants need to be considered, although those most at risk of requiring further work are SO₂, NO₂, PM₁₀ and benzene – Section C.1 of Box 5.5 of LAQM TG(09).

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

There are no new or proposed installations for which an air quality assessment was, or would be required.

Stroud 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

There are no existing installations with substantially increased emissions and none with any new relevant exposure introduced.

Stroud 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

There are no new or significantly changed installations with no previous air quality assessments.

Stroud 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

Major petrol fuel depots could emit sufficient benzene to put the 2010 objective at risk of being exceeded, especially if combined with higher levels from nearby busy roads – Section

C.2 of Box 5.5 of LAQM TG(09). There are no major fuel (petrol) storage depots within the Local Authority area.

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

5.3 Petrol Stations

Petrol stations could emit sufficient benzene to put the 2010 objective at risk of being exceeded, especially if combined with higher levels from nearby busy roads - Section C..3 of Box 5.5 of LAQM TG(09). Stroud District Council has considered busy roads as defined and all petrol stations located on them. None have relevant exposure within 10 metres of the pumps.

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

5.4 Poultry Farms

There is the potential for localised exceedences of the PM₁₀ objectives associated with emissions from certain large poultry farms - Section C..4 of Box 5.5 of LAQM TG(09). There is one such farm with a permit from the Environment Agency - Appendix A: Faccenda Group Limited, Highwood Farm, Kingswood, Wotton under Edge, Glos, GL12 8JU. However, this farm has mechanically ventilated units which house 158,250 birds. This is well below the specified criteria of 400,000 birds.

Stroud 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 an increase in PM₁₀ emissions, due to the process of combustion – aerosol formation from volatile materials distilled from the wood is also an issue. Compared to conventional gas-burning, biomass burning can also result in an increase in the overall NO_x emissions due to the fuel-derived portion that is not present in gas combustion - Section D.1a of Box 5.8 LAQM.TG(09). Stroud District Council received several enquiries during 2008 regarding the necessity for consideration of biomass boilers under the Clean Air Act 1993. All such boilers were well below 50kW.

Stroud District Council confirms that there is no biomass combustion plant of concern in the Local Authority area.

6.2 Biomass Combustion – Combined Impacts

There is the potential that many small biomass combustion installations (including domestic solid-fuel burning), whilst individually acceptable, could in combination lead to unacceptably high PM₁₀ concentrations, particularly in areas where PM₁₀ concentrations are close to or above the objectives. The impact of domestic biomass combustion in most areas is thought to be small at the time of writing, but could become more important in future - Section D.1b of Box 5.8 LAQM.TG(09). There are only a few isolated biomass boilers within Stroud District Council. There are no areas that would meet the criteria as set out in the Technical Guidance LAQM.TG(09).

Stroud District Council confirms that there are no biomass combustion plant of concern in the Local Authority area.

6.3 Domestic Solid-Fuel Burning

There is the potential in areas where significant coal burning takes place for exceedences of the objectives for SO₂ to occur - Section D.2 of chapter 5 LAQMTG(09). Having reviewed potential locations within Stroud District Councils administrative area, no areas of significant coal burning have been identified since the last round of Updating and Screening Assessment in 2006.

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

7 Fugitive or Uncontrolled Sources

Potentially elevated levels of PM₁₀ can arise from the fugitive emissions from a range of sources including quarrying, stone cutting, gravel extraction and wind-blown dust from stockpiles and dusty surfaces - Section E of Box5.10 LAQM TG(09). Having reviewed potential locations within Stroud District Council's administrative area, no locations of concern have been identified since the last round of Updating and Screening Assessment in 2006.

Stroud 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

One location from the diffusion tube network – Cainscross, Stroud – has been identified as a potential location of exceedances of the air quality objective for NO₂ with a bias adjusted annual result for 2008 of 40.7µg/m³. However the diffusion tube location is on a traffic island within a roundabout complex and is not therefore representative of relevant exposure. Also there no traffic data available for the road junction in question and the authority has therefore been unable to carry out DMRB predictions.

There are no issues for any other pollutants.

8.2 Conclusions from Assessment of Sources

- There are no road traffic sources of concern within Stroud District Council's administrative area.
- There are no other transport sources of concern within Stroud District Council's administrative area.
- There are no industrial sources of concern within Stroud District Council's administrative area.
- There are no commercial or domestic sources of concern within Stroud District Council's administrative area.
- There are no fugitive or uncontrolled sources of concern within Stroud District Council's administrative area.

8.3 Proposed Actions

Stroud will be reviewing its diffusion tube network at the end of 2009 and will investigate relocating the tube at Cainscross (and others) to a more representative location. Some locations will be removed from the network and some additional locations will be established.

Stroud will submit a Review and Assessment Progress Report in April 2010.

9 References

No	Title	Author	Date
Ref 1	Design Manual For Roads and Bridges, Volume 11 Section 3 Part 1 HA207/07		May 2007
Ref 2	Updating & Screening Assessment	Stroud District Council	2006
Ref 3	Progress Report	Stroud District Council	2007
Ref 4	Progress Report	Stroud District Council	2008
Ref 5	Diffusion Tubes for Ambient NO ₂ Monitoring: Practical Guidance for Laboratories & Users	AEA for DEFRA	Feb 2008
Ref 6	Local Air Quality Management - Technical Guidance (TG09)	DEFRA	Feb 2009
Ref 7	National Rail Timetable Map	Network Rail	2009
Ref 8	FAQ – Guidance on assessing emissions from Railway Locomotives	UK Air Quality Archive	Feb 2009
Ref 9	Summary of Laboratory Performance in WASP	AEA for DEFRA	Feb 2009

10 Bibliography

No	Title	Author	Date
1	Local Air Quality Management - Policy Guidance (PG09)	DEFRA	Feb 2009
2	Stroud District Business Directory	Stroud Enterprise Hub (SEH)	Aug 2004
3	Gloucestershire Traffic Flow Diagrams	Gloucestershire Highways	2004
4	Annual speed monitoring 1998 to 2005	Gloucestershire Highways	2005
5	Gloucestershire Traffic Flow Diagrams	Gloucestershire Highways	2007

11 Appendix A: List of A1 Permitted Processes

Environment Agency permitted installations involving Part A1 prescribed activities regulated under the Environmental Permitting (England & Wales) Regulations 2007.

Reference	Premises	Prescribed Activity
BV3146	Stonehouse Battery Factory, Schlumberger WCP Ltd, Brunel Way, Stroudwater Business Park, Stonehouse, Glos, GL10 3SX	Section 4.2 A(1)(b) -any manufacturing activity which uses, or which is likely to result in the release to air or into water of, any halogens, hydrogen halides or any compounds mentioned in paragraph (a)(vi) of the PPC Regulations 2000
HP3635PM	RMC Environmental Services Ltd, Frampton Landfill, Perryway, Frampton on Severn, Glos, GL2 7HS	Section 5.2 A(1) – disposal of waste by landfill
XP3938SF	Nu-Pro Surface Treatments Ltd, Eagle Works, London Road, Thrupp, Stroud, Glos, GL5 2BA	Section 4.2 A(1)(h) – unless falling within another section of this schedule, any activity, other than the combustion or incineration or carbonaceous material as defined in the Interpretation of Part A(1) of Section 1.2 of this schedule, which is likely to result in the release into the air of any acid forming oxide of nitrogen
BP3532SW	Severnside Dairies, Dairy Crest Ltd, Oldends Lane, Stonehouse, Glos, GL10 2DG	Six activities under Section 6.8 Part A(1)(e) – treating and processing of milk and Section 5.3 Part A(1)(c)(A) – disposal of non-hazardous waste
PP3232SB	Norit (UK) Ltd, Purton Carbon Ltd, Purton Water Treatment Works, Riddle Street, Purton, Glos, GL13 9HN	Section 5.4 A(1)(c) – cleaning or regenerating carbon
HP3537ML	Faccenda Group Ltd, Highwood Farm, Kingswood, Wotton under Edge, Glos, GL12 8JU	Section 6.9 A(1)(a)(i) –intensive farming – rearing of poultry in an installation with more than 40,000 poultry
BP3498VC/T001	New Earth Solutions Group Ltd, The Factory, Sharpness Docks, Berkeley, Glos, GL13 9UD	Section 5.3 A(1)(c) – disposal of waste other than by incineration or landfill

12 Appendix B: List of A2 Permitted Processes

Local Authority Pollution Prevention and Control (LAPPC) permitted installations involving Part A2 prescribed activities regulated under the Environmental Permitting (England & Wales) Regulations 2007.

Reference	Premises	Prescribed Activity
LA-IPPC/77	Nu-Pro Surface Treatments Ltd, Eagle Works, London Road Thrupp, GL5 2BA	Surface treatment of metals and plastic materials

13 Appendix C: List of Part B Permitted Processes

Local Authority Pollution Prevention and Control (LAPPC) permitted installations involving Part B prescribed activities regulated under the Environmental Permitting (England & Wales) Regulations 2007.

Reference	Premises	Prescribed Activity
LAPPC/2	Silvey Brothers Limited, The Garage, Saul, Glos, GL2 7LW	Waste oil burner
LAPPC/6	Fourways Garage, Middle Hill, Chalford, Stroud, Glos, GL6 8BD	Waste oil burner
LAPPC/7	Holbrook Garage, Bisley, Stroud, Glos, GL6 7AX	Waste oil burner
LAPPC/9	D M Foundries, London Road, Stroud, Glos, GL5 2AZ	Foundry
LAPPC/17	Dragon Alfa Cement Ltd, Sharpness Docks, Glos, GL13 9UA	Unloading cement
LAPPC/18	Cullimores Mix Ltd, Netherhills, Whitminster, Glos, GL2 7PQ	Bulk use of cement
LAPPC/20	Olympic Varnish Co Ltd, The Dockyard, Brimscombe, Stroud, Glos, GL5 2TQ	Paper coating
LAPPC/24	Sharpness Docks Ltd, Sharpness Docks, Glos, GL13 9UA	Coal
LAPPC/34	Kellaway Building Supplies Ltd, The Old Ryeford Saw Mills, Stonehouse, Glos, GL10 3HE	Bulk use of cement
LAPPC/38	Snax 24 Ltd, London Road, Stroud, Glos, GL5 2AX	Petrol filling station
LAPPC/39	Tesco Stores Ltd, Stratford Road, Stroud, Glos, GL5 4AG	Petrol filling station
LAPPC/40	Dudbridge Superstop, Dudbridge, Stroud, Glos, GL5 3HP	Petrol filling station
LAPPC/41	Bear Street Garage, Bear Street, Wotton under Edge, Glos, GL12 7DF	Petrol filling station
LAPPC/42	Bristol Street Ford, London Road, Stroud, Glos, GL5 2AX	Petrol filling station
LAPPC/43	Millwood Motor Co Ltd, Cam, Glos, GL11 5DH	Petrol filling station
LAPPC/44	Shell Nailsworth, Stroud Road, Nailsworth, Glos, GL6 0BE	Petrol filling station
LAPPC/45	UMA (UK) Ltd, 14 Ebley Road, Stonehouse, Glos, GL10 2LH	Petrol filling station
LAPPC/46	Cross Keys, Bristol Road, Hardwicke, Glos, GL2 4RQ	Petrol filling station
LAPPC/48	Wild Goose Garage, 27 Kingshill Road, Dursley, Glos, GL11 4BJ	Petrol filling station
LAPPC/50	Shell Oldbury, Westend Roundabout, Stonehouse, Glos, GL10 2SY	Petrol filling station
LAPPC/51	Bridge Service Station 2-6 Gloucester Road, Stonehouse, Glos, GL10 2PB	Petrol filling station

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LAPPC/53	Berkeley Heath Motors, A38 Berkeley, Glos GL13 9ET	Petrol filling station
LAPPC/54	Fromebridge Self Service, Whitminster, Glos GL2 7PG	Petrol filling station
LAPPC/55	Michaelwood Services Northbound M5, Lower Wick, Dursley, Glos GL11 6DD	Petrol filling station
LAPPC/56	Michaelwood Services Southbound M5, Lower Wick, Dursley, Glos GL11 6DD	Petrol filling station
LAPPC/61	Fourways Garage, Fourways Garage (Chalford) Ltd, Middle Hill, Chalford, Stroud, Glos, GL6 8BD	Petrol filling station
LAPPC/63	Severn Vale Service Centre, Perryway Garage, Frampton-on-Severn, GL2 7HS	Waste oil burner
LAPPC/64	Holbrook Garage, Bisley, Stroud, Glos, GL6 7AX	Petrol filling station
LAPPC/67	Smith's (Gloucester) Ltd, Alkerton Court, Eastington, Stonehouse, Glos. GL10 3AQ	Mobile crusher
LAPPC/68	Car Clinic, Kingswood Garage, Kingswood Glos, GL12 8RA	Waste oil burner
LAPPC/69	M & N Motor Services, Davids Lane, Nympsfield, Stonehouse, Glos, GL10 3UG.	Waste oil burner
LAPPC/70	Lakeside Garage, Stroud Road, Nailsworth, Glos GL6 0BE	Waste oil burner
LAPPC/72	Stroud Tyre Co Ltd, Units 5-6 Wallbridge Industrial Estate, Bath Road, Stroud, Glos, GL5 3JU	Waste oil burner
LAPPC/73	Roadspeed Units 5-6 Wallbridge Industrial Estate, Bath Road, Stroud, Glos, GL5 3JU	Waste oil burner
LAPPC/75	Stonehouse Commercials, Unit 9A Ryeford Ind. Estate, Stonehouse, Glos GL10 3HE	Waste oil burner
LAPPC/76	Cotswold Crusher Hire, 24 The Martins, Westrip, Stroud Glos, GL5 4PQ	Mobile crusher
LA-IPPC/77	Nu-Pro Surface Treatments Ltd, Eagle Works, London Road Thrupp, GL5 2BA	Coating aircraft components and Surface treatment of metals
LAPPC/78	The Premier Kitchen Company, Q1, Quadrant Buisness Park, Quedgeley Gl2 2RN	Timber activity and combustion
LAPPC/80	Gloucester Composites Ltd, Fox House, Stonedale Road, Stonehouse, GL10 3SA	Manufacture of fibre reinforced plastic
LAPPC/81	STC Services (Stroud) Ltd, Unit L1A, Bath Road Trading Estate, GL5 3QF	Waste oil burner
LAPPC/82	Severn Plywoods Ltd, 14 Gloucester Road, Stonehouse, GL10 2PB	Timber activity and combustion
LAPPC/83	Smith's (Gloucester) Ltd, Alkerton Court, Eastington, Stonehouse, Glos. GL10 3AQ	Mobile crusher
LAPPC/84	Millclean Dry cleaners & Launderers, 35 Westward Road, Cainscross, Stroud, Glos GL5 4JA.	Dry cleaner
LAPPC/85	Johnson The Cleaners, 6 Kendrick Street, Stroud, Glos GL5 1AA	Dry cleaner
LAPPC/86	Atkins Autos, Old Brewery Yard, Cainscross, Stroud, Glos GL5 4JW	Waste oil burner
LAPPC/87	Russells Dry Cleaners, 47 George Street, Mill Yard, Nailsworth, GL6 0AG	Dry cleaner
LAPPC/88	Dry Cleaners at Gerards, 35D Parsonage Street, Dursley, Glos, GL11 4BP	Dry cleaner
LAPPC/89	Cemex Ltd, Cemex Ltd, Chesnut Lane, Stroud, GL5 3EN	Bulk use of cement

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LAPPC/90	VMR Autos Unit J1, Drycott Business Park, Cam Dursley, GL11 5DQ	Waste oil burner
LAPPC/93	Smith's (Gloucester) Ltd, Alkerton Court, Eastington, Stonehouse, Glos. GL10 3AQ	Mobile crusher
LAPPC/94	Smith's (Gloucester) Ltd, Alkerton Court, Eastington, Stonehouse, Glos. GL10 3AQ	Mobile crusher
LAPPC/95	Smith's (Gloucester) Ltd, Alkerton Court, Eastington, Stonehouse, Glos. GL10 3AQ	Mobile crusher
LAPPC/96	Abbey Surfacing, Parkend Farm, Moreton Valence, Glos, GL2 7NG	Mobile crusher
LAPPC/97	Reputation Readymix, The Old Airfield, Moreton Valence, Glos, GL2 7NG	Bulk use of cement

14 Appendix D: QA:QC Data

14.1 Diffusion Tube Bias Adjustment Factors

The NO₂ diffusion tubes were supplied and analysed by Bristol Scientific Services. Tubes were prepared using 50µl of 20% triethanolamine in water. The tube preparation and subsequent analysis follow the procedures in the harmonised "Practical Guidance" document. All diffusion tubes are stored, handled and exposed in accordance with the relevant guidance. They are exposed for one month.

Stroud District Council does not undertake any co-location studies, so bias adjustment factors were obtained from the National Bias Adjustment Factor Spreadsheet (Version v05/09) – Appendix G.

- 2006 – 0.9 for 5 studies
- 2007 – 0.77 for 5 studies
- 2008 – 0.87 for 4 studies

Figure 3: Bias adjustment factor 2006

Follow the steps below in the correct order to show the results of relevant co-location studies			Spreadsheet Version Number: 05/09							
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods			This spreadsheet will be updated in late September 2009 on the R&A website							
Whenever presenting adjusted data, you should state the adjustment factor used			This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.							
Published by Air Quality Consultants Ltd on behalf of Defra, the Welsh Assembly Government, the Scottish Government and the Department of the Environment Northern Ireland										
Step 1:	Step 2:	Step 3:	Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor ³ shown in blue at the foot of the final column.							
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data.	If you have your own co-location study then see footnote ⁴ . If uncertain what to do then contact the Review and Assessment Helpdesk 0117 328 3668 aqm-review@uwe.ac.uk							
Analysed By	Method	Year ⁵	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m ³)	Automatic Monitor Mean Conc. (Cm) (µg/m ³)	Bias (B)	Tube Precision ⁶	Bias Adjustment Factor (A) (Cm/Dm)
Bristol Scientific Services	20% TEA in Water	2006	UB	Cheltenham BC	12	22	21	5.7%	G	0.95
Bristol Scientific Services	20% TEA in Water	2006	UB	LB Waltham Forest	10	36	34	4.6%	S	0.96
Bristol Scientific Services	20% TEA in Water	2006	Rural	Pembrokeshire CC	11	7	5	27.6%	G	0.78
Bristol Scientific Services	20% TEA in Water	2006	R	Brighton and Hove CC	11	38	33	13.9%	G	0.88
Bristol Scientific Services	20% TEA in Water	2006	K	AEA, E&E Intercomparison	12	116	111	4.3%	G	0.96
Bristol Scientific Services	20% TEA in Water	2006		Overall Factor³ (5 studies)				Use		0.90

Figure 4: Bias adjustment factor 2007

Spreadsheet Version Number: 05/09										
Follow the steps below in the correct order to show the results of relevant co-location studies								This spreadsheet will be updated in late September 2009 on the R&A website		
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods										
Whenever presenting adjusted data, you should state the adjustment factor used										
This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.										
Published by Air Quality Consultants Ltd on behalf of Defra, the Welsh Assembly Government, the Scottish Government and the Department of the Environment Northern Ireland										
Step 1:	Step 2:	Step 3:	Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor ³ shown in blue at the foot of the final column.							
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data.	If you have your own co-location study then see footnote ⁴ . If uncertain what to do then contact the Review and Assessment Helpdesk 0117 328 3668 aqm-review@uwe.ac.uk.							
Analysed By	Method	Year ⁵	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m ³)	Automatic Monitor Mean Conc. (Cm) (µg/m ³)	Bias (B)	Tube Precision ⁶	Bias Adjustment Factor (A) (Cm/Dm)
Bristol Scientific Services	20% TEA in Water	2007	Rural	Pembrokeshire CC	11	7	5	36.9%	G	0.73
Bristol Scientific Services	20% TEA in Water	2007	R	Brighton and Hove CC	12	46	33	38.2%	G	0.72
Bristol Scientific Services	20% TEA in Water	2007	K	South Gloucestershire	9	29	24	21.0%	G	0.83
Bristol Scientific Services	20% TEA in Water	2007	R	West Wiltshire DC	9	38	26	48.6%	G	0.67
Bristol Scientific Services	20% TEA in Water	2007	K	AEA Tech Intercomparison	12	115	103	12.0%	G	0.89
Bristol Scientific Services	20% TEA in Water	2007	Overall Factor³ (5 studies)						Use	0.77

Figure 5: Bias adjustment factor 2007

Spreadsheet Version Number: 05/09										
Follow the steps below in the correct order to show the results of relevant co-location studies								This spreadsheet will be updated in late September 2009 on the R&A website		
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods										
Whenever presenting adjusted data, you should state the adjustment factor used										
This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.										
Published by Air Quality Consultants Ltd on behalf of Defra, the Welsh Assembly Government, the Scottish Government and the Department of the Environment Northern Ireland										
Step 1:	Step 2:	Step 3:	Step 4:							
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor ³ shown in blue at the foot of the final column.							
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data.	If you have your own co-location study then see footnote ⁴ . If uncertain what to do then contact the Review and Assessment Helpdesk 0117 328 3668 aqm-review@uwe.ac.uk.							
Analysed By	Method	Year ⁵	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m ³)	Automatic Monitor Mean Conc. (Cm) (µg/m ³)	Bias (B)	Tube Precision ⁶	Bias Adjustment Factor (A) (Cm/Dm)
Bristol Scientific Services	20% TEA in Water	2008	UB	LB Waltham Forest	12	41	36	14.2%	S	0.88
Bristol Scientific Services	20% TEA in Water	2008	R	Lewes DC	11	40	38	6.0%	S	0.94
Bristol Scientific Services	20% TEA in Water	2008	K	AEA Tech Intercomparison	12	122	116	5.4%	G	0.95
Bristol Scientific Services	20% TEA in Water	2008	R	Brighton and Hove CC	12	43	31	38.7%	G	0.72
Bristol Scientific Services	20% TEA in water	2008	Overall Factor³ (4 studies)						Use	0.87

14.2 Short-term to Long-term Data adjustment

Two sites in 2008 had less than 9 months of monitoring namely Stroud – London Road and Upton St Leonards – 50 Woodland Green. Automatic monitoring site data was obtained from the UK Air Quality Archive from various long-term sites reasonably local to Stroud’s area were obtained. Some sets of data were excluded as there was missing data in their sets. The short-term to long-term adjusted ratio was calculated from three tube data sets in accordance with the guidance from Box 3.2 of LAQM TG(09).

Table 4: Calculation Results for 50 Woodland Green

Site	Site Type	Annual Mean	Period Mean*	Ratio
Bristol St Pauls	Urban Background	32.33	36.33	0.89
Harwell	Urban Centre	10.19	12.57	0.81
Reading New Town	Urban Background	22.42	25.67	0.87
			Average	0.86

* Period mean calculated from months of February, April, August, September and December

Table 5: Calculation Results for Stroud – London Road

Site	Site Type	Annual Mean	Period Mean*	Ratio
Bristol St Pauls	Urban Background	32.33	32.86	0.98
Harwell	Urban Centre	10.19	9.56	1.07
Reading New Town	Urban Background	22.42	22.43	1.00
			Average	1.02

* Period mean calculated from months of March, April, May, July, October, November and December

14.3 QA/QC of diffusion tube monitoring

Table 6 illustrate laboratories that have demonstrated satisfactory performance in the WASP scheme for analysis of NO₂ diffusion tubes, January 2008 – January 2009. Stroud District Council use Bristol Scientific Services.

Table 6: Laboratories performance through WASP

Laboratory	Performance on basis of RPI, OLD CRITERIA, best 4 out of the 5 rounds 100-104	Performance on basis of RPI, NEW CRITERIA, best 4 out of the 5 rounds 100-104
Aberdeen Public Analysts	Good	Good
Bodycote Clyde Analytical	Acceptable	Acceptable
Bristol City Council	Good	Good
Bureau Veritas	Good	Acceptable
Cardiff Scientific Services	Good	Good
Dundee City Council (Tayside)	Good	Acceptable
Edinburgh City Council	Good	Good
Glasgow Scientific Service	Good	Good
Gradko	Good	Good
Harwell Scientifics	Good	Good
Kent Scientific Services	Good	Good
Kirklees MBC	Good	Acceptable
Lambeth Scientific Services	Good	Good
Lancashire County Analysts	Good	Good
Milton Keynes Council	Good	Acceptable
Northampton Borough Council	Good	Good
South Yorkshire Laboratories	Good	Good
Staffordshire County Council	Good	Good
University of Essex	Good	Acceptable
Walsall MBC	Acceptable	Acceptable
West Yorks Analytical Services	Good	Good

For further information about any particular laboratory's performance, please contact the laboratory directly. If you have any questions about these performance criteria, or the context in which they apply, please contact Alison Loader at AEA, on 0870 190 6518, or e-mail alison.loader@aeat.co.uk. For more general enquiries about the WASP scheme, please contact Hannah Clark at HSL, hannah.clark@hsl.gov.uk.

Table 7: WASP Results Bristol Scientific Services Rounds 97-104

WASP Results Lab 152 Round 97 onwards:								
Round	97	98	99	100	101	102	103	104
Tube 1 (µg NO ₂)	0.89	1.865	2.085	1.358	0.949	1.489	1.178	1.179
Tube 2 (µg NO ₂)	1.573	1.228	2.093	1.474	2.576	1.431	0.916	1.108
Tube 3 (µg NO ₂)	1.582	1.857	0.885	1.354	1.813	2.307	0.934	1.84
Tube 4 (µg NO ₂)	0.914	1.217	0.879	1.467	0.914	1.96	1.071	1.96
Spike tube 1 (µg NO ₂)	0.89	1.83	2.15	1.36	0.92	1.37	1.22	1.22
Spike tube 2 (µg NO ₂)	1.58	1.19	2.15	1.47	1.86	1.37	0.94	1.22
Spike tube 3 (µg NO ₂)	1.58	1.83	0.84	1.36	1.86	2.28	0.94	2.02
Spike tube 4 (µg NO ₂)	0.89	1.19	0.84	1.47	0.92	2.28	1.22	2.02
Standardised result tube 1	1	1.019	0.97	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	0.86	0.878	0.97
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
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	Good	Good	Good	Good
Good =<56.25								
Acceptable =<225								
Unacceptable >225								

15 Appendix E: Diffusion Tube Locations 2008

Figure 6: Diffusion tube monitoring locations

