

South Bucks District Council - England

South Bucks District Council



2009 Air Quality Updating and Screening Assessment for *South Bucks District Council*

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

April, 2009

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Executive Summary

The 2009 Updating and Screening Assessment has not identified significant changes in emissions sources within South Bucks District since the previous Updating and Screening Assessment in 2006. Owing to the largely rural nature of the district, the only significant sources of pollution are the motorways (M25, M40 and M4) which pass through the district, and an AQMA was declared around the motorways in 2004.

Monitoring data has shown that air quality in the district is generally good. Five of our diffusion tubes showed exceedences of the annual mean objective for NO₂. Of these, four were situated in the AQMA. Whilst the fifth site showed an exceedence, the NO₂ level at the façade of the nearest property was calculated to be below the annual mean objective.

PM₁₀ levels, as monitored adjacent to the AQMA, were well below the objective levels. Measured data has been consistently low for the past three years.

Benzene levels have been measured at a number of locations throughout the district for many years, and have been consistently low (less than 1.0 µgm⁻³) and monitoring was discontinued in 2008.

There have been very few changes in the district since the 2006 Updating and Screening Assessment. The two potentially most significant changes were the opening of a new quarry in Denham, and the building of a new Motorway Service Area off the M40 in Beaconsfield which opened in February 2009.

PM₁₀ levels have been monitored at the new quarry and, as detailed in this report, were not found to be significant. SBDC will be introducing NO₂ and benzene monitoring at the Motorway Service Station, and expect to have some preliminary data in time for the next progress report.

SBDC intends to review its passive diffusion tube network in 2009 in order to ensure thorough coverage throughout the district.

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1 Introduction

1.1 Description of Local Authority Area

South Bucks District is a small semi rural district covering approximately 50 square miles in the south of Buckinghamshire. It flanks Greater London to the east, and has southern and western boundaries along the River Thames. The population is approximately 63,700. Some 87% of the district is designated as Green Belt.

There is no major urban centre within the district, but there are over 20 towns and villages, the largest of which are Beaconsfield, Burnham and Gerrards Cross.

Air Quality in the area is generally good, although an Air Quality Management Area adjacent to the M4, M40 and M25 motorways as they pass through the district. However, in 2006, at all monitoring locations within the district, the National Air Quality Strategy Objectives for NO₂ were met. The Review and Assessment process has suggested that the objectives for other pollutants should also be met, even though these are not measured directly.

The relative prosperity in the District has led to higher than average levels of car ownership and use. Only 11.1% of households in the District have no car or van, compared to 26.8% nationally. About 65% of residents use a car to travel to work and only 1.5% uses a bus. Commuting levels into and out of the district are high. In 2001, about 19,300 people out of a working population of 30,000 travelled out of the district to work. Of the 29,700 people working in the District, about 19,000 of them travelled in from elsewhere. Only 10,700 both live and work in the District.

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 1.1. 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).

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Table 1.1 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

The initial round of review and assessment for South Bucks District Council identified that the whole District would meet all of the National Air Quality Strategy Objectives.

The second round of review and assessment was undertaken during 2003/2004. The initial stage of the second round of air quality review and assessment involved an updating and screening assessment to review sources of National Air Quality Strategy pollutants in the District. This assessment for South Bucks, which was completed in May 2003 identified that further, more detailed assessment, would be required for the annual mean NO₂ concentrations associated with road traffic emissions.

A Detailed Assessment of air quality was undertaken for nitrogen dioxide emissions from road traffic and additionally, particulate matter (PM₁₀) emissions were also assessed as areas of highest concentrations were predicted to be similar. A Detailed Assessment was undertaken in April 2004 for the following locations:

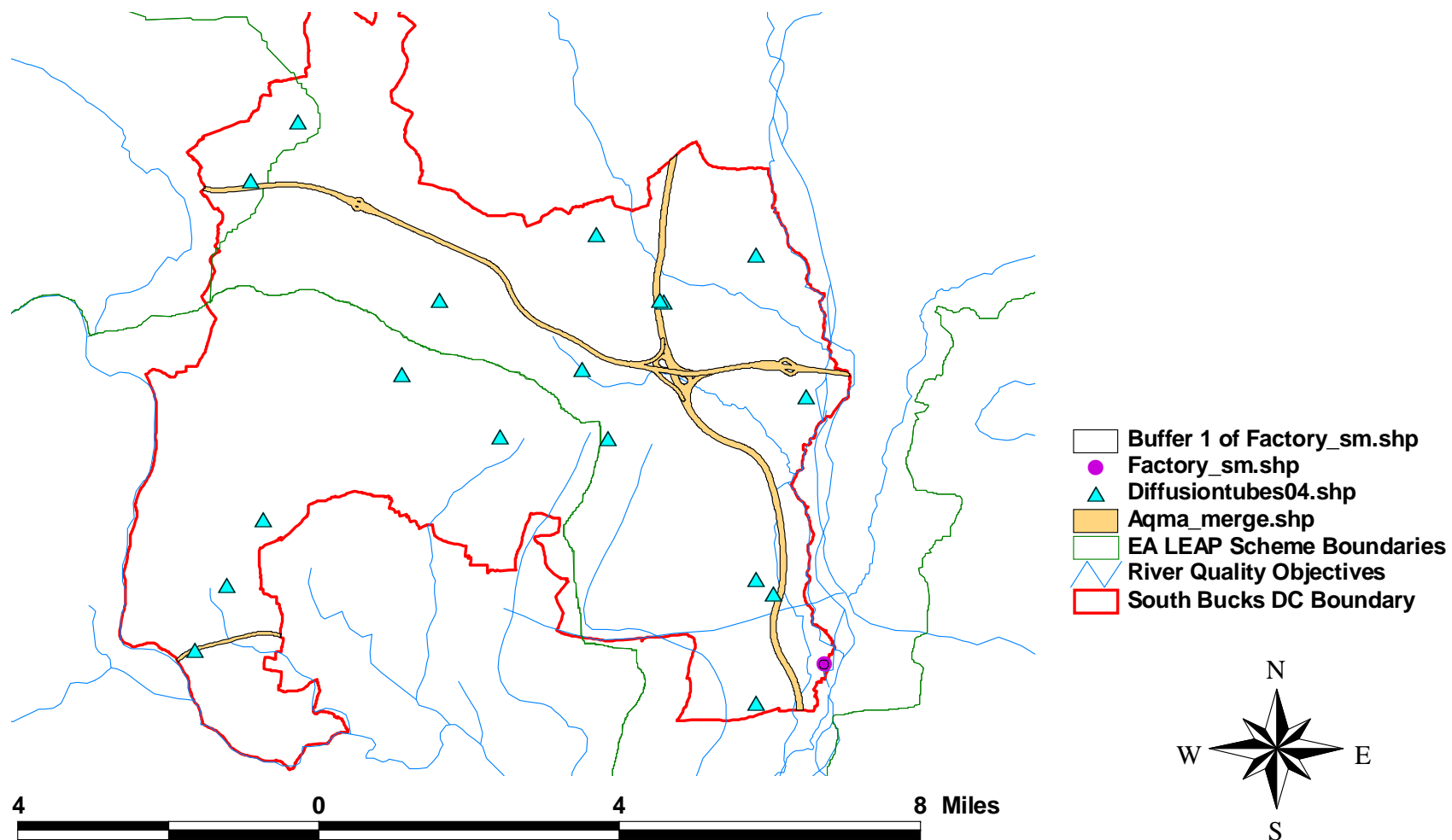
- M40 Junctions 1 to 3;
- A40 A40/M40 convergence, Junction 1 roundabout, to the border of Chiltern and at Wycombe End;
- A4020 South of M40 Junction 1; and
- M4 Junction 4B to 5 and Junction 7 to 8.

The Detailed Assessment concluded:

- No exceedences are predicted at sensitive receptors in relation to annual mean or 24-hour mean PM₁₀ concentrations for 2004. Widescale exceedences are shown on the basis of the provisional 2010 objectives.
- The Council should consider declaring an AQMA in relation to NO₂ annual mean concentrations in the following areas;
 - To the north of the M4 in the Oaks Stubbs Lane area in Dorney
 - To the south of the M4 where the B3026 crosses the motorway
 - Cherry Orchard Farm to the east of the M25
 - At Gerrard's Cross where the A40 crosses the M25
- Modeled concentrations are close to the objectives at sensitive receptors in the following locations. Additional diffusion tube monitoring should be introduced to provide further clarity as to the levels of NO₂ at residential property façades in these areas;
 - Sutton End Cottage to the north of the M4
 - Victoria Crescent to the west of the M25
 - Wooburn Green Lane to the north of the M40
 - Coldharbour Farm Cottages to the west of the M25

As the result of the findings of the Detailed Assessment of air quality in the District, an Air Quality Management Area (AQMA) was therefore declared for corridors along the M25, M40 and M4 motorways in October 2005.

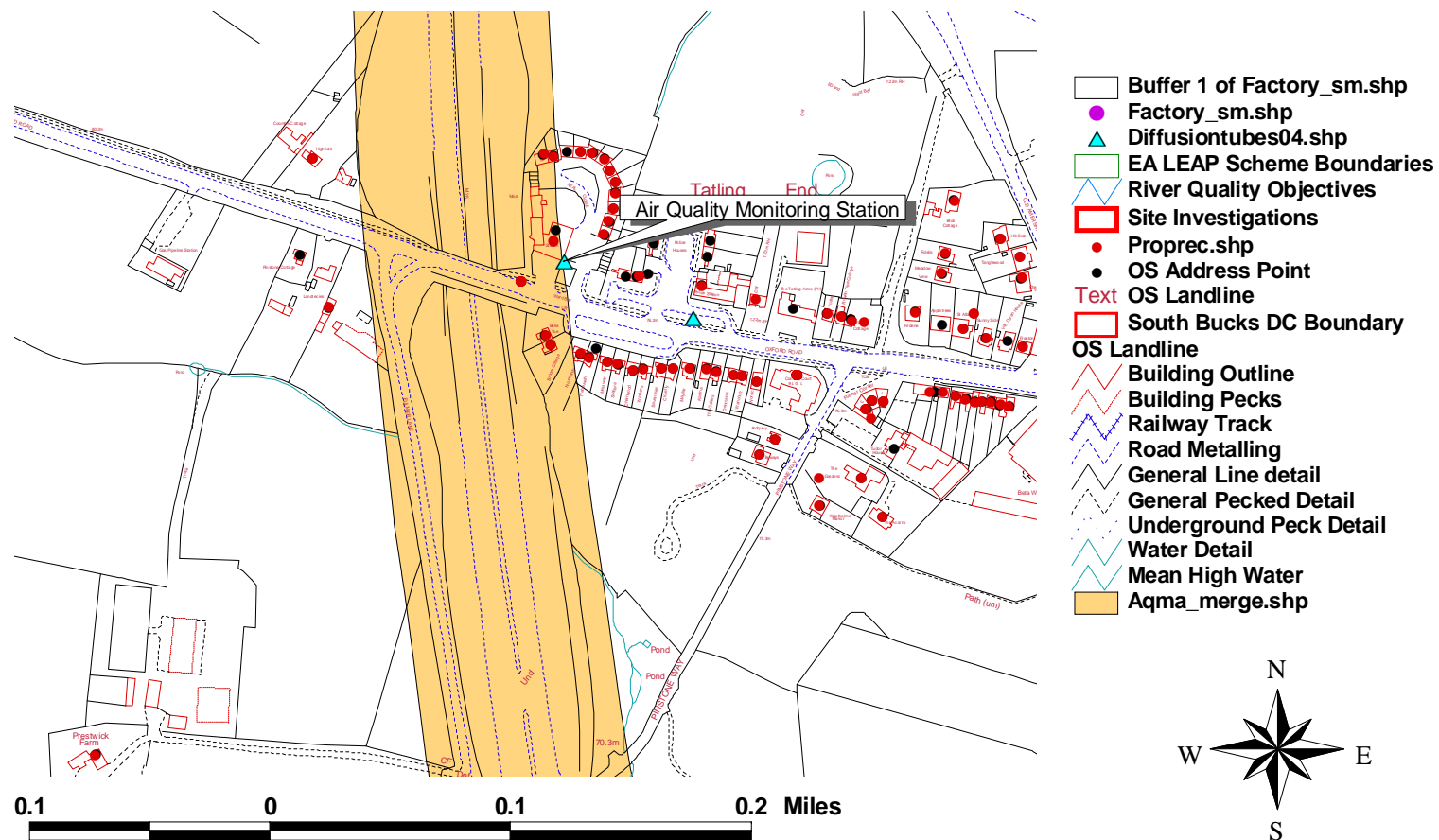
Map of AQMA Showing Diffusion Tube Locations



2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites





There is one automatic monitoring station in the district, situated at the boundary of the AQMA, where the A40 passes over the M25. The station measures NO_2 by a Signal Ambirack analyser and PM_{10} by TEOM. The station is calibrated approximately fortnightly, and the data is managed and ratified by AEA Technology. AEA undertake a site audit every 6 months and Signal carry out routine maintenance of the analysers every 6 months.

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Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location ?
GX	Roadside	501 626 187 211	NO ₂ and PM ₁₀	Y	Y (45m)	15m	

2.1.2 Non-Automatic Monitoring

South Bucks District Council currently undertakes diffusion tube monitoring in 17 different locations, as detailed in Table 2.2

Table 2.2 Details of Non- Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location?
Iver, Old Slade Lane	Kerbside	503 679 178 586	NO ₂	N	Y (13m)	1m	Y
Iver, Victoria Crescent	Kerbside	504 056 180 901	NO ₂	N	Y (7m)	1m	
Iver, High Street	Kerbside	503 688 181 229	NO ₂	N	Y (12m)	2m	Y
New Denham, Oxford Road	Kerbside	504 754 185 138	NO ₂	N	Y (9m)	2m	Y
Denham Green, Nightingale Way	Kerbside	503 678 188 192	NO ₂	N	Y (8m)	2m	
GX, Tatling End	Kerbside	501 717 187 175	NO ₂	N	Y (30m)	6m	
GX, Packhorse Road	Kerbside	500 259 188 613	NO ₂	N	Y (8m)	2m	
Fulmer Village	Kerbside	499 954 185 599	NO ₂	N	Y (20m)	1m	
Wexham, Black Park	Kerbside	500 518 184 244	NO ₂	N	N	1m	
Stoke Poges, Bells Hill	Kerbside	498 201 184 266	NO ₂	N	Y (4m)	2m	
Hedgerley Village	Kerbside	496 895 187 215	NO ₂	N	Y (19m)	3m	
Farnham Common, Beaconsfield Road	Kerbside	496 095 185 599	NO ₂	N	Y (25m)	3m	N
Beaconsfield, Station Road	Kerbside	493 873 191 040	NO ₂	N	Y (20m)	2m	Y
Beaconsfield A40	Kerbside	492 857 189 770	NO ₂	N	Y (24m)	12m	
Burnham High Street	Kerbside	493 136 182 503	NO ₂	N	Y (0m)	1m	Y
Taplow, A4	Kerbside	491 668 181 187	NO ₂	N	Y (20m)	2m	
Dorney, Oak Stubbs Lane	Kerbside	491 672 179 697	NO ₂	Y	Y (20m)	2m	
AQMS GX	Kerbside	501 626 187 211	NO ₂	Y	Y (45m)	15m	
AQMS GX	Kerbside	501 626 187 211	NO ₂	Y	Y (45m)	15m	
AQMS GX	Kerbside	501 626 187 211	NO ₂	Y	Y (45m)	15m	

2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

The annual mean concentration of NO₂ for 2008 was below the air quality objective level. The automatic monitoring station is sited at the boundary of the AQMA.

Table 2.3a Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Proportion of year with valid data 2008 %	Annual mean concentrations (µg/m ³)		
				2006 *	2007 *	2008
GX	Gerrards Cross	Y	74	39	41	37

* data capture for 2006 = 86% and for 2007 = 88%

Table 2.3b Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2008 %	Number of Exceedences of hourly mean (200 µg/m ³) <i>If the period of valid data is less than 90% of a full year, include the 99.8th %ile of hourly means in brackets.</i>		
				2006 *	2007 *	2008
A1	1 Example Site	N	95	0	3	15
GX	Gerrards Cross	Y	74			0 (124 µg/m³)

The full summary of the NO₂ monitoring data provided by AEA is given below.

SOUTH BUCKS GERRARDS CROSS 01 January to 31 December 2008

These data have been fully ratified by AEA

POLLUTANT	NO	NO ₂	NO _x
Number Very High	-	0	-
Number High	-	0	-
Number Moderate	-	0	-
Number Low	-	6498	-
Maximum 15-minute mean	579 µgm ⁻³	204 µgm ⁻³	1064 µgm ⁻³
Maximum hourly mean	469 µgm ⁻³	172 µgm ⁻³	888 µgm ⁻³
Maximum running 8-hour mean	292 µgm ⁻³	116 µgm ⁻³	552 µgm ⁻³
Maximum running 24-hour mean	231 µgm ⁻³	98 µgm ⁻³	450 µgm ⁻³
Maximum daily mean	129 µgm ⁻³	75 µg ⁻³	271 µgm ⁻³
99.8th percentile of hourly means	-	124 µgm ⁻³	-
Average	29 µgm ⁻³	37 µgm ⁻³	82 µgm ⁻³
Data capture	74.0 %	74.0 %	74.0 %

All mass units are at 20°C and 1013mb
NO_x mass units are NO_x as NO₂ µgm⁻³

Pollutant	Air Quality (England) Regulations 2000 and (Amendment) Regulations 2002	Exceedences	Days
Nitrogen Dioxide	Annual mean > 40 µgm ⁻³	0	-
Nitrogen Dioxide	Hourly mean > 200 µgm ⁻³	0	0

Diffusion Tube Monitoring Data

There are five tubes which have shown an exceedence of the 40 µg/m³ annual mean NO₂ objective, however, four of these are within the existing AQMA. Three of these were located at the air quality monitoring station, and the fourth was in Oak Stubbs Lane in Dorney, 2 metres from the carriageway of M4.

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The remaining tube is situated on the A40 approximately 85 metres east of the automatic monitoring site. In 2007, there was a slight exceedence at the site, with an NO₂ level of 42.5 µg/m³. In 2008 the annual mean was rather higher, at 45.9 µg/m³. The tube is located 6.14 metres from the kerb. The façade of the nearest building at this point is 13.11 metres from the kerb at this point. Using the calculator provided at <http://www.airquality.co.uk/laqm/tools/NO2withDistancefromRoadsCalculatorIssue2.xls> the concentration of NO₂ at the building façade was calculated to be 39.1 µg/m³.

Some discrepancy was noted between the diffusion tubes located at the AQMS. However, owing to some equipment problems early in the year, data capture from the analyser was only 74%. Historically, only one diffusion tube has been co-located with the analyser, however, recently two further tubes have been added to form a proper co-location study. Since only four months worth of data were available from these additional tubes, they were not used to calculate the bias correction factor.

The tube in Oak Stubbs Lane in Dorney is situated in the AQMA next to the M4 motorway, where residential property is located very close to the motorway carriageway. Using the tool provided at <http://www.airquality.co.uk/laqm/tools/NO2withDistancefromRoadsCalculatorIssue2.xls> the NO₂ concentration at the façade of the property nearest to the motorway (eight metres away) was calculated to be 36.3 µg/m³.

Table 2.4a Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Data Capture 2008 %	Annual mean concentrations
				2008 ($\mu\text{g}/\text{m}^3$) Adjusted for bias
A1	1 Example Site	N	95	
1	Iver, Old Slade Lane	N	100	37.3
2	Iver, Victoria Crescent	N	100	33.6
3	Iver, High Street	N	75	38.3
4	New Denham, Oxford Road	N	100	38.8
5	Denham Green, Nightingale Way	N	100	22.9
6	GX, Tatling End	N	100	45.9
7	GX, Packhorse Road	Y	100	34.2
8	Fulmer Village	N	100	25.4
9	Wexham, Black Park	N	92	17.8
10	Stoke Poges, Bells Hill	N	92	29.0
11	Hedgerley Village	N	92	19.2
12	Farnham Common, Beaconsfield Road	N	100	29.0
13	Beaconsfield, Station Road	N	100	37.7
14	Beaconsfield A40	N	100	33.7
15	Burnham High Street	N	100	27.4
16	Taplow, A4	N	100	37.1
17	Dorney, Oak Stubbs Lane	Y	42	44.1
18	AQMS GX	Y	100	45.2
19	AQMS GX	Y	33	46.5
20	AQMS GX	Y	33	51.3

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Table 2.4b Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Annual mean concentrations ($\mu\text{g}/\text{m}^3$) Adjusted for bias		
			2006 *	2007 *	2008
			30.1	24.0	25.1

* Optional

2.2.2 PM₁₀

Tables 2.5a and 2.5b show the PM10 data for 2008, along with the data for 2007 and 2006 for comparison. All the data have been corrected using the volatile correction model.

Table 2.5a Results of PM₁₀ Automatic Monitoring: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2008 %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
				2006 *	2007 *	2008
A1	1 Example Site	N	98	45	41	44
GX	Gerrards Cross	Y	95.1	23	22	21

Table 2.5b Results of PM₁₀ Automatic Monitoring: Comparison with 24-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2008 %	Number of Exceedences of hourly mean (50 µg/m ³) <i>If data capture < 90%, include the 90th %ile of hourly means in brackets.</i>		
				2006 *	2007 *	2008
A	1 Example Site	N	95	0	3	2
GX	Gerrards Cross	Y	95.1	7	14	8

The data show that the annual mean is was 21 µg/m³ which is comfortably below the annual mean objective of 40 µg/m³. There is good consistency between 2008 data, and that from 2007 and 2006. There were 8 exceedences of the hourly mean of 50 µg/m³, which is well below the limit of 35. The full summary of PM₁₀ data provided by AEA is given below.

SOUTH BUCKS GERRARDS CROSS 01 January to 31 December 2008

These data have been fully ratified by AEA

POLLUTANT	PM ₁₀ +	PM ₁₀ VCM*	PM ₁₀ GR10
Number Very High	-	-	0
Number High	-	-	5
Number Moderate	-	-	19
Number Low	-	-	8603
Maximum 15-minute mean	259 µgm ⁻³	-	337 µgm ⁻³
Maximum hourly mean	129 µgm ⁻³	-	168 µgm ⁻³
Maximum running 8-hour mean	102 µgm ⁻³	-	133 µgm ⁻³
Maximum running 24-hour mean	76 µgm ⁻³	-	99 µgm ⁻³
Maximum daily mean	63 µgm ⁻³	71.5 µgm ⁻³	82 µgm ⁻³
Average	18 µgm ⁻³	21.0 µgm ⁻³	24 µgm ⁻³
Data capture	98.3 %	95.1%	98.3 %

+ PM₁₀ as measured by a TEOM

*PM₁₀ VCM – TEOM data corrected using Volatile Correction Model

PM₁₀ GR10 - indicative gravimetric corrected, i.e. 'raw' TEOM PM₁₀ data with a 1.3 factor applied

All mass units are at 20°C and 1013mb

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
PM ₁₀ Particulate Matter (VCM Corrected)	Daily mean > 50 µgm ⁻³	8	8
PM ₁₀ Particulate Matter (VCM Corrected)	Annual mean > 40 µgm ⁻³	-	-

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The PM₁₀ TEOM data has been corrected using the Volatile Correction Model (www.volatile-correction-model.info) as detailed on Page 3-10 of LAQM.TG (09).

FYI - PM₁₀ TEOM data as indicative corrected, i.e. 'raw' TEOM PM₁₀ data with a 1.3 factor applied

Pollutant	Air Quality (England) Regulations 2000 and (Amendment) Regulations 2002	Exceedences	Days
PM ₁₀ Particulate Matter (Gravimetric)	Daily mean > 50 µg m ⁻³	8	8
PM ₁₀ Particulate Matter (Gravimetric)	Annual mean > 40 µg m ⁻³	0	-

2.2.3 Sulphur Dioxide

South Bucks District Council does not undertake any monitoring of sulphur dioxide. During Phase 1 of the Review and Assessment process, three Part A permitted processes were identified as having the potential to be significant sources of SO₂. The three sources were, Slough Power Station, ICI plc and Grundon's Incinerator.

2.2.4 Benzene

Monitoring of Benzene has been carried out for many years by SBDC but has always been at very low levels. Monitoring was undertaken at 5 different locations throughout the district, and typical annual averages were found to be around 0.5 µg/m³. Appendix D shows the complete data set for 2007 which was the last full year of monitoring. Data is available for part of 2008, which is also shown in appendix D

2.2.5 Other pollutants monitored

No other pollutants are monitored within South Bucks District Council.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

There is no major urban centre within South Bucks District. There are a number of small towns, including Beaconsfield, Burnham, Gerrards Cross, Iver and Farnham Common where there is a certain amount of congestion in the main through roads at peak times. 5 minute traffic counts in these locations suggest that AADTs of approximately 10,000. SBDC has requested traffic flow data from Bucks County Council but this has not been received. Some of these locations have residential properties within 2 metres of the kerb. All such locations have been monitored for NO₂ by diffusion tube for many years, and none exceed the annual mean objective for NO₂.

South Bucks 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 a number of small towns, including Beaconsfield, Burnham, Gerrards Cross, Iver and Farnham Common where there is a certain amount of congestion in the main through roads at peak times. No traffic data has been supplied by Bucks County Council, but five minute traffic counts suggest AADTs in the region of 10,000.

These are all areas where there are shops, and thus it is reasonable to expect that people might spend an hour or more close to traffic. However, all of these locations have been considered in previous rounds of review and assessment. Furthermore, all locations have been monitored for NO₂ by diffusion tube for many years, and none exceed the annual mean objective for NO₂.

South Bucks 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.

No new roads with a high flow of Buses and/or HGVs have been identified since the last round of review and assessment. The busiest roads in the district are the M25, M40 and M4 motorways, which are already in an AQMA. Other busy roads in the district have been

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monitored for NO₂ using diffusion tubes and no exceedences of the air quality objective have been found.

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

3.4 Junctions

Guidance specifies that narrow, congested streets, 'busy' junctions (>10,000 vehicles per day) and roads with a high percentage of HGVs are considered to be more significant in terms of potential exposure. Since the previous US and A, no new roads meeting these criteria have been identified.

No new road developments have been constructed or are proposed since the 2006 US and A. No roads have been identified in the Borough for which updated traffic data has shown that annual average daily traffic flow is significantly higher (over 25%) than previous measurements. No roads have also been identified which have a daily flow greater than 10,000 vehicles per day, but which were omitted from the previous rounds of the Review and Assessment process.

The updates to the guidance in 2006, stress the need for an assessment of those roads which were identified in the second round of review and assessment as being close to the objective.

The update has included the changes to the background PM10 maps which have been revised to the base year 2004, this has led to some background concentrations of PM10 increasing in some areas above concentrations that were previously estimated. During the second round of Review and Assessment a Detailed Assessment was undertaken for PM10 this concluded that there would be no exceedences of the 24-hour objective at relevant locations. The background concentrations for PM10 in the District are also all substantially below the AQO for 2004.

Therefore, further assessment of PM10 with regards to road transport emissions is not required

South Bucks 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

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

3.6 Roads with Significantly Changed Traffic Flows

Since the 2006 Updating and Screening Assessment, a new motorway service area has been built within the district, which opened in February 2009. The service area is situated at Junction 2 of the M40 near Beaconsfield. The road layout has been altered slightly at this junction to allow access to the Service Area. The site adjoins the present AQMA. South Bucks District Council intends to site both a benzene and NO₂ tube at the service area and will report the first data in the 2009 review and assessment report.

SBDC has not received the requested traffic flow data from Bucks County Council. We don't yet know whether or not the new motorway service area has changed traffic flows at the location, however, it is thought unlikely that traffic flows would have increased by 25%.

The site adjoins the present AQMA.

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

3.7 Bus and Coach Stations

There are no bus or coach stations in the district and none is currently planned for the future.

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

4 Other Transport Sources

4.1 Airports

There are no airports in the South Bucks district.

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

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

The guidance requires the identification of locations where diesel or steam locomotives are regularly stationary for periods of 15 minutes or more. There is a small branch line which services a road stone quarry in the District. The diesel engines which visit this site only make one visit a day and on most occasions are idle for less than 15 minutes. The guidance also states that there needs to be the potential for regular outdoor exposure of members of the public within 15 m of these idle locomotives. As there is no relevant exposure to members of the public from the location of the stationary locomotives and the likelihood of idle locomotives at this location is low, a further assessment of this emission source is not required.

South Bucks 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

South Bucks 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)

Due to the location of the District, there are no emissions from shipping. This emission source does not require further consideration.

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

5 Industrial Sources

5.1 Industrial Installations

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

There are now only two part A1 processes in the district, and no A2. There are no new proposed processes since the 2006 US and A in either South Bucks district or the surrounding areas. Therefore, further assessment of PM₁₀ with regards to emissions from industrial sources is not required.

South Bucks 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 now only two part A1 processes in the district, and no part A2 processes. There are no significant planned amendments to existing source emissions since the 2006 US and A in either South Bucks district or the surrounding areas. Therefore, further assessment of PM₁₀ with regards to emissions from industrial sources is not required.

South Bucks 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

A new quarry opened in Denham in late 2008, and monitoring of dust and PM₁₀ was a planning condition.

PM₁₀ and directional dust monitoring data from the New Denham Quarry site from 24 January - 19 September 2008 have been analysed and interpreted. There appear to have been no PM₁₀ issues of significance arising from site activities, as there was only one occurrence of PM₁₀ concentrations above 50 µg/m³ during almost 8 months of site activity, and average PM₁₀ concentrations at the site during the study period were lower than the local estimated concentration which is significantly below the NAQS annual average threshold. Thus it is reasonable to suggest that site activities are unlikely to cause a breach of either of the NAQS thresholds for PM₁₀.

South Bucks District Council has assessed the new installation, and concluded that it will

not be necessary to proceed to a Detailed Assessment.

5.2 Major Fuel (Petrol) Storage Depots

There are no major petrol storage depots within South Bucks District. Benzene monitoring has been carried out historically in the district, however the levels measured have always been low, therefore monitoring was discontinued in 2008. In Appendix D, measured benzene data is given for 2007, the last complete year for which data has been produced, and for 2008 until routine monitoring was stopped. Benzene monitoring still continues on an ad hoc basis, and has continued to measure benzene levels in below $1 \mu\text{g m}^{-3}$

Benzene Tube Data for the South Bucks District for 2007 $\mu\text{g m}^{-3}$

	January	February	March	April	May	June	July	August	September	October	November	December	Average
Langley	1.1	1.1	0.29	0.5	D	0.5	0.7	0.3	0.6	0.5	0.4	D	0.68
Predicted 2009													0.61
Predicted 2010													0.60
Gerrards Cross	1.20	1.20	0.30	0.30	D	0.3	<0.2	0.40	0.70	0.80	0.5	0.70	0.65
Predicted 2009													0.58
Predicted 2010													0.57
Mount Hill	0.60	1.0	0.25	0.30	D	0.20	<0.2	0.40	A	<0.20	<0.20	D	0.47
Predicted 2009													0.42
Predicted 2010													0.37
South Drive	0.70	0.6	0.16	0.4	D	<0.20	<0.2	0.5	0.80	0.8	0.40	D	0.56
Predicted 2009													0.50
Predicted 2010													0.44
Nashdom lane	0.90	0.60	<0.05	<0.3	D	0.50	<0.2	0.40	0.3	0.60	0.50	0.70	0.51
Predicted 2009													0.46
Predicted 2010													0.40

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There are no major fuel (petrol) storage depots within the South Bucks District Council area.

5.3 Petrol Stations

South Bucks District Council has contacted all petrol filling stations in the district in order to obtain information about their annual throughputs, however, not all have yet supplied the information.

Petrol Station Site	Annual Petrol Throughput (m ³)	Relevant Exposure	Stage 2 Vapour Recovery
Denham Service Station, North Orbital Road VR1	2,900	No	No
Iver Heath Service Station, Uxbridge Road VR2			No
Sergeants Mead, London Road, Beaconsfield VR3		No	No
Denham Service Station, Oxford Road, Denham VR4		No	No
Shell Services, Bath Road, Taplow VR5			No
BP Express Shopping, Gerrards Cross. VR6		No	No
Texaco Service Station, 66 Oxford Road, New Denham VR7	2400	No	No
Burnham Garage, Stomp Road VR8	2,300	No	No
Lent Rise Service Station, Lent Rise Road Total VR9	2,800	No	No
Holtspur Service Station, Oxford Road, Beac VR11		No	No
Flying Red Horse, Oxford Road, Denham VR12		No	No
Willowbank Services, Oxford Road, New Denham VR13			No
Hughes Beaconsfield Farnham Common VR14	2,400		No
Shell Motorway Service Station VR15	N/A		Yes

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

5.4 Poultry Farms

There are only 2 poultry farms in the south Bucks District, one having 4500 birds and the other having 8000 birds

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

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

There is no relevant plant burning biomass in South Bucks District.

South Bucks District Council confirms that there are no biomass combustion plant in the Local Authority area.

6.2 Biomass Combustion – Combined Impacts

There are no biomass combustion plants in the 50kW to 200MW range in South Bucks District.

South Bucks District Council confirms that there are no biomass combustion plant in the Local Authority area.

6.3 Domestic Solid-Fuel Burning

Previous rounds of Review and Assessment have identified no areas where the density of houses burning coal exceeds 50 properties per 500m². No new areas have been identified since the previous review and assessment.

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

7 Fugitive or Uncontrolled Sources

The 2006 US and A identified no potential sources of fugitive PM₁₀ emissions. No new potential sources have appeared in the district since the 2006 US and A was produced.

South Bucks 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

Monitoring data shows that NO₂ levels in the district are below the air quality objective levels, with the exception of the monitoring locations which are already in the AQMA, and one other location on the A40 Oxford Road, which is close to the AQMA. Although NO₂ at this location showed an exceedence, (45.9µgm⁻³) the level at the nearest receptor was found to be below the objective level (39.1µgm⁻³)

8.2 Conclusions from Assessment of Sources

No new significant pollution sources have been identified since the 2006 Updating and Screening Assessment.

8.3 Proposed Actions

No specific actions are proposed as a result of the 2009 Updating and Screening Assessment. However, the present network of diffusion tubes has been in place for a number of years, and it is proposed that this should be reviewed and new locations considered.

9 References

Local Air Quality Management Technical Guidance, TG(09). DEFRA

Appendices

Appendix A: QA/QC Data

Appendix B: NO₂ Tube Data

Appendix C: Benzene Tube Data

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

South Bucks District Council uses NO₂ tubes prepared and analysed by Bureau Veritas UK Ltd in Glasgow. The analysis method used is 10% TEA in water.

Historically, SBDC has not carried out its own co-location study, but started one in late 2008. However, since only 4 months of data were available from this, it was not really possible to use it to determine a bias correction factor. Therefore, a bias correction factor of 0.9 was found from the R and A Helpdesk spreadsheet, at <http://www.uwe.ac.uk/aqm/review/R&Asupport/diffusiontube050509.xls>

PM Monitoring Adjustment

PM₁₀ data included in this report has been adjusted using the volatile correction model.

QA/QC of automatic monitoring

Data Management and ratification is carried out by AEA Technology. The equipment is maintained by Signal Ambitech. Calibrations are carried out approximately fortnightly.

QA/QC of diffusion tube monitoring

Diffusion tubes are analysed by the Bureau Veritas laboratory in Glasgow. Bureau Veritas has a defined quality system, which forms part of the UKAS accreditation that the laboratory holds. All accredited methods are fully documented.

All external proficiency scheme results are also assessed by the Quality Manager at Bureau Veritas. The Quality Manager also carries out internal audits.

The instrument is calibrated daily, using a series of calibration standards to ensure a satisfactory linear response is obtained. A standard check is analysed after every fifty samples to ensure that the calibration is still valid.

A series of ten quality control check solutions are analysed before any samples in order to check system stability and performance. An external quality control check solution prepared by netcen is analysed once per month in order to check our internal QC, results of this check are reported back to netcen.

The NO₂ tubes are prepared and analysed in a separate, designated part of the laboratory within the main laboratory building, ambient nitrogen dioxide concentrations within the laboratory are monitored routinely. Tubes are prepared by spiking with 10% TEA in water. Blanks from each batch of tubes prepared in the laboratory are retained for verification.

Data is checked by the analyst as it is generated, QC data is plotted immediately after it is obtained. All raw data and data transfer is checked by a supervisor, data entry into the Laboratory Information Management System (LIMS) is also checked and the final reports are checked before signing.

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Appendix B

Nitrogen Dioxide Passive Diffusion Tube Monitoring Results 2008

		Grid Reference	SI Unit ug/m3													Average ug/m3	Converted via Casella lab conversion factor for 2008(0.90)	
			J	F	M	A	M	J	J	A	S	O	N	D				
1	Iver, Old Slade Lane	Kerbside (and 100m adjacent M4)	503.679	178.566	44	48	35	39	37	19	27	34	49	49	49	67	41.42	37.28
2	Iver, Victoria Cres	Kerbside (and 100m adjacent M25)	504.056	180.901	43	35	41	49	36	23	31	38	48	39	48	61	41.00	33.62
3	Iver;High Street	Kerbside	503.688	181.229	46	45	47	45	38	C	A	C	43	45	49	62	46.67	38.27
4	New Denham, Oxford Rd	Kerbside	504.754	185.138	50	45	42	46	37	37	41	42	54	51	59	63	47.25	38.75
5	Denham Green, Nightingale way	Kerbside	503.678	188.192	37	28	27	25	17	19	21	25	27	30	35	44	27.92	22.89
6	GX Tatling End	Kerbside A40 (and 50m adjacent M25)	501.717	187.175	64	59	56	50	30	48	41	47	52	63	97	64	55.92	45.85
7	GX, Packhorse Rd	Kerbside	500.259	188.613	48	63	33	42	26	26	29	35	54	39	46	59	41.67	34.17
8	Fulmer Village	Kerbside	499.954	185.727	26	26	27	33	31	22	24	32	38	32	37	43	30.92	25.35
9	Wexham Black Park	Kerbside	500.518	184.244	25	A	19	22	20	12	15	18	27	22	26	33	21.73	17.82
10	Stoke Poges, Bells Hill	Kerbside	498.201	184.266	44	41	32	37	28	21	28	35	43	36	44	A	35.36	29.00
11	Hedgerley Village	Kerbside	496.895	187.215	21	42	B	22	17	11	14	17	27	29	27	31	23.45	19.23
12	Farnham Common Beaconsfield Rd	Kerbside	496.095	185.599	38	36	32	31	25	28	30	34	43	39	46	43	35.42	29.04
13	Beac Station Rd	Kerbside	493.873	191.040	83	26	55	45	31	34	34	41	52	52	35	63	45.92	37.65
14	Beac A40	Kerbside (and 75m adjacent M40)	492.857	189.77	61	52	38	42	29	36	39	38	28	41	40	49	41.08	33.69
15	Burnham, high street	Kerbside	493.136	182.503	38	43	29	28	18	21	20	26	34	36	61	47	33.42	27.40
16	Taplow,police station	Kerbside A4	491.668	181.187	51	35	43	43	28	35	36	51	50	49	58	64	45.25	37.11
17	Dorn.M4	Kerbside (and 10m adjacent M4)	491.672	179.697	55	48	66	48	52	A	A	A					53.80	44.12
18	Air Quality Monitoring Station GX	Kerbside (Adjacent M25)			66	62	58	47	37	56	53	55	44	60	57	67	55.17	45.24
19	Air Quality Monitoring Station GX	Kerbside (Adjacent M25)											47	56	59	65	56.75	46.54
20	Air Quality Monitoring Station GX	Kerbside (Adjacent M25)											58	61	60	71	62.50	51.25

A=Tube not returned by client

B=Sample tube damaged

C=Sample tube contaminated
D=Sample lost during analysis

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Appendix C Benzene Tube Data

Benzene Tube Data for the South Bucks District for 2007

µg/m³

	January	February	March	April	May	June	July	August	September	October	November	December	Average
Langley	1.1	1.1	0.7	0.5	D	0.5	0.7	0.3	0.6	0.5	0.8	D	0.68
Gerrards Cross	1.00	1.20	0.70	0.30	D	0.30	0.20	0.40	0.70	0.80	0.80	0.70	0.65
Mount Hill	0.60	1.00	0.50	0.30	D	0.20	0.20	0.40	A	0.20	0.80	D	0.47
South Drive	0.70	0.60	0.60	0.40	D	0.20	0.20	0.50	0.80	0.80	0.80	D	0.56
Nashdom lane	0.90	0.60	0.50	0.30	D	0.50	0.20	0.40	0.30	0.60	0.60	0.70	0.51

Benzene Tube Data for the South Bucks District for 2008

µg/m³

	January	February	March	April	May	June	July	August	September	October	November	December	Average
Langley	0.8	0.6	0.5	0.2	0.3	0.4	0.2	0.4	1.4	N	N	N	0.53
Gerrards Cross	0.20	0.60	0.60	0.40	0.20	0.30	0.40	0.40	1.20	N	N	N	0.48
Mount Hill	0.80	0.90	0.60	0.40	0.30	0.20	0.30	0.40	1.00	N	N	N	0.54
South Drive	0.80	D	0.50	0.40	0.50	0.40	0.30	0.40	0.60	N	N	N	0.49
Nashdom lane	0.90	1.20	0.60	0.40	0.40	0.40	0.30	0.40	N	N	N	N	0.58

