



# 2010 Air Quality Progress Report for *South Bucks District Council*

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

April, 2011

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## Executive Summary

There have been no major changes in pollution sources within the District since the 2009 Review and Assessment report. A new motorway service station opened in the district in February 2009 and a programme for monitoring NO<sub>2</sub> and benzene was operated there during 2010. This showed that the relevant Air Quality Objectives were not exceeded.

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. Generally, however, NO<sub>2</sub> levels seemed to be a little higher than previous years. This may have been a result of some unusually high levels in January 2009, which skewed the annual mean.

Five tubes, out of 16 locations showed an exceedence. Three of the five tubes were those used for the co-location study at the continuous monitoring station, and adjoin the existing AQMA. Of the remaining two, one was the Tatling end site, with a bias corrected annual mean 43.15 µg/m<sup>3</sup>.

Using the calculator at

<http://www.airquality.co.uk/laqm/tools/NO2withDistancefromRoadsCalculatorIssue2.xls>

to correct for NO<sub>2</sub> fall off with distance, it was found that there was a level of 36.5 µg/m<sup>3</sup> at the nearest receptor.

The remaining site was in Station Road in Beaconsfield, with a bias corrected annual mean of 41.76 µg/m<sup>3</sup>. At the nearest receptor, the concentration of NO<sub>2</sub> was calculated to be 38.4 µg/m<sup>3</sup>.

The annual mean for PM<sub>10</sub> was 21.2 µg/m<sup>3</sup> when the volatile correction model was applied and 21 µg/m<sup>3</sup> when the gravimetric correction factor of 1.3 was applied.

Using the volatile correction model, there was one exceedence of the daily mean of 50 µg/m<sup>3</sup>, however, using the gravimetric correction there was no exceedence of the daily mean.

Thus no detailed assessment is required for any pollutant in South Bucks District at the present time.

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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 NO<sub>2</sub> 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 Progress Report

Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the Local Air Quality Management process.

They are not intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedence of an Air Quality Objective, the Local Authority (LA) should undertake a Detailed Assessment immediately, and not wait until the next round of Review and Assessment.

## 1.3 Air Quality Objectives

The air quality objectives applicable to Local Air Quality Management (LAQM) in **England** are set out in the Air Quality (England) Regulations 2000 (SI 928), and the Air Quality (England) (Amendment) Regulations 2002 (SI 3043) and reviewed in the 2007 Air Quality Strategy for England, Scotland, Wales and Northern Ireland. They are shown in Table 1.1. This table shows the objectives in units of microgrammes per

cubic metre  $\mu\text{g}/\text{m}^3$  (for carbon monoxide the units used are milligrammes per cubic metre,  $\text{mg}/\text{m}^3$ ). Table 1.1. includes the number of permitted exceedences in any given year (where applicable).

**Table 1.1 Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in England.**

Pollutant	Concentration	Measured as	Date to be achieved by
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 $\text{mg}/\text{m}^3$	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
Particles (PM <sub>10</sub> ) (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 NO<sub>2</sub> 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 (PM<sub>10</sub>) 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:

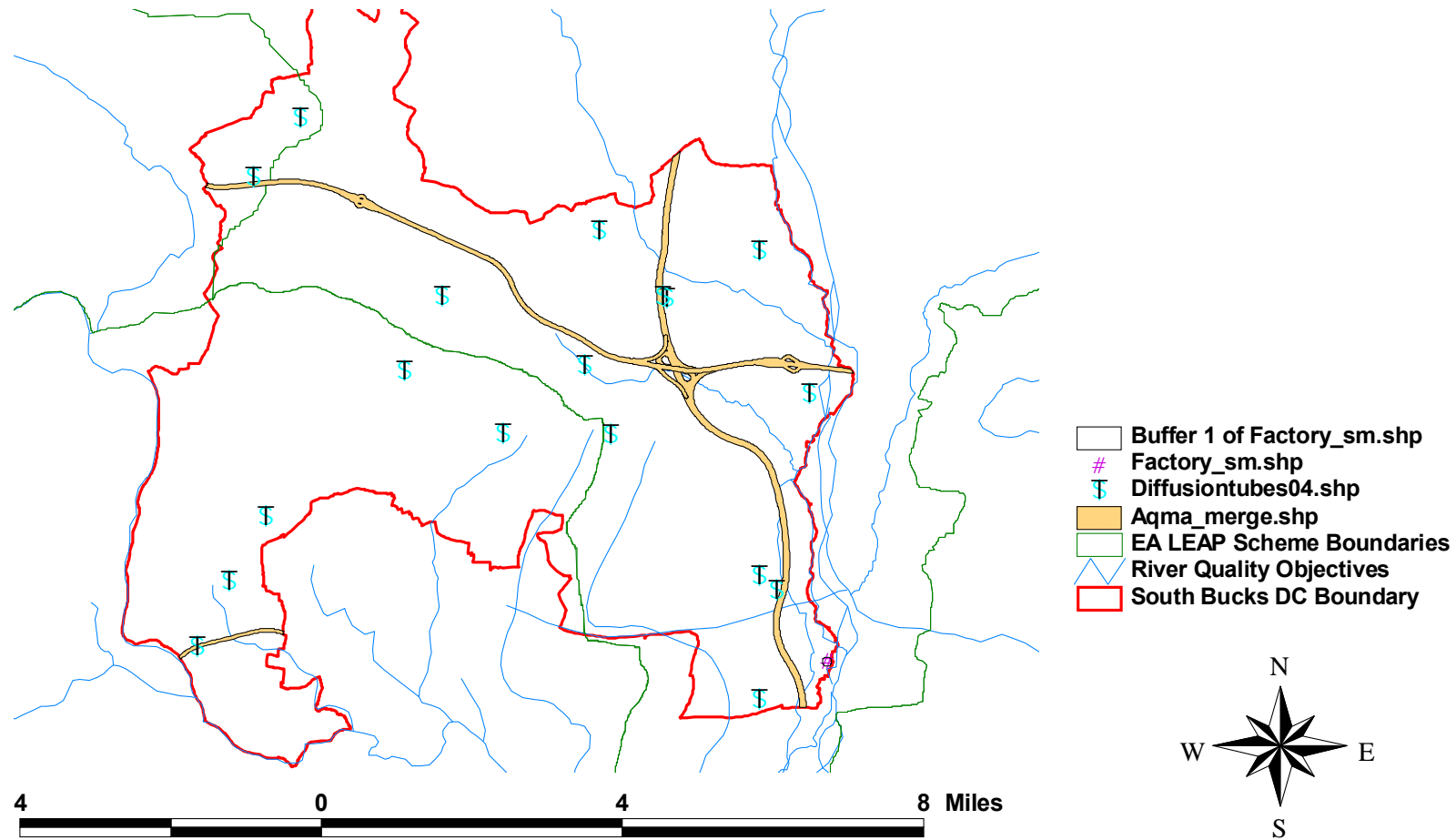
- No exceedences are predicted at sensitive receptors in relation to annual mean or 24-hour mean PM<sub>10</sub> concentrations for 2004. Widescale exceedences are shown on the basis of the provisional 2010 objectives.
- The Council should consider declaring an AQMA in relation to NO<sub>2</sub> annual 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 NO<sub>2</sub> 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.

The 2005 Updating and Screening Assessment (2006) indicated that no detailed assessment would be required for any pollutant. The 2006 Review and Assessment report showed no exceedences of the National Air Quality Objective for NO<sub>2</sub> at any of the monitoring locations in the District. The 2007 Review and Assessment report showed only one location (Tatling End) where the National Air Quality Objective for NO<sub>2</sub> was exceeded, but when the level was calculated at the nearest receptor, it was found not to exceed. The 2008 Updating and Screening Assessment showed 5 sites where NO<sub>2</sub> levels exceeded the objective. 4 of the sites were in the existing AQMA. The fifth was the Tatling End site which exceeded in 2007, but again, there was no exceedence at the nearest receptor. In 2009, seven diffusion tubes showed exceedences. Of these, three were co-located with the continuous monitor, and the remaining four showed no exceedence at the nearest relevant receptor.

### **Figure 1.1 Map of AQMA Boundaries**

### Map of AQMA Showing Diffusion Tube Locations



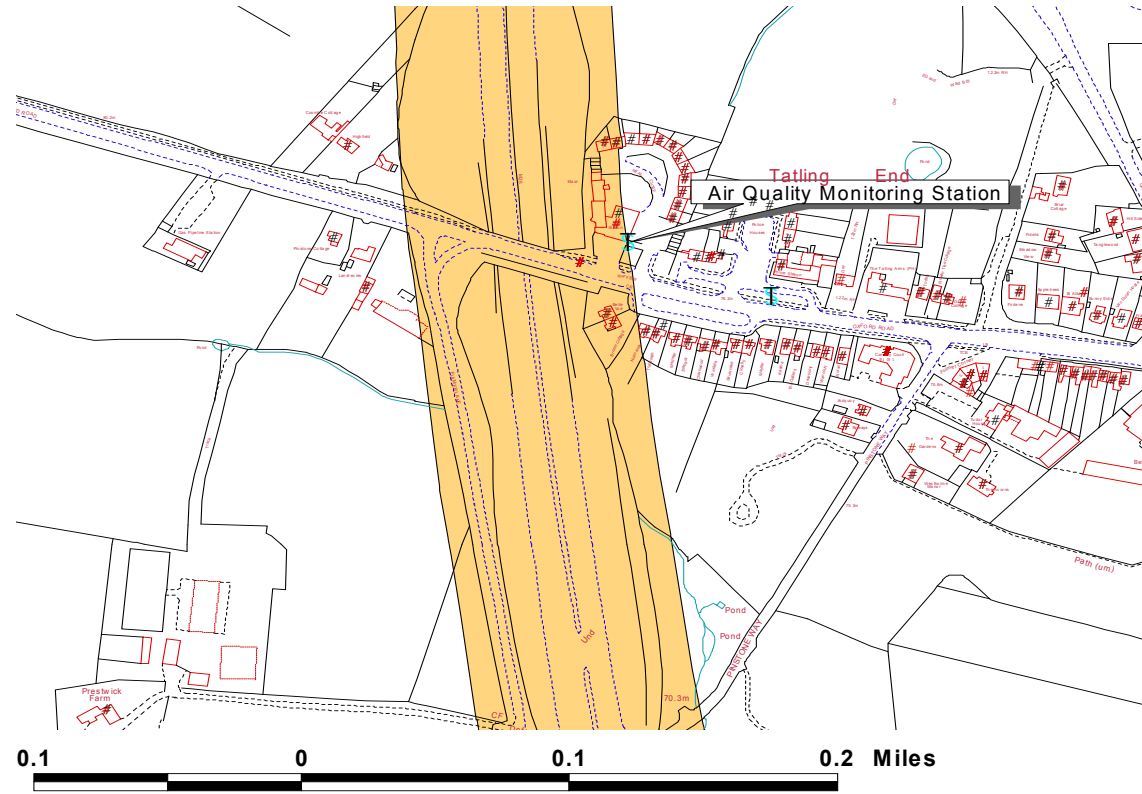
## 2 New Monitoring Data

### 2.1 Summary of Monitoring Undertaken

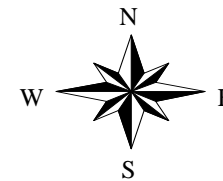
#### 2.1.1 Automatic Monitoring Sites

Figure 2.1 Map(s) of Automatic Monitoring Sites





- Buffer 1 of Factory\_sm.shp
- Factory\_sm.shp
- Diffusiontubes04.shp
- EA LEAP Scheme Boundaries
- River Quality Objectives
- Site Investigations
- Proprec.shp
- OS Address Point
- OS Landline
- South Bucks DC Boundary
- OS Landline
- Building Outline
- Building Pecks
- Railway Track
- Road Metalling
- General Line detail
- General Pecked Detail
- Underground Peck Detail
- Water Detail
- Mean High Water
- Aqma\_merge.shp



**Table 2.1 Details of Automatic Monitoring Sites**

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	Monitoring Technique	In AQM A?	Relevant Exposure ? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure ?
Gerrards Cross	Roadside	501626	187211	PM <sub>10</sub> , NO <sub>x</sub>	TEOM, IR	Y	Y (45m)	15m	Y

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<sub>2</sub> using an API 200E NO<sub>x</sub> analyser and PM<sub>10</sub> 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 SupportingU carry out routine maintenance of the analysers every 6 months.

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

Diffusion tubes are analysed by the Environmental Services Group (ESG) Ltd laboratory, formerly in Glasgow and more recently in Harwell. ESG 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 ESG. 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 the internal QC. Results of this check are reported back to Netcen.

The NO<sub>2</sub> 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 20% 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.

#### **Figure 2.2 Map(s) of Non-Automatic Monitoring Sites (if applicable)**

See Figure 1.1



**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 <sub>2</sub>	N	Y (13m)	1m	Y
Iver, Victoria Crescent	Kerbside	504 056 180 901	NO <sub>2</sub>	N	Y (7m)	1m	
Iver, High Street	Kerbside	503 688 181 229	NO <sub>2</sub>	N	Y (12m)	2m	Y
New Denham, Oxford Road	Kerbside	504 754 185 138	NO <sub>2</sub>	N	Y (9m)	2m	Y
Denham Green, Nightingale Way	Kerbside	503 678 188 192	NO <sub>2</sub>	N	Y (8m)	2m	
GX, Tatling End	Kerbside	501 717 187 175	NO <sub>2</sub>	N	Y (30m)	6m	
GX, Packhorse Road	Kerbside	500 259 188 613	NO <sub>2</sub>	N	Y (8m)	2m	
Fulmer Village	Kerbside	499 954 185 599	NO <sub>2</sub>	N	Y (20m)	1m	N
Wexham, Black Park	Kerbside	500 518 184 244	NO <sub>2</sub>	N	N	1m	N
Hedgerley Village	Kerbside	496 895 187 215	NO <sub>2</sub>	N	Y (19m)	3m	
Farnham Common, Beaconsfield Road	Kerbside	496 095 185 599	NO <sub>2</sub>	N	Y (25m)	3m	N
Beaconsfield, Station Road	Kerbside	493 873 191 040	NO <sub>2</sub>	N	Y (20m)	2m	Y
Beaconsfield A40	Kerbside	492 857 189 770	NO <sub>2</sub>	N	Y (24m)	12m	
Burnham High Street	Kerbside	493 136 182 503	NO <sub>2</sub>	N	Y (0m)	1m	Y
Taplow, A4	Kerbside	491 668 181 187	NO <sub>2</sub>	N	Y (20m)	2m	
AQMS GX	Kerbside	501 626 187 211	NO <sub>2</sub>	Y	Y (45m)	15m	
AQMS GX	Kerbside	501 626 187 211	NO <sub>2</sub>	Y	Y (45m)	15m	
AQMS GX	Kerbside	501 626 187 211	NO <sub>2</sub>	Y	Y (45m)	15m	



## **2.2 Comparison of Monitoring Results with Air Quality Objectives**

The continuous NO<sub>2</sub> analyser indicated that annual mean for 2010 was 41µgm<sup>-3</sup>. However, owing to problems with the installation of a replacement analyser at the beginning of 2010, data capture was only 81.1%. Therefore, whilst we note the exceedence, we feel that the incomplete data makes the figure unreliable. There were 3 exceedences of the hourly mean, which occurred on 1 day in 2010. As discussed later, it is also possible that widening work on the M25 has also resulted in an increase in NO<sub>2</sub> levels, owing to effectively bringing the motorway carriageway closer to the monitoring point.

Diffusion tube data for 2010 is shown in Appendix 1.

## 2.2.1 Nitrogen Dioxide

Produced by AEA on behalf of South Buckinghamshire District Council

## SOUTH BUCKS GERRARDS CROSS 01 January to 31 December 2010

These data have been ratified by AEA

POLLUTANT	NO	NO <sub>2</sub>	NO <sub>x</sub>
Number Very High	-	0	-
Number High	-	0	-
Number Moderate	-	1	-
Number Low	-	7107	-
Maximum 15-minute mean	619 µg m <sup>-3</sup>	363 µg m <sup>-3</sup>	1308 µg m <sup>-3</sup>
Maximum hourly mean	549 µg m <sup>-3</sup>	327 µg m <sup>-3</sup>	1165 µg m <sup>-3</sup>
Maximum running 8-hour mean	359 µg m <sup>-3</sup>	192 µg m <sup>-3</sup>	741 µg m <sup>-3</sup>
Maximum running 24-hour mean	244 µg m <sup>-3</sup>	139 µg m <sup>-3</sup>	510 µg m <sup>-3</sup>
Maximum daily mean	213 µg m <sup>-3</sup>	128 µg m <sup>-3</sup>	453 µg m <sup>-3</sup>
99.8th percentile of hourly means	301 µg m <sup>-3</sup>	155 µg m <sup>-3</sup>	577 µg m <sup>-3</sup>
Average	30 µg m <sup>-3</sup>	41 µg m <sup>-3</sup>	87 µg m <sup>-3</sup>
Data capture	81.1 %	81.1 %	81.1 %

\* PM<sub>10</sub> Indicative Gravimetric Equivalent µg m<sup>-3</sup>+ PM<sub>10</sub> as measured by a TEOM using a gravimetric factor of 1.3 for Indicative Gravimetric Equivalent  
All gaseous pollutant mass units are at 20°C and 1013mb.

Particulate matter concentrations are reported at ambient temperature and pressure.

NO<sub>x</sub> mass units are NO<sub>x</sub> as NO<sub>2</sub> µg m<sup>-3</sup>

Pollutant	Air Quality (England) Regulations 2000 and (Amendment) Regulations 2002	Exceedences	Days
Nitrogen Dioxide	Annual mean > 40 µg m <sup>-3</sup>	1	-
Nitrogen Dioxide	Hourly mean > 200 µg m <sup>-3</sup>	3	1

Note: For a strict comparison against the objectives there must be a data capture of &gt;90% throughout the calendar year

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

Site ID	Location	Within AQMA?	Data Capture for monitoring period <sup>a</sup> %	Data Capture for full calendar year 2010 <sup>b</sup> %	Annual mean concentrations (µg/m <sup>3</sup> )		
					2008 <sup>c,d</sup>	2009 <sup>c,d</sup>	2010 <sup>c</sup>
GX	Gerrards Cross	Y		81.1	37	38	<b>41</b>

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

Site ID	Location	Within AQMA?	Data Capture for monitoring period <sup>a</sup> %	Data Capture for full calendar year 2010 <sup>b</sup> %	Number of Exceedences of hourly mean (200 µg/m <sup>3</sup> ) If the period of valid data is less than 90% of a full year, include the 99.8 <sup>th</sup> percentile of hourly means in brackets.		
					2008 <sup>c</sup>	2009 <sup>c</sup>	2010
GX	Gerrards Cross	Y		81.1		11	3

**Diffusion Tube Monitoring Data****Table 2.4a Results of Nitrogen Dioxide Diffusion Tubes**

Site ID	Location	Within AQMA?	Data Capture 2010 %	Annual mean concentrations
				2010 (µg/m <sup>3</sup> ) Adjusted for bias (0.84)
1	Iver, Old Slade Lane	N	92	35.4
2	Iver, Victoria Crescent	N	100	39.1
3	Iver, High Street	N	100	36.9
<b>4</b>	<b>New Denham, Oxford Road</b>	<b>N</b>	<b>100</b>	<b>39.3</b>
5	Denham Green, Nightingale Way	N	100	26.3
<b>6</b>	<b>GX, Tatling End</b>	<b>N</b>	<b>100</b>	<b>43.2</b>
7	GX, Packhorse Road	Y	100	34.3
8	Fulmer Village	N	92	32.7
9	Wexham, Black Park	N	100	19.9
11	Hedgerley Village	N	100	20.5
12	Farnham Common, Beaconsfield Road	N	92	33.0
<b>13</b>	<b>Beaconsfield, Station Road</b>	<b>N</b>	<b>100</b>	<b>41.8</b>
14	Beaconsfield A40	N	100	33.3
15	Burnham High Street	N	100	30.1
<b>16</b>	<b>Taplow, A4</b>	<b>N</b>	<b>100</b>	<b>39.5</b>
<b>18</b>	<b>AQMS GX</b>	<b>Y</b>	<b>100</b>	<b>42.2</b>
<b>19</b>	<b>AQMS GX</b>	<b>Y</b>	<b>75</b>	<b>44.9</b>
<b>20</b>	<b>AQMS GX</b>	<b>Y</b>	<b>75</b>	<b>42.8</b>

The data show tubes in 5 locations exceeding the annual mean objective of 40µgm<sup>-3</sup>. Of these, 3 are the tubes co-located with the continuous analyser in the AQMA.

The remaining 2 tubes are outside the AQMA. The table below shows the historic trend in annual means at the 4 locations.

**Table 2.4b Annual Mean NO<sub>2</sub> Levels (µg/m<sup>3</sup>)**

	A4 Bath Road Taplow	Station Road Beaconsfield	GX Tatling End	Oxford Road New Denham
<b>2006</b>	31.8	37.9	38.6	33.3
<b>2007</b>	35.1	38.1	42.4	37.3
<b>2008</b>	37.1	37.6	45.9	38.8
<b>2009</b>	40.0	43.4	41.2	40.7
<b>2010</b>	39.5	41.8	43.2	39.3

The Gerrards Cross (GX), Tatling End tube is situated on the A40 approximately 85 metres east of the automatic monitoring site. This tube has shown an exceedence for 4 of the last 5 years. In 2007, there was a slight exceedence at the site, with an NO<sub>2</sub> level of 42.5 µg/m<sup>3</sup>. In 2008 the annual mean was rather higher, at 45.9 µg/m<sup>3</sup>. In 2009, the annual mean was 41.23 µg/m<sup>3</sup>, and in 2010 it was 43.2 µg/m<sup>3</sup>.

However, the relevant exposure by this tube is located further back from the road than the tube site. 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 NO<sub>2</sub> at the building façade was calculated to be 35.4 µg/m<sup>3</sup>.

**Figure 2.2: Location of Tatling End Diffusion Tube in Relation to Major Roads, AQMA, and Relevant Exposure.**

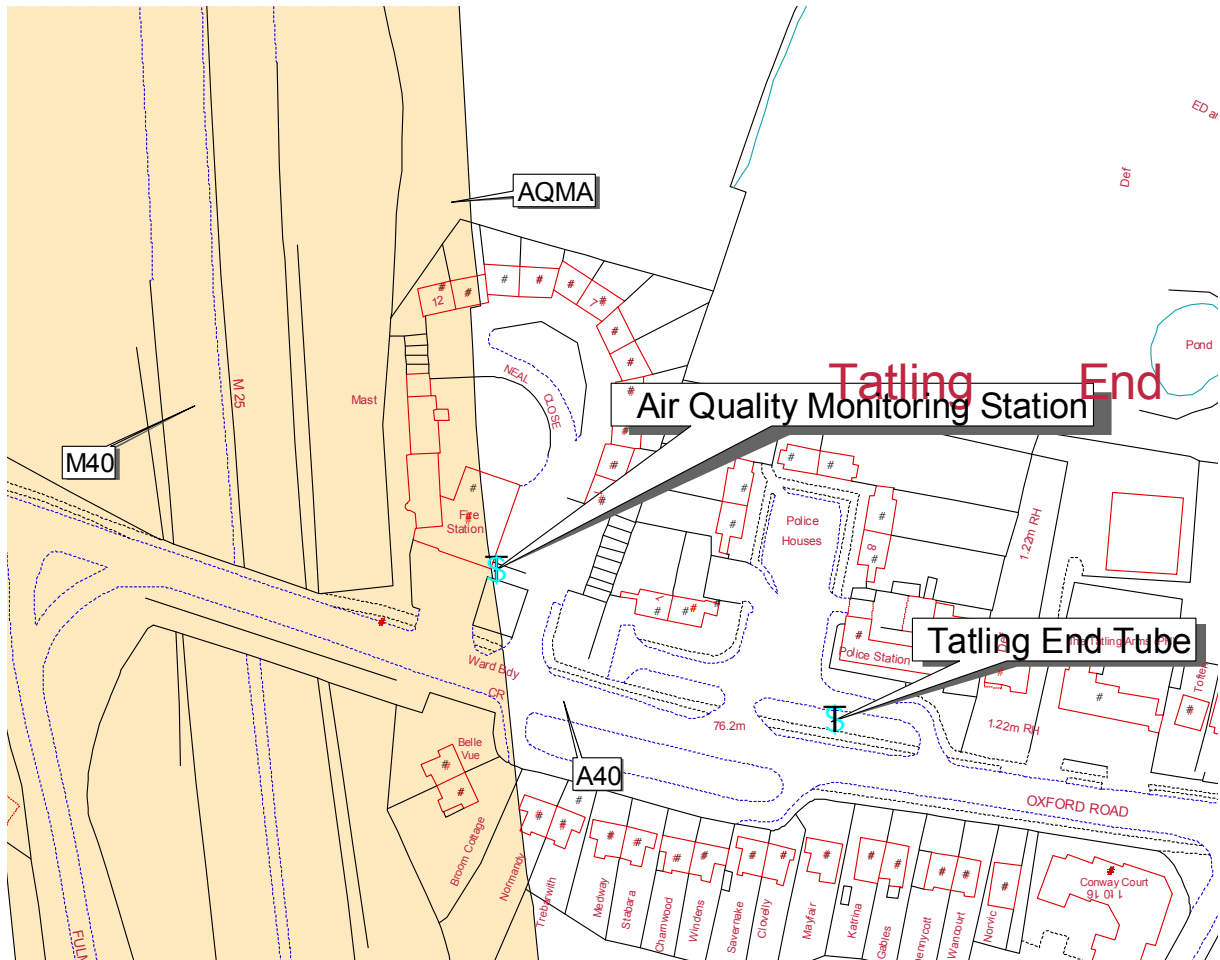


Table 2.4b shows historical data from sites where exceedences have occurred in recent years. In 2010, the sites at Oxford Road, New Denham, and Bath Road, Taplow showed NO<sub>2</sub> levels below the objective, following a small exceedence in 2009.

The tube at Station Road, Beaconsfield, showed an annual mean of 41.8 µg/m<sup>3</sup>. Corrected for relevant exposure, as above, the concentration at the façade of the nearest building was calculated to be 38.4 µg/m<sup>3</sup>.

PM<sub>10</sub>

Produced by AEA on behalf of South Buckinghamshire District Council

**SOUTH BUCKS GERRARDS CROSS****01 January to 31 December 2010**

These data have been fully ratified by AEA

POLLUTANT	PM <sub>10</sub> <sup>+</sup>	PM <sub>10</sub> VCM*	PM <sub>10</sub> GR10
Number Very High	-	-	0
Number High	-	-	0
Number Moderate	-	-	0
Number Low	-	-	8719
Maximum 15-minute mean	150 µg m <sup>-3</sup>	-	195 µg m <sup>-3</sup>
Maximum hourly mean	117 µg m <sup>-3</sup>	-	152 µg m <sup>-3</sup>
Maximum running 8-hour mean	66 µg m <sup>-3</sup>	-	86 µg m <sup>-3</sup>
Maximum running 24-hour mean	38 µg m <sup>-3</sup>	50.4 µg m <sup>-3</sup>	49 µg m <sup>-3</sup>
Maximum daily mean	36 µg m <sup>-3</sup>	50.4 µg m <sup>-3</sup>	47 µg m <sup>-3</sup>
Average	16 µg m <sup>-3</sup>	21.2 µg m <sup>-3</sup>	21 µg m <sup>-3</sup>
Data capture	99.0 %	99.5 %	99.0 %

+ PM<sub>10</sub> as measured by a TEOM (uncorrected)\*PM<sub>10</sub> VCM – TEOM data corrected using Volatile Correction ModelPM<sub>10</sub> GR10 - indicative gravimetric corrected, i.e. 'raw' TEOM PM<sub>10</sub> data with a 1.3 factor applied

All mass units are at 20°C and 1013mb

Pollutant	Air Quality (England) Regulations 2000 and (Amendment) Regulations 2002	Exceedences	Days
PM <sub>10</sub> Particulate Matter (VCM Corrected)	Daily mean > 50 µg m <sup>-3</sup>	1	1
PM <sub>10</sub> Particulate Matter (VCM Corrected)	Annual mean > 40 µg m <sup>-3</sup>	0	-

The PM<sub>10</sub> TEOM data has been corrected using the Volatile Correction Model ([www.volatile-correction-model.info](http://www.volatile-correction-model.info)) as detailed on Page 3-10 of LAQM.TG (09). Also, the correction has been undertaken using FDMS data as selected by the VCM

FYI – PM<sub>10</sub> TEOM data as indicative corrected, i.e. 'raw' TEOM PM<sub>10</sub> data with a 1.3 factor applied

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

Site ID	Location	Within AQMA?	Data Capture for monitoring period <sup>a</sup> %	Data Capture for full calendar year 2010 <sup>b</sup> %	Annual mean concentrations ( $\mu\text{g}/\text{m}^3$ )		
					2008 <sup>c, d</sup>	2009 <sup>c, d</sup>	2010 <sup>c</sup>
GX	Gerrards Cross	Y		99.5		22	21.2

**Table 2.5b Results of PM<sub>10</sub> Automatic Monitoring: Comparison with 24-hour Mean Objective (using gravimetric correction – factor of 1.3 applied)**

Site ID	Location	Within AQMA?	Data Capture for monitoring period <sup>a</sup> %	Data Capture 2010 <sup>b</sup> %	Number of Exceedences of daily mean objective ( $50 \mu\text{g}/\text{m}^3$ ) If data capture < 90%, include the 90 <sup>th</sup> percentile of daily means in brackets.		
					2008 <sup>c</sup>	2009 <sup>c</sup>	2010 <sup>c</sup>
GX	Gerrards Cross	Y		99.0		0	0

**Table 2.5c Results of PM<sub>10</sub> Automatic Monitoring: Comparison with 24-hour Mean Objective (corrected using volatile correction model)**

Site ID	Location	Within AQMA?	Data Capture for monitoring period <sup>a</sup> %	Data Capture 2010 <sup>b</sup> %	Number of Exceedences of daily mean objective ( $50 \mu\text{g}/\text{m}^3$ ) If data capture < 90%, include the 90 <sup>th</sup> percentile of daily means in brackets.		
					2008 <sup>c</sup>	2009 <sup>c</sup>	2010 <sup>c</sup>
GX	Gerrards Cross	Y		99.5		0	1

Between 2009 and 2010, work was carried out on the M25 motorway, to increase the number of lanes on each carriageway from 3 to 4. At the point nearest our AQMS, physical widening was not possible, owing to the constraints of the bridge carrying the A40 over the motorway at that point. Therefore, the hard shoulder has been re-designated as a running lane at this location.

Figure 2.3 shows an aerial view of the finished widening project at this point.

It was hoped that the carriageway widening would improve the flow of traffic and that this would help to reduce pollution levels at this point. It has not been possible to demonstrate this hoped for reduction in NO<sub>2</sub> level from the monitoring results.

One consequence of the widening of the motorway and the conversion of the hard shoulder to a running lane, is that the distance from the carriageway to the monitoring station has effectively been reduced from approximately 53.5m to 50m. Thus measured NO<sub>2</sub> levels, would be expected to show a small increase.

Using the calculator at

<http://www.airquality.co.uk/laqm/tools/NO2withDistancefromRoadsCalculatorIssue2.xls>

s

to estimate the size of this increase suggests that it might be in the region of 1.5 µg/m<sup>3</sup>.

**Figure 2.3: Aerial View of M25 after Completion of Widening Work.**





### **2.2.2 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 SO<sub>2</sub>. The three sources were, Slough Power Station, ICI plc and Grundon's Incinerator.

### **2.2.3 Benzene**

Monitoring of Benzene was carried out for many years by SBDC but was always 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/m<sup>3</sup>. Monitoring was discontinued in 2008.

### **2.2.4 Other pollutants monitored**

No other pollutants are monitored within South Bucks District Council.

### 2.2.5 Monitoring Project at Beaconsfield Motorway Service Station

Beaconsfield Motorway Service Station opened in South Bucks District at Junction 2 of the M40 in February 2009. Access to the service station is via the A305, and modification to the road layout of junction 2 was required. In addition to the usual retail outlets, the service station comprises 4 petrol storage tanks supplying 36 petrol pumps. A stage 2 vapour recovery permit is in place. There is also a diesel tank and a separate HGV fuelling area.

South Bucks District Council commissioned TRL to undertake a programme to measure NO<sub>2</sub> and PM<sub>10</sub> by continuous monitoring, and NO<sub>2</sub> and benzene by diffusion tube at the Station

The results of NO<sub>2</sub> diffusion tube monitoring are summarised in Table 2.6

**Table 2.6 NO<sub>2</sub> Levels at Different Sites Within the Service Area**

	<b>Average NO<sub>2</sub> level <math>\mu\text{gm}^{-3}</math></b>
Site 1	34.4
Site 2	27.9
Site 3	27.6
Site 4	25.6
Analyser	28.1

The BTEX monitoring results are summarised in Table 2.7 below

**Table 2.7 BTEX Levels at Different Sites Within the Service Area**

	<b>Average level <math>\mu\text{gm}^{-3}</math></b>
Benzene	0.36
Toluene	1.47
Ethylene Benzene	0.32
m-xylene/p-xylene	0.27
o-xylene	0.31

The benzene level is well below the annual mean objective level for England and Wales of 5.00  $\mu\text{gm}^{-3}$  which came into effect on 31<sup>st</sup> December 2010.

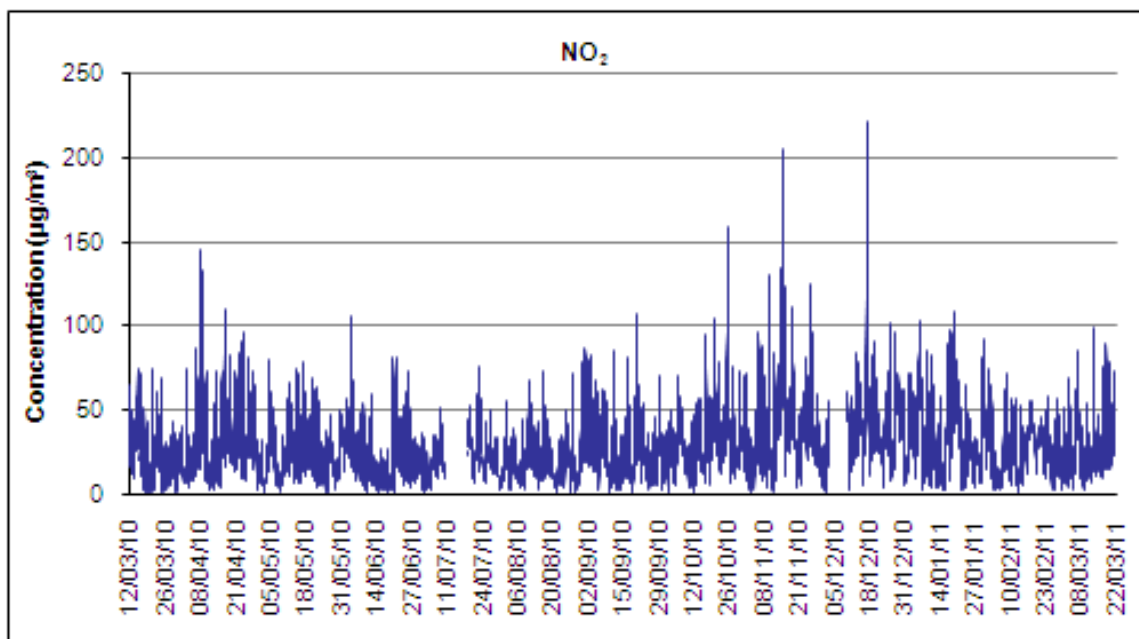
There are no objectives for the other pollutants.

Automatic monitoring showed an average of 27.8  $\mu\text{gm}^{-3}$  with 2 exceedences of the hourly mean of 200  $\mu\text{gm}^{-3}$ . The annual objective permits 18 objectives of the hourly mean. The annual average was 27.8  $\mu\text{gm}^{-3}$ . There was 95.2% data capture.

The average level of PM<sub>10</sub> was found to be 19.3 µgm<sup>-3</sup>, corrected by the volatile correction method (VCM). This is comfortably below the objective annual mean level of 40 µgm<sup>-3</sup>. There were 3 exceedences of the PM<sub>10</sub> 24 hour mean objective of 50 µgm<sup>-3</sup>.

We are therefore satisfied that the new Motorway Service Station has not caused undue air quality problems at this location. TRL’s report is shown in full as Appendix 3

**Figure 2.4 2010 NO<sub>2</sub> data from Beaconsfield Motorway Service Station**



**2.2.6 Summary of Compliance with AQS Objectives**

South Bucks District Council has examined the results from monitoring in the district. Concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment.

## **3 New Local Developments**

### **3.1 Road Traffic Sources**

#### **3.1.1 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 NO<sub>2</sub> by diffusion tube for many years, and none exceed the annual mean objective for NO<sub>2</sub> at the nearest relevant receptor.

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.

#### **3.1.2 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 NO<sub>2</sub> by diffusion tube for many years. Only the site at Station Road Beaconsfield showed a small exceedence at the monitoring location, but the corrected level at the nearest relevant receptor showed no exceedence.

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.

### 3.1.3 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 monitored for NO<sub>2</sub> 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.

### 3.1.4 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 Review and Assessment report, no new roads meeting these criteria have been identified.

No new road developments have been constructed or are proposed since the 2009 US and A. No roads have been identified in the District 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 PM<sub>10</sub> maps which have been revised to the base year 2004, this has led to some background concentrations of PM<sub>10</sub> increasing in some areas above concentrations that were previously estimated. During the second round of Review and Assessment a Detailed Assessment was undertaken for PM<sub>10</sub> this concluded that there would be no exceedences of the 24-hour objective at relevant locations. The background concentrations for PM<sub>10</sub> in the District are also all substantially below the AQO for 2004.

Therefore, further assessment of PM<sub>10</sub> 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.

### **3.1.5 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.

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

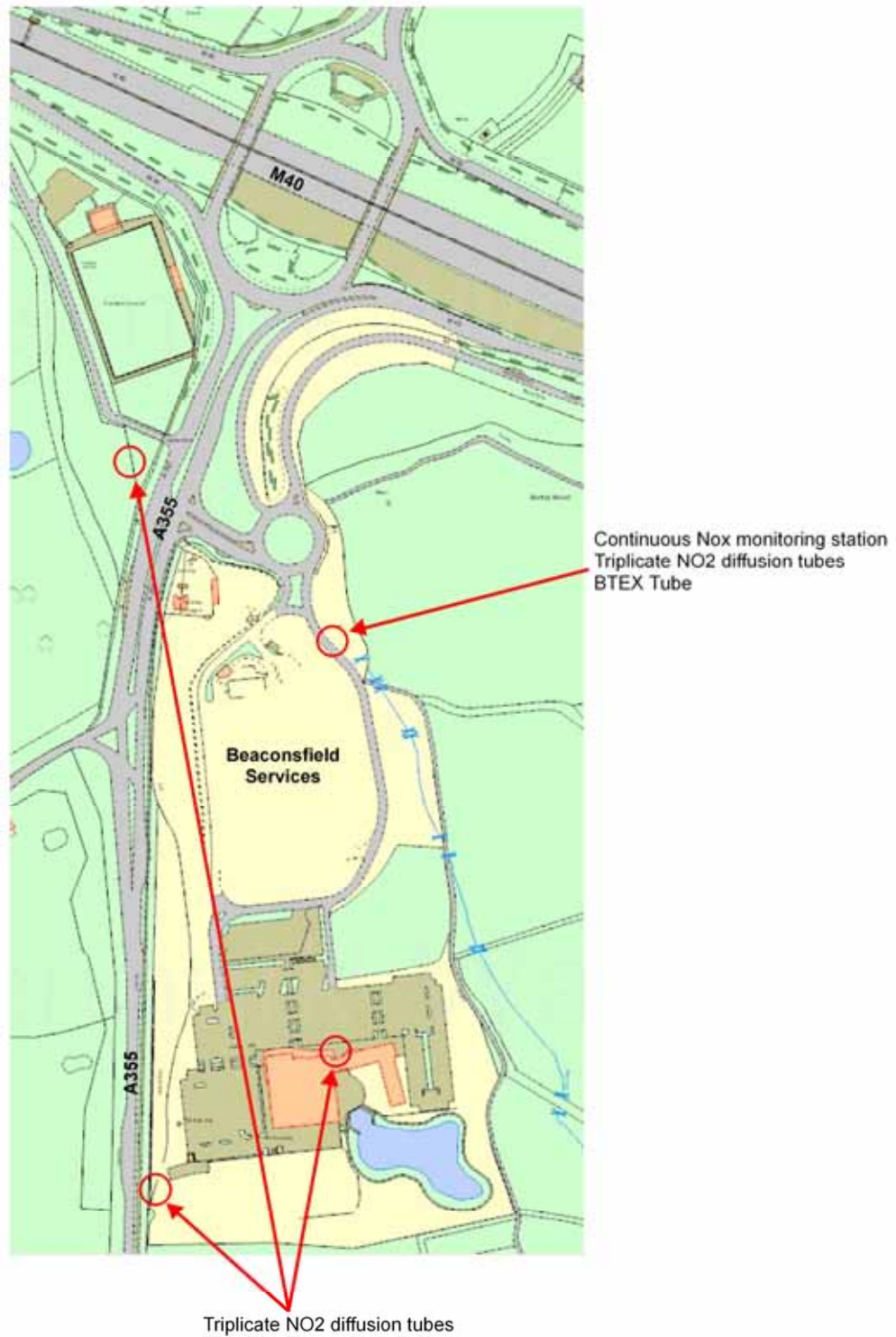
A new motorway service area was built within the district, which opened in February 2009. The service area is situated at Junction 2 of the M40 near Beaconsfield. The road layout has been altered slightly at this junction to allow access to the Service Area. The site adjoins the present AQMA. There are few receptors near the service station, however, because of the changed traffic flows and the proximity to the AQMA, it was thought worthwhile to investigate the air quality on the site.

TRL was commissioned to undertake monitoring on the site for a 12 month period from March 2010 to March 2011. The project was paid for with a grant from DEFRA. The results are summarised in Section 2.2.5. and TRL's report is given in Appendix 3. The monitoring confirms that the NO<sub>2</sub> and PM<sub>10</sub> levels are below the objective levels at this location.

During the latter half of 2009, work commenced on a project to widen the M25 motorway between Junctions 16 and 19. It is the subjective view of SBDC that this caused increased queuing of stationary traffic on the motorway carriageway, by the location of the Air Quality Monitoring Station, especially during the early phases of the project. However, we are not able to support this view with any data. The work was completed, and this section of motorway fully reopened in June 2010.

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

**Figure 3.1 Map Showing Location of Diffusion Tubes in the New Motorway Service Area at Beaconsfield**



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### **3.1.7 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.

## **3.2 Other Transport Sources**

There are no airports in the South Bucks district.

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 with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

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

## **3.3 Industrial Sources**

### **3.3.1 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 2009 US and A in either South Bucks district or the surrounding areas. Therefore, further assessment of PM<sub>10</sub> 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.



### **3.3.2 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 2009 US and A in either South Bucks district or the surrounding areas. Therefore, further assessment of PM<sub>10</sub> 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.

### **3.3.3 New or Significantly Changed Installations with No Previous Air Quality Assessment**

South Bucks District Council confirms that there are no newly identified relevant industrial installations.

## **3.4 Commercial and Domestic Sources**

### **3.4.1 Biomass Combustion – Individual Installations**

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

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

### **3.4.2 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.

### **3.4.3 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 500m<sup>2</sup>. 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.

### **3.4.4 New Developments with Fugitive or Uncontrolled Sources**

South Bucks District Council confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

## **4 Local / Regional Air Quality Strategy**

South Bucks District Council is a partner in the Bucks and Milton Keynes Air Quality Management Group. The group was responsible for devising the Bucks and Milton Keynes Regional Air Quality Strategy in 2006. The strategy is designed to benchmark air quality management throughout the region, and ensure that best practice is employed consistently.

The group comprises representatives from the Buckinghamshire District Councils, Milton Keynes Council, Bucks County Council, and the Strategic Health Authority/Primary Care Trust.

The Strategy is continually updated, and the current review will be completed in 2010. It sets out a series of county wide initiatives to reduce pollution and improve air quality.

The group has its own website at [www.bucksairquality.net](http://www.bucksairquality.net) where relevant data and information can be found for each of the Districts, together with links to their individual websites.

## **5 Planning Applications**

The major planning application received by SBDC in 2009 was the so called 'Project Pinewood.' This was for a development of some 1400 properties in Iver, part of which would adjoin the M25 AQMA. This was refused and an appeal is currently pending. No major new planning applications were received in 2010.

## **6 Air Quality Planning Policies**

South Bucks District Council's new Core Strategy states:-

“In 2004, an Air Quality Management Area (AQMA) was declared in the District, adjacent to the three motorways. The Council will contribute to the improvements in local air quality by mitigating the impacts of development and transport wherever possible, especially within the AQMA and close to Burnham Beeches SAC. For example, the levels of development close to Burnham Beeches will be managed, and the Council will work closely with the Highways Authority to explore ways of reducing traffic levels on the A355 through Farnham Common”

## 7 Local Transport Plans and Strategies

Traffic emissions are by far the largest contributor to air pollution in the South Bucks District. Therefore it is important that the Council gets involved with trying to influence transport policy and planning. This role is undertaken at County level and SBDC contributes to Environmental Impact Assessments and work with the transport specialists in order to minimise the detrimental effects of transport on air quality.

In terms of air quality we have a good relationship with the County and Transport Planners. We contribute to the local transport plans and have a dynamic relationship, with support always prevalent. To this end, the Bucks Air Quality Management Group meets quarterly to ensure air quality issues remain a high priority for both the District and the County. We also have undertaken joint projects including the County website, publicity, school campaigns and extra monitoring.

### Local Transport Plan 2

The Transport Plan (LTP2) for Buckinghamshire has 'the environment' which includes air quality as one of its 4 key priorities. Innovative features such as air quality buffer zones were discussed. These allowed for an earlier indication of problem hot-spots, before they exceed the National standards.

They have provided a way to combat any worsening areas prior to them developing into AQMAs, allowing earlier action to be taken. It also features a number of measures that contribute to maintaining the good air quality throughout the District.

### Local Transport Plan 3

All local transport authorities are required to produce a Local Transport Plan and Buckinghamshire County Council is currently in the early stages of developing its next Local Transport Plan, LTP3. The Plan will set out how the County Council, and its partners, will respond to the transport challenges over the next 15 years.

The government has outlined five new strategic Goals and a set of related Challenges that the LTP needs to address:

- Support economic growth and competitiveness
- Tackle climate change
- Contribute to better safety, security and health
- Promote equality of opportunity
- Improve quality of life and the Built and Natural Environment

## 8 Climate Change Strategies

South Bucks District Council has two overlapping strategies to deliver on Sustainability and Climate Change, namely:-

- A South Bucks wide Energy Action Plan to meet local needs and changes across South Bucks Communities
- A Sustainability and Climate Change Action Plan which addresses broader social, economic and environmental issues on climate change.

The Council have concluded an *internal* Energy Action Plan to become more energy efficient, reducing costs and carbon. The Council reduced its carbon footprint over the past two years (2009/10 - 2010/11) by 16%. The Council is now following the Department of Environment and Climate Change (DEFRA) Carbon Emissions Reporting (DEFRA 2009) along with the majority of other local authorities which are excluded from the Carbon Reduction Commitment Energy Efficiency Scheme (CRC). A further five year energy efficiency implementation plan for the Council is being considered.

Key outcomes arising from the strategies and likely future energy efficiency plan can be summarised into three key areas: -

- Physical changes to buildings, reduced energy use through energy efficiency actions, along with the installation of renewable and low carbon energies across South Bucks which will save costs and cut carbon
- Behavioural changes through awareness raising of South Bucks staff, its partners and contractors and South Bucks businesses and communities to reduce energy locally, thereby reducing costs and cutting carbon
- Thinking ahead and avoiding climate risk through the development of a climate risk assessment on climate adaptation

## **9 Implementation of Action Plans**

Table 9.1 below shows progress on SBDC's AQMA action plan. It should be noted that some parts of the action plan were developed with Bucks County Council as part of the LTP. BCC are leading on many of these actions especially those relating to the County road network.



**Table 9.1 Action Plan Progress**

Ref	Measure	Description	Lead Org	AQ Impact	Timescale	Cost	Non-AQ Impact	Progress
SB1	Buckinghamshire and Milton Keynes Regional Air Quality Strategy (BMKAQS).	Work in partnership with members of the BAQMG to deliver the regional air quality strategy	BAQMG	High	Ongoing	££	CO <sub>2</sub> , partnership working, congestion	Strategy is being updated, due to be completed in 2010
SB2	Work in partnership with the Highways Agency (HA)	Work in partnership with the HA to address air quality issues on the motorways in South Bucks.	BCC SBDC	Med	Dec-08	£	Partnership working, CO <sub>2</sub> , noise	During 2009, the HA began the process of widening the section of the M25 where it passes through South Bucks District. This section of the M25 forms a significant part of SBDC's AQMA. It is hoped that free flowing traffic in this stretch will result in improvements in air quality.
SB3	Work in partnership to provide data for new National Indicators (NI194) on air quality (PM <sub>10</sub> , NOX) and climate change.	SBDC and BCC will work in partnership to provide data to inform the new national indicator set. Baselines need to be set by December 2008.	BCC SBDC	Low	Dec-08	£	CO <sub>2</sub> , Partnership	Baseline data was produced by 2008

Ref	Measure	Description	Lead Org	AQ Impact	Timescale	Cost	Non-AQ Impact	Progress
SB4	Work in partnership with the local PCT	Improve partnership working between the transport and LAQM authority and the PCT e.g. joint campaigns linking health and air quality issues.	BCC SBDC	Low	Dec-09	£	Partnership working	<p>BCC has been working with schools to promote the health and environmental (including air quality) benefits of sustainable travel. Each term, there is a 'Termly Theme' where all school travel planning activities during that period are based around a specific topic.</p> <p>There is a new project to deliver the concept of a 'Go Bucks' transport hub in Buckinghamshire. This will involve close partnership working with other providers/co-ordinators of transport services in Bucks and the need to look at what the private market is able to supply.</p>

Ref	Measure	Description	Lead Org	AQ Impact	Timescale	Cost	Non-AQ Impact	Progress
SB5	Buckinghamshire County Council Travel Plan	BCC will continue to implement measures to encourage employees to travel by low polluting modes of transport	BCC	Med	Ongoing	££	CO <sub>2</sub> , Increased accessibility	SBDC Introduced its own Green Travel Plan in 2009
SB6	Review Air Quality monitoring provision in the district, in order to ensure most effective coverage.	Review monitoring locations, discontinue monitoring at locations where NO <sub>x</sub> levels have been historically low, and monitor at new sites where air quality issues may be considered likely.	SBDC	Med	Ongoing	££		NO <sub>2</sub> tubes have been discontinued in a number of locations where levels have been historically low. No suitable new sites have yet been identified.
SB7	Publication of a residential design guide,	Residential design guide to encourage sustainable design and construction	SBDC	Low	Dec-08	£	CO <sub>2</sub>	The residential design guide has been published and is available via the SBDC website.
SB8	Planning referrals and air quality impact assessments	SBDC planning department will refer all applications where potential air quality issues are identified, to the Environmental Health Department. The Environmental Health Department may require developers to undertake an air quality impact assessment, if appropriate.	SBDC	High	Ongoing	£	Partnership working	Ongoing
SB9	Continue to apply to DEFRA for grant funding to maintain air quality monitoring equipment and data.	Apply annually for DEFRA funding for AQMS maintenance contract, data ratification contract, diffusion tube network etc.	SBDC	Low	Ongoing	£		£8617 was awarded to SBDC by DEFRA in 2010 for monitoring work.
SB10	Implement an EMAS system at SBDC	Implement the Eco-Management and Audit Scheme (EMAS)	SBDC	Low	2010	££	CO <sub>2</sub> ,	Implementation is at an advanced stage and expected to be

Ref	Measure	Description	Lead Org	AQ Impact	Timescale	Cost	Non-AQ Impact	Progress
								completed by March 2010
<b>SB1 1</b>	Clean Air Act and EPA enforcement	Provide improved information and advice to companies and residents about problems caused by bonfires, and enforcement action for breaches of the Clean Air Act and EPA. Update bonfire leaflets and website information.	SBDC	Med	Ongoing	££		SBDC continue to provide information on request and via our website. Update of air quality pages on website was undertaken during 2010
<b>SB1 2</b>	Air quality complaints and investigations	Continue to investigate nuisance complaints and monitor air quality within the district.	SBDC	Low	Ongoing	£££		The Pollution Team of SBDC's Environmental Health Department continues to investigate issues of statutory nuisance and other complaints relating to air quality.
<b>SB1 3</b>	Cleaner vehicles	SBDC will work closely with BCC to encourage the use of cleaner vehicle technologies. Encourage local companies to consider using cleaner fuel technologies by providing information packs on the benefits of switching to cleaner vehicles.	SBDC BCC	Low	2009	£££	CO <sub>2</sub>	Service provider Carousel continue to invest in a newer fleet of vehicles, specifically on the A40/740 routes within the district. This continues, as per last progress

Ref	Measure	Description	Lead Org	AQ Impact	Timescale	Cost	Non-AQ Impact	Progress
								update.
<b>SB1 4</b>	SBDC will seek to use the cleanest available technologies for vehicles undertaking its functions, where this does not impact upon the level of service provided.	With each new vehicle hire or purchase from 2007 and included as requirement in procurement policy from 2007	SBDC	Med	Ongoing	£££	CO <sub>2</sub>	
<b>SB1 5</b>	Smoky vehicle reporting forms	SBDC will provide Smoky vehicle reporting forms on our website and paper forms in libraries and Parish/District Council Offices. These forms can be returned to South Bucks District Council with details of a Smokey vehicle. The information will then be passed to VOSA who have regulatory powers to deal with Smoky vehicles.	SBDC	Low		£	CO <sub>2</sub>	Smoky Vehicle Reporting form is now available on the SBDC website.

Ref	Measure	Description	Lead Org	AQ Impact	Timescale	Cost	Non-AQ Impact	Progress
SB1 6	Heavy Goods Vehicle (HGV) emissions on the motorway network	SBDC & BCC will encourage the Highways Agency to investigate the potential impacts upon Heavy Duty Vehicle emissions from the proposed rapid widening scheme between junctions 16 to 23 of the M25. The Council will encourage the Highways Agency to take action to mitigate any potential adverse impact identified and to consider measures to reduce HDV emissions.	BCC SBDC HA	Med		£		M25 widening scheme now completed through South Bucks District. Work is continuing, extending the scheme through other areas.
SB1 7	HGV routing	SBDC will work in partnership with BCC to review HGV routes within the District to ensure that the routes used are not contributing to significant nitrogen dioxide emissions through unnecessary congestion and inappropriate routing.	SBDC BCC	Med		££	Noise	BCC has developed a draft freight strategy which will address the routing of freight vehicles when implemented as an action within the Local transport Plan 3 which is currently being developed.
SB1 8	Parking provision	SBDC will regularly review its parking provision. This will include development of a Civil Enforcement Area (CEA)	SBDC	Low		£		Enforcement carried out according to the powers granted under the Road Traffic Regulation Act 1984
SB1 9	Public transport promotion	SBDC and BCC will distribute leaflets providing information about public transport routes within the District and surrounding areas to businesses within the District with advice about formulating work place travel	SBDCBCC	Low		££	Accessibility	Updated information about public transport is now available via the SBDC

Ref	Measure	Description	Lead Org	AQ Impact	Timescale	Cost	Non-AQ Impact	Progress
		plans.						<p>website. In partnership with the service provider Carousel BCC have carried out extensive promotion of the A30 and A40/470. In addition a range of comprehensive timetable guides are produced and distributed for the South Bucks area on a frequent basis and these are also available from South Bucks District Council outlets</p> <p>A programme of improvements and upgrades have been undertaken of roadside timetable information and bus-stop flags in the Iver and Iver Heath area</p> <p>Service numbers 53 and 58 including Burnham. BCC produced a new combined South</p>

Ref	Measure	Description	Lead Org	AQ Impact	Timescale	Cost	Non-AQ Impact	Progress
								Bucks and Wycombe Travel guide in November 2010, which has been widely distributed in the area. BCC's promotion focuses on the nextBus real time information system. Roadside displays have been updated to include QR bar code readers, which take smart phone readers direct to the nextBus website.
<b>SB2 0</b>	SBDC Travel Plan (Oxford Road)	SBDC will develop a Travel Plan for the Council offices in Oxford Road.	SBDC	Med		££		SBDC Green Travel Plan implemented in 2009 and reviewed in 2010. SBDC joined Cyclescheme as part of the Green Travel Plan, and completed its first cycle purchase on behalf of a staff member in 2010.
<b>SB2 1</b>	Encourage energy efficiency in private homes	SBDC will continue to encourage energy efficiency in private homes by working with its partners to identify opportunities to seek	SBDC	Low		£££	CO <sub>2</sub>	Surveys undertaken on behalf of SBDC



Ref	Measure	Description	Lead Org	AQ Impact	Timescale	Cost	Non-AQ Impact	Progress
		additional resources, make strategic links and target the poorest households and properties. The Council will also raise awareness of the benefits of energy efficiency measures through advice, education and promotion.						by Energy Savings Trust
<b>SB2 2</b>	SBDC will promote mixed-use development, particularly in town centres.			Low		£	Accessibility	
<b>SB2 3</b>	Regulate the permitted processes under the Environmental Permitting (England and Wales) Regulations 2007	SBDC will continue to regulate the authorised processes under the Environmental Permitting (England and Wales) Regulations 2007 requiring operators to use Best Available Techniques to control the emissions of prescribed substances. The DEFRA recommended risk based inspection scheme will be operated to monitor compliance.	SBDC	High		££		SBDC permits approximately 35 processes under the above regulations, including 8 dry cleaners, 14 filling stations, and 2 vehicle resprayers, along with a number of cement batchers, and mobile crushers etc. SBDC continues to inspect these premises on a

Ref	Measure	Description	Lead Org	AQ Impact	Timescale	Cost	Non-AQ Impact	Progress
								regular basis, ensuring compliance with permit conditions and providing advice and guidance as required.
<b>SB2 4</b>	Real time monitoring of air quality	Information obtained from the real time monitoring of air quality at Tatling End will be made available on the SBDC website and through an Air Quality Bulletin produced in each edition of South Bucks Report.	SBDC	Low		£		A link to previous Review and Assessment reports is available on the SBDC website. These contain all ratified data available from the Air Quality Monitoring Station. It is not thought feasible to put real time information on the website, for technical reasons, and owing to data ratification issues.
<b>SB2 5</b>	Nitrogen dioxide and benzene tube network information	Information obtained from the nitrogen dioxide and benzene tube network will be made available on the SBDC website and through an Air Quality Bulletin produced in each edition of South Bucks Report	SBDC	Low		£		A link to previous Review and Assessment reports is available on the SBDC website. These contain all ratified data available from the

Ref	Measure	Description	Lead Org	AQ Impact	Timescale	Cost	Non-AQ Impact	Progress
								passive diffusion tube network.
SB2 6	MOT testing stations	SBDC will produce leaflets for MOT testing stations in the District to distribute with MOT certificates, emphasising the need for regular car maintenance.	BCC SBDC	Med		££		Leaflets were produced with the aid of a DEFRA grant, and sent off to local MOT stations and also some filling stations.

## **10 Conclusions and Proposed Actions**

### **10.1 Conclusions from New Monitoring Data**

The three diffusion tubes co-located at the Air Quality Monitoring Station, which is in the AQMA, showed an exceedence of the annual mean for NO<sub>2</sub>. The mean reading of the three tubes was 51.56 ug/m<sup>3</sup>, which was bias corrected down to 43.31 ug/m<sup>3</sup>. The automatic monitoring station showed an annual average of 41 ug/m<sup>3</sup>. Therefore SBDC does not plan to review the AQMA at this stage.

When the diffusion tube data were corrected for bias and relevant exposure, there were no other exceedences. Therefore no detailed assessments are required at present.

### **10.2 Conclusions relating to New Local Developments**

We are not currently aware of any new local developments which will require detailed assessments at present.

### **10.3 Other Conclusions**

Air quality in the district as a whole is generally good, with the motorways passing through the district being the main sources of significant pollution levels. Unfortunately, South Bucks District Council can do little to reduce pollution from the motorway, however, it is hoped that when the current project to widen the M25 between junctions 16 and 19 is complete, traffic will flow more freely along this section of motorway and emissions will therefore be reduced. However, conversely, it is possible that the volume of traffic increase in future years, which will increase pollution.

### **10.4 Proposed Actions**

Data for 2010 are broadly speaking, similar to 2009 data. Although there has been an increase in NO<sub>2</sub> levels at some sites, other sites have shown a decrease, and it is not really possible to spot any general trend.

There were 5 diffusion tubes which showed an exceedence of the annual mean in 2010, down from 7 in 2009. Of these, three form the co-location study at the automatic monitoring station. However, at all these sites, the relevant exposure is further away from the road than the tube site is, therefore there are no exceedences when the appropriate correction is applied. South Bucks District

Council therefore does not propose to move to a detailed assessment at any location.

The NO<sub>2</sub> level at the AQMA was slightly above the objective when measured by continuous monitoring. This showed a small increase compared with previous years. However, this could be accounted for, at least in part, by the M25 widening scheme, which has had the effect of bringing the carriageway of the M25 approximately 3.5m closer to the monitoring station. Furthermore, data capture was poor (81%) owing to problems resulting from the installation of a new analyser at the beginning of 2010. Therefore, any conclusions based on this data must be somewhat tentative.

The bias corrected diffusion tube data also showed an exceedence of the objective. Therefore it is not intended to change or revoke the AQMA at present. However, it is proposed to continue monitoring air quality in and around the AQMA to ensure that it remains appropriate. SBDC will submit a further progress report in 2012.

## 11 References

Air Pollution in the UK (2007) AEA on behalf of DEFRA and the Dissolved Administrations

- Air Quality (England) Regulations 2000 (SI 928)
- Air Quality (England) (Amendment) Regulations 2002 (SI 3043)
- Air Quality Strategy for England, Scotland, Wales and Northern Ireland (2007)
- South Bucks District Council (2004) Progress Report.
- South Bucks District Council (2005) Progress Report.
- South Bucks District Council (2006) Updating and Screening Assessment.
- South Bucks District Council (2008) Progress Report.
- South Bucks District Council (2009) Updating and Screening Assessment
- Part IV of the Environment Act (1995)
- Relevant Policy and Technical Guidance documents:
  - Technical Guidance LAQM.TG (09)
  - Policy Guidance LAQM.PG (09)

### Websites:

NAEI Data Warehouse - [http://www.naei.org.uk/data\\_warehouse.php](http://www.naei.org.uk/data_warehouse.php)

Review and Assessment Website - <http://www.uwe.ac.uk/aqm/review/>

UK Background Maps - <http://www.airquality.co.uk/archive/laqm/tools.php>

South Bucks District Council Website – <http://www.southbucks.gov.uk>

## Appendices

Appendix 1: QA/QC Data

Appendix 2: NO<sub>2</sub> diffusion tube results 2010

Appendix 3: Report of TRL air quality monitoring exercise at Beaconsfield Service Station.

## **Appendix 1: QA:QC Data**

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

South Bucks District Council uses NO<sub>2</sub> tubes prepared and analysed by Environmental Scientifics Group in Glasgow. The analysis method used is 20% TEA in water. The R and A Helpdesk Database gives a bias correction factor for this lab and analysis method of 0.84 for 2010.

#### **Factor from Local Co-location Studies (if available)**

Using our local co-location study, we calculated a bias correction factor of 0.78.

#### **Discussion of Choice of Factor to Use**

Two bias correction factors were available for use in 2010. The bias correction factor calculated from the spreadsheet on the air quality help desk website is 0.84. Our own local bias correction factor, calculated from the results of our co-location study, is 0.78.

Unfortunately, although triplicate tubes were deployed every month, analysis of all three tubes was only possible for 8 of the 12 months (ie 66%). Furthermore, because of problems with the installation of a new NO<sub>x</sub> analyser, at the beginning of the year, overall NO<sub>2</sub> data capture for 2010 was only 81%. In view of this, it was felt that the bias correction factor calculated from our local co-location was likely to be less reliable than the factor calculated from the air quality help desk website.

### **PM<sub>10</sub> Monitoring Adjustment**

PM<sub>10</sub> in the South Bucks District is monitored using TEOM. Data has been presented in this report which has been corrected using both the gravimetric correction factor of 1.3, and using the volatile correction model. The data corrected by the volatile correction model shows 4 exceedences of the daily mean objective, whereas data corrected by the gravimetric factor shows no exceedences. However, in practice, the choice of correction method makes little difference, as either way the the level was well below the AQ Objective.

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

All data from the South Bucks Gerrards Cross Air Quality Station are managed by external consultants (AEA) to quality procedures developed under the UK National Network. The data management processes represent best practice and fully meet the requirements set out in LAQM TG(09).

All data are screened and scaled (on the basis of site calibrations) and the final data sets presented within this report have benefited from a full process of data ratification, including through additional data quality checks that include site UKAS quality control audits and a final data ratification process that corrects data for instrument sensitivity drift between routine calibrations.

AEA also carry out a six monthly audit of the Air Quality Monitoring Station. The equipment is maintained by Air Monitors Ltd, of Tewkesbury, Glos. Calibrations are carried out approximately fortnightly.



**Appendix 2**

**Nitrogen Dioxide Passive Diffusion Tube Monitoring Results 2010**

		Grid Reference	SI Unit ug/m3												Average ug/m3	Converted via local correction factor (0.84)		
			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	60	68	41	52	30	17	C	28	37	43	33	56	42.16	35.42
2	Iver, Victoria Cres	Kerbside (and 100m adjacent M25)	504.056	180.901	58	65	51	72.2	37	30	30	30	42	42	45	56	46.50	39.06
3	Iver;High Street	Kerbside	503.688	181.229	67	61	42	62.7	34	34	28	28.4	37.9	40	38	55	43.94	36.91
4	New Denham, Oxford Rd	Kerbside	504.754	185.138	63	65	36	38	35	47	39	38	48	49	48	55	46.75	39.27
5	Denham Green, Nightingale way	Kerbside	503.678	188.192	43	39	30	52	21	24	18	19	26	29	34	39	31.25	26.25
6	GX Tatling End	Kerbside A40 (and 50m adjacent M25)	501.717	187.175	71	59	55	63	35	44	47	38	48	50	48	59	51.37	43.15
7	GX, Packhorse Rd	Kerbside	500.259	188.613	59	56	33	31	35	39	30	31	36	45	46	49	40.85	34.31
8	Fulmer Village	Kerbside	499.954	185.727	42	35	38	85	31	31	A	27	30	34	36	39	38.95	32.72
9	Wexham Black Park	Kerbside	500.518	184.244	31	31	18	45	19	17	14	18	19	21	24	27	23.63	19.85
11	Hedgerley Village	Kerbside	496.895	187.215	31	35	31	30	15	8	12	15	18	18	37	43	24.40	20.50
12	Farnham Common Beaconsfield Rd	Kerbside	496.095	185.599	47	42	35	43	43	33	29	31	37	38	53	A	39.24	32.96
13	Beac Station Rd	Kerbside	493.873	191.040	69	42	76	60	49	39	40	42	49	46	40	44	49.72	41.76
14	Beac A40	Kerbside (and 75m adjacent M40)	492.857	189.77	56	41	44	43	36	35	34	31	39	39	35	39	39.6	33.26
15	Burnham, high street	Kerbside	493.136	182.503	51	33	24	D	27	D	21	24	28	35	36	35	35.78	30.06
16	Taplow,police station	Kerbside A4	491.668	181.187	75	55	48	D	44	D	35	30	46	55	54	52	47.04	39.52
18	Air Quality Monitoring Station GX	Kerbside (Adjacent M25)	501.627	187.212	65	63	48	41	38	43	50	47	54	49	48	56	50.21	42.18
19	Air Quality Monitoring Station GX	Kerbside (Adjacent M25)	501.627	187.212	75	63	66	52	33	44	52	A	50	46	D	D	53.50	44.94
20	Air Quality Monitoring Station GX	Kerbside (Adjacent M25)	501.627	187.212	59	63	62	53	42	44	51	41	44	D	D	D	50.99	42.83

A=Tube not returned by client  
 B=Sample tube damaged  
 C=Sample tube contaminated  
 D=Sample lost during analysis

April 2011

South Bucks District Council

**Appendix 3. Report from TRL on Air Quality at the new Beaconsfield Service Station**



## Beaconsfield Services Air Quality Monitoring

TRL installed an air quality monitoring station on behalf of South Bucks District Council at Beaconsfield Services, Gerrards Cross, to continuously measure oxides of nitrogen (NO, NO<sub>2</sub> and NO<sub>x</sub>), and particulate concentrations (PM<sub>10</sub>).

This report covers data collected between 12<sup>th</sup> March 2010 and 22<sup>nd</sup> March 2011.



### UK Air Quality Objectives

Air quality standards and objectives are set out in the Air Quality (England) Regulations 2000 (as amended 2002) and the Air Quality Strategy (AQS). The limits contained within the AQS are based upon concentrations over a given period of time that are considered to be acceptable, in terms of the effects of each pollutant on human health. Table 1 outlines the Air Quality objectives for NO<sub>2</sub> and PM<sub>10</sub> as set out in the UK AQS published in July 2007.

**Table 1. Air Quality Strategy Objectives**

Objective	Compliance date
<b>UK objectives for NO<sub>2</sub> set in regulations</b>	
Hourly average concentration of 200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	31 December 2005
Annual mean of 40 µg/m <sup>3</sup>	31 December 2005
<b>UK objectives for NO<sub>x</sub> not set in regulations (vegetation based directives; targets met)</b>	
Annual average concentration of 30 µg/m <sup>3</sup>	31 December 2000
<b>UK objectives for Particles (PM<sub>10</sub>) set in regulations</b>	
24 hour running mean of 50 µg/m <sup>3</sup> not to be exceeded more than 35 times a year	31 December 2004
Annual mean concentration of 40 µg/m <sup>3</sup>	31 December 2004

**Results for hourly ratified NO<sub>x</sub> data at Beaconsfield Services (12/03/2010 to 22/03/2011)**

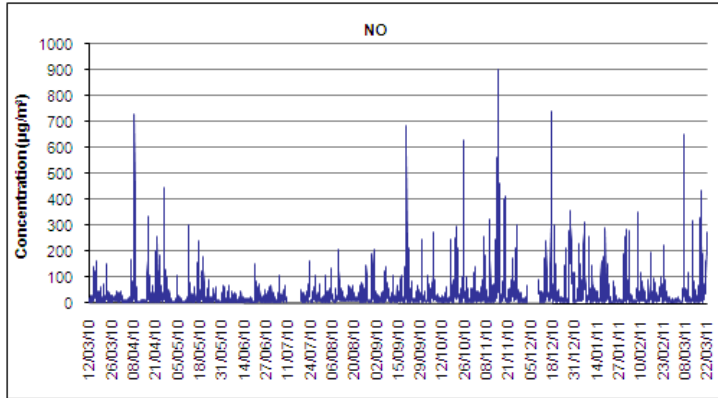


Figure 1: NO hourly data

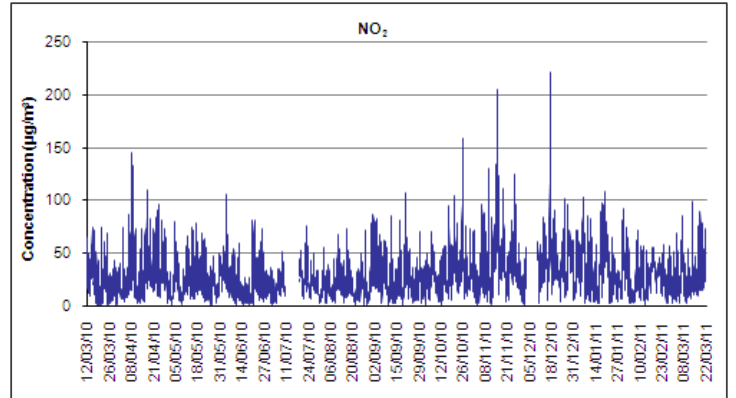


Figure 2: NO<sub>2</sub> hourly data

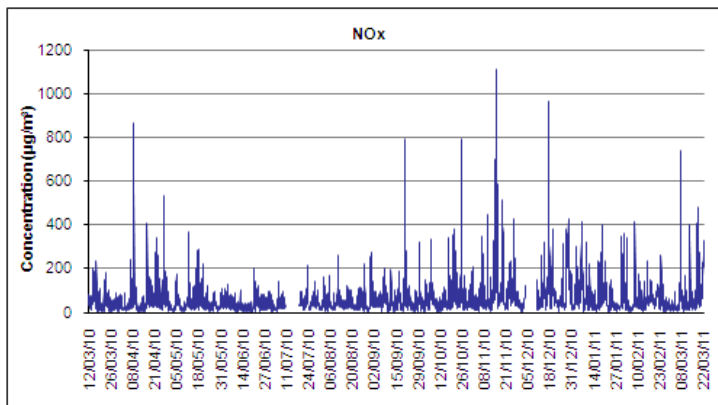


Figure 3: NO<sub>x</sub> hourly data

**Table 2. Statistics for oxides of nitrogen at Beaconsfield Services (hourly average)**

	NO	NO <sub>x</sub>	NO <sub>2</sub>
<b>NO<sub>2</sub> 1 hour mean objective (200 µg/m<sup>3</sup>, 18 exceedences/year)</b>	-	-	<b>2</b>
Minimum (µg/m <sup>3</sup> )	0.1	0.7	0.1
Average (µg/m <sup>3</sup> )	31.7	59.4	27.8
Standard deviation (µg/m <sup>3</sup> )	54.1	68.9	19.4
Median (µg/m <sup>3</sup> )	15.9	40.2	23.4
Maximum (µg/m <sup>3</sup> )	903.3	1108.1	221.4
Data capture (%)	95.2	95.2	95.2

**Results for PM<sub>10</sub> data at Beaconsfield Services (12/03/2010 to 22/03/2011)**

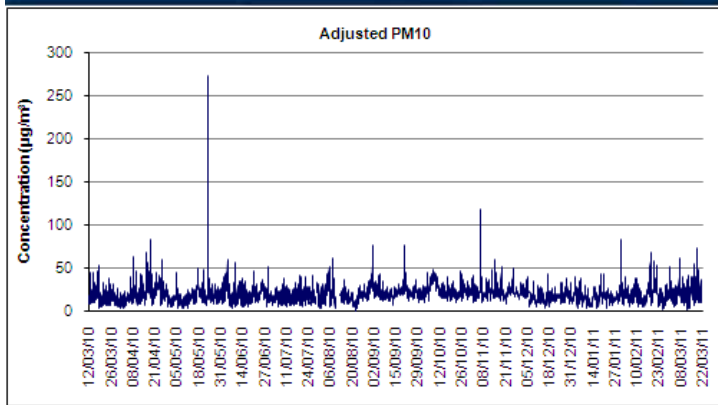


Figure 5: Adjusted PM<sub>10</sub> hourly data

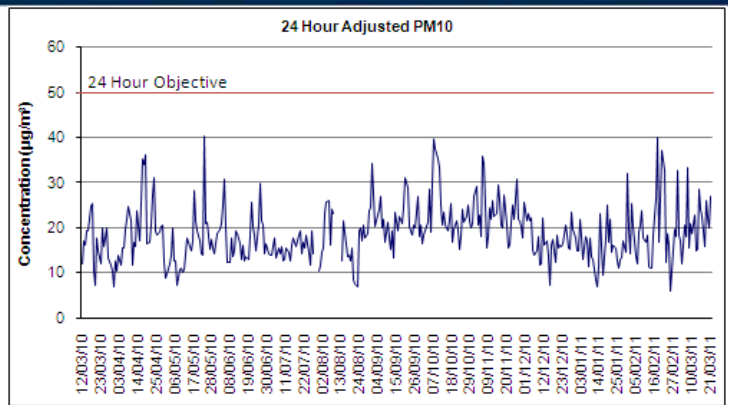


Figure 6: Adjusted PM<sub>10</sub> 24 hour average data

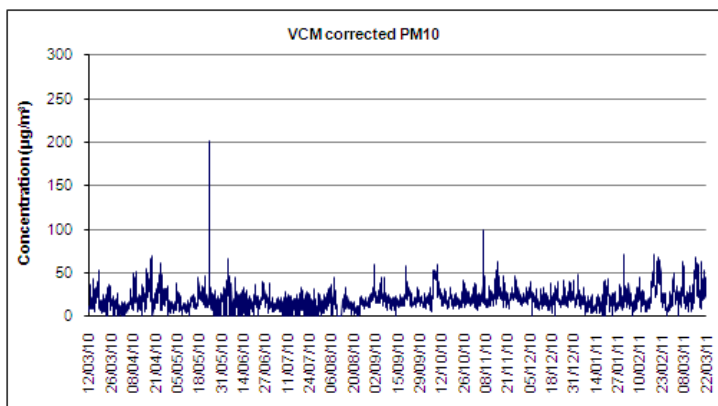


Figure 7: VCM Corrected PM<sub>10</sub> hourly data

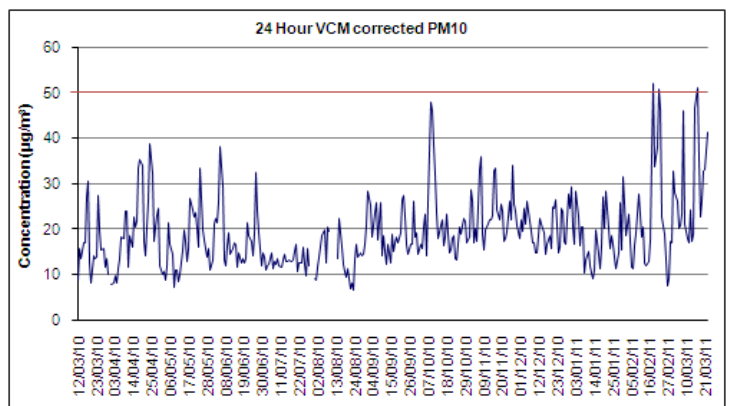


Figure 8: VCM Corrected PM<sub>10</sub> 24 hour average data

**Table 3. Statistics for PM<sub>10</sub> at Beaconsfield Services (24 hour average)**

	PM <sub>10</sub>	VCM PM <sub>10</sub>
<b>PM<sub>10</sub> 24 hour mean objective (50 µg/m<sup>3</sup>, 35 exceedences/year)</b>	<b>0</b>	<b>3</b>
Minimum (µg/m <sup>3</sup> )	5.9	6.6
Average (µg/m <sup>3</sup> )	18.9	19.3
Standard deviation (µg/m <sup>3</sup> )	6.1	7.8
Median (µg/m <sup>3</sup> )	18.2	17.7
Maximum (µg/m <sup>3</sup> )	40.4	51.9
Data capture (%)	98.7	98.4

## Discussion

Air quality monitoring began at the Beaconsfield Services site in March 2010. This is the full report and presents the data collected from 12<sup>th</sup> March 2010 to 22<sup>nd</sup> March 2011. In addition to this, the provisional calibrated and ratified data, on which the statistics in this report are based, have also been provided to South Bucks District Council.

The data capture rates during this period have been excellent, with rates of 95.2% for NO<sub>x</sub> and 98.7% for PM<sub>10</sub> being achieved.

As shown in Table, there have been 2 exceedences of the hourly NO<sub>2</sub> objective of 200 µg/m<sup>3</sup> over the monitoring period presented in this report, which is below the 18 exceedences per year allowed, and the mean NO<sub>2</sub> concentration of 27.8 µg/m<sup>3</sup> is below the annual mean objective limit of 40 µg/m<sup>3</sup>.

Figure 2 shows hourly values for NO<sub>2</sub> at the Beaconsfield Services site; the peaks and troughs experienced here compare well with other monitoring sites, including the AURN sites at Oxford St Ebbes, to the north west of Gerrards Cross, and Reading New Town, to the south west.

The VCM corrected PM<sub>10</sub> results in Table 3 show that there have been 3 exceedences of the PM<sub>10</sub> 24 hour mean objective of 50 µg/m<sup>3</sup> over the monitoring period, and the average PM<sub>10</sub> concentration of 19.3 µg/m<sup>3</sup> recorded at this site is lower than the annual mean objective of 40 µg/m<sup>3</sup>.

The peaks in PM<sub>10</sub> concentrations shown in Figures 6 and 8 were also experienced at the Oxford St Ebbes and Reading New Town automatic monitoring sites.