



2010 Air Quality Progress Report for *South Oxfordshire District Council*

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

April 2010

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Executive Summary

This progress report has shown that across the district there are no major changes in emissions from both the transport infrastructure and industrial sectors.

New monitoring data is showing no exceedences of the objectives for Benzene and the short-term, hourly mean objective for nitrogen dioxide, however a number of exceedences of the 40µg/m³ annual mean objective for nitrogen dioxide have been identified. The majority of these are within existing air quality management areas, where action plans and mitigation measures are being progressed.

However, two locations outside our current air quality management areas have shown an exceedence of the annual mean objective for nitrogen dioxide. Adwell Cottages adjacent to the M40 motorway has returned an annual mean figure of 44.0µg/m³ and a borderline level of 38.0µg/m³ has been recorded at 55 Broadway in Didcot.

The feedback from the Updating and Screening Assessment 2009 (which we received 13 Nov 2009) advised us to go to Detailed Assessment for both the Adwell and Didcot Broadway sites. Following discussions with the Air Quality Helpdesk we have increased the diffusion tube network at both locations and are seeking grant funding to install a continuous analyser on the Broadway in Didcot for a six month monitoring period.

A Defra Grant application for continuous monitoring equipment and the two detailed assessment will be submitted to Defra during the current round of funding in May 2010. If these applications are unsuccessful, we shall be placing raising an internal growth bid in September 2010 to fund these works in April 2011.

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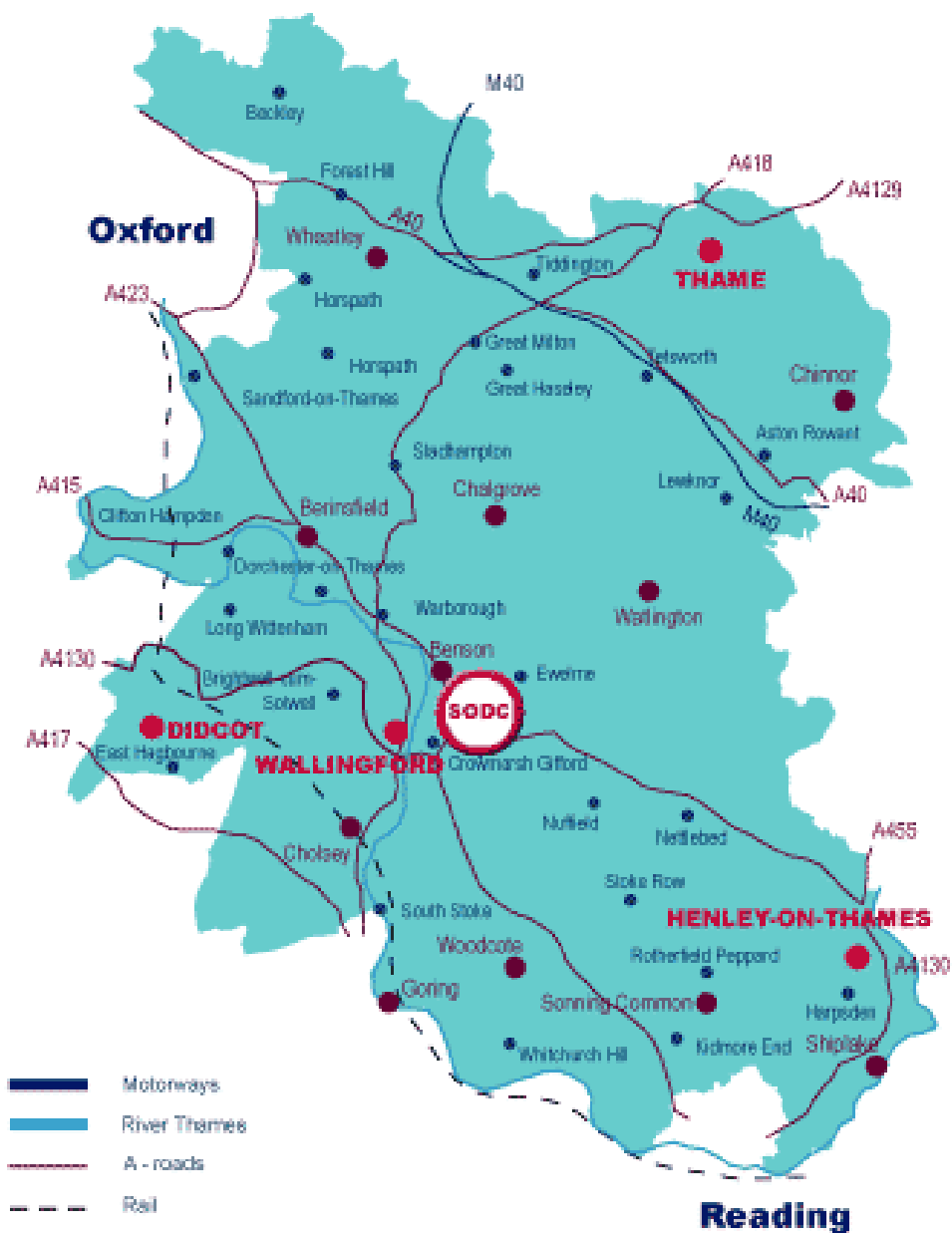
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1 Introduction

1.1 Description of Local Authority Area

South Oxfordshire is a relatively large rural district located to the south east of Oxford city. The district is made up of four main market towns namely Thame, Didcot, Wallingford and Henley-on-Thames and a number of smaller towns and villages. A small section of the M40 motorway crosses the district in the north and a handful of A roads link the major towns. There are very few industrial sources within in the District although Didcot power station is situated in the neighbouring Vale of White Horse District to the west of Didcot.

Figure 1.1 South Oxfordshire 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). 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, mg/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 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

Table 1.4 below lists the previous completed stages of LAQM completed, the relevant dates and gives a brief description of the conclusions and recommendations from each report.

Figures 1.5, 1.6 and 1.7 below show the areas covered by the current AQMA declarations.

Table 1.4 Previous completed stages of LAQM

Report	Date	Main Conclusions
Stage 1 Assessment	1998	Further assessment was required for CO, SO ₂ , PM ₁₀ and NO ₂ – focussing on M40 / A40 corridor and the towns of Didcot and Henley-on-Thames. Also further assessment was required for SO ₂ emissions from Didcot A power station and NO _x / NO ₂ emissions from gas-fired Didcot B power station.
Stage 2 Assessment	2000	For CO, PM ₁₀ and NO ₂ , road traffic was identified as the major emission source. DMRB assessment showed that exceedences were likely at a number of properties in Henley-on-Thames and along the M40 / A40 corridor. ADMS dispersion modelling was undertaken for Didcot power stations (A & B) which indicated that exceedences of the air quality objectives were unlikely.
Stage 3 Assessment	January 2002	Advanced dispersion modelling of pollutant emissions from road traffic showed that an exceedence of the 2005 NO ₂ objective could not be ruled out at a number of properties in Henley-on-Thames. No exceedences were identified at properties adjacent to the M40/A40. The Stage 3 report therefore recommended that an AQMA should be designated around Duke Street and suggested that further continuous NO _x /NO ₂ monitoring should take place in central Henley.
Stage 4 Assessment	November 2004	Modelling results, although comparative with the earlier Stage 3 assessment, did suggest that the area of NO ₂ annual mean exceedences was wider than predicted during the Stage 3 assessment. This owed partly to the increase in monitored concentrations in 2003, based on the year 2000 baseline used in the previous assessment. SODC reviewed the assessment and responded by enlarging the AQMA to include more of Bell Street, Market Place, Hart Street and Reading Road. (See Fig 1.5 below)
Updating & Screening Assessment	May 2003	The USA was based on a checklist whereby sources identified in the first phase of Review and Assessment and any new or altered emission sources, were reviewed with regard to their current significance and any requirement for further assessment. The USA concluded that based on monitored concentrations in Wallingford and close to the M40, a Detailed Assessment was required.
Detailed Assessment	August 2005	The Detailed Assessment involved the use of more sophisticated modelling and monitoring techniques and was used to determine whether the likelihood existed for the AQOs to be exceeded and the consequent need to declare or revise an AQMA. Through the application of detailed dispersion modelling, supported by local monitoring data, the Detailed Assessment concluded that the Council should consider declaring an AQMA in relation to annual mean NO ₂

		concentrations in Wallingford town centre. Predicted concentrations in close proximity to the M40 motorway were shown as likely to meet the AQOs in 2005. A Further Assessment would therefore follow AQMA designation for Wallingford. (See figure 1.6 below)
Progress Report	November 2005	Monitored concentrations of NO ₂ in Watlington were approaching the AQO. It was considered most appropriate for the Council to continue to evaluate the monitored concentrations for this location following analysis of the data for the 2005 calendar year. The Progress Report concluded that a Detailed Assessment was not required to be undertaken by the Council.
Further Assessment	July 2006	The Further Assessment provided an opportunity for the Council to revisit and revise if necessary, the conclusions from the Detailed Assessment (2004) in relation to the location and extent of the AQMA declared in Wallingford. It also formed the basis for the Council to develop an Action Plan to reduce emissions of nitrogen oxides (NO _x) from road traffic sources. The Further Assessment concluded that the Council should not revoke or amend the AQMA declaration at the current time and that they should proceed with the formulation of an Air Quality Action Plan with the aim of working towards meeting the annual mean NO ₂ Air Quality Objective concentration.
Updating & Screening Assessment	November 2006	The USA was based on a checklist whereby sources identified in the second round of Review and Assessment and any new or altered emission sources, were reviewed with regard to their current significance and any requirement for further assessment. The South Oxfordshire USA concluded that it was unlikely that a Detailed Assessment would be required for any potential source identified in the South Oxfordshire District. However, it noted that it was possible that with the availability of further data, the 2007 Progress Report may confirm that a Detailed Assessment is required for Watlington and/or Didcot.
Progress Report	May 2007	The progress report concluded that no further exceedences were considered likely for Carbon Monoxide, Benzene, 1, 3 Butadiene, Lead, Sulphur Dioxide and PM ₁₀ . However, a detailed assessment for NO ₂ should be carried out in the central area of Watlington. It was also reported that a number of initial traffic management schemes had been identified within Wallingford and a 'gating' scheme was to be trialled, with the action plan to follow.
Henley Air Quality Action Plan	May 2007	The Henley air quality action plan identified a number of measures to be introduced in Henley-on-Thames in pursuit of achieving the annual mean objective for NO ₂ . Including the introduction of an ITS scheme for the town, with a predicted 1.9µg/m ³ reduction predicted.
Detailed Assessment	July 2008	Through the application of detailed dispersion modelling, supported by local monitoring data, the Detailed Assessment concluded that the Council should consider declaring an AQMA in relation to annual mean NO ₂ in the Couching Street area of Watlington. (See figure 1.7 below)
Action Plan – Progress Report	May 2008	The action plan progress report updated the progress on all actions implemented under the action plan in Henley. The report concluded that the ITS scheme had almost been fully implemented. There were still exceedences of the NO ₂ annual mean; therefore, the action plan was to focus on HGV usage in the town as well as provision of parking.
Updating & Screening	May 2009	The USA concluded that no further exceedences were considered likely for Carbon Monoxide, Benzene, 1, 3 Butadiene, Lead, Sulphur Dioxide

Assessment		<p>and PM₁₀. However, a detailed assessment for NO₂ should be carried out along the Broadway in Didcot and at the Adwell Cottages (two cottages next to the M40).</p> <p>Further works were completed on the Henley AQAP, and traffic management scheme within Wallingford and a 'gating' scheme had been trialled.</p> <p>An AQMA was declared in the centre of Watlington 31 March 2009.</p>
Action Plan – Progress Report	January 2010	<p>The action plan progress report updated the progress on all actions implemented under the action plan in Henley. The report concluded that the ITS scheme had almost been fully implemented. There were still exceedences of the NO₂ annual mean; therefore, the action plan was to focus on reviewing the SCOOT traffic management system in the town as well as provision of parking/signage.</p>
Further Assessment (Watlington)	March 2010	<p>Retain the existing AQMA and undertake consultation on the findings arising from this report with the statutory and other consultees as required.</p> <p>Extend its monitoring into Brook Street to check the findings of this report and amend the AQMA, as necessary.</p> <p>Use the results of the source apportionment work in this report to identify potential actions that will enable the Council to work towards improving air quality.</p> <p>Maintain the current NO₂ monitoring capability within the Watlington AQMA.</p>

Figure 1.5 Map of enlarged Henley AQMA

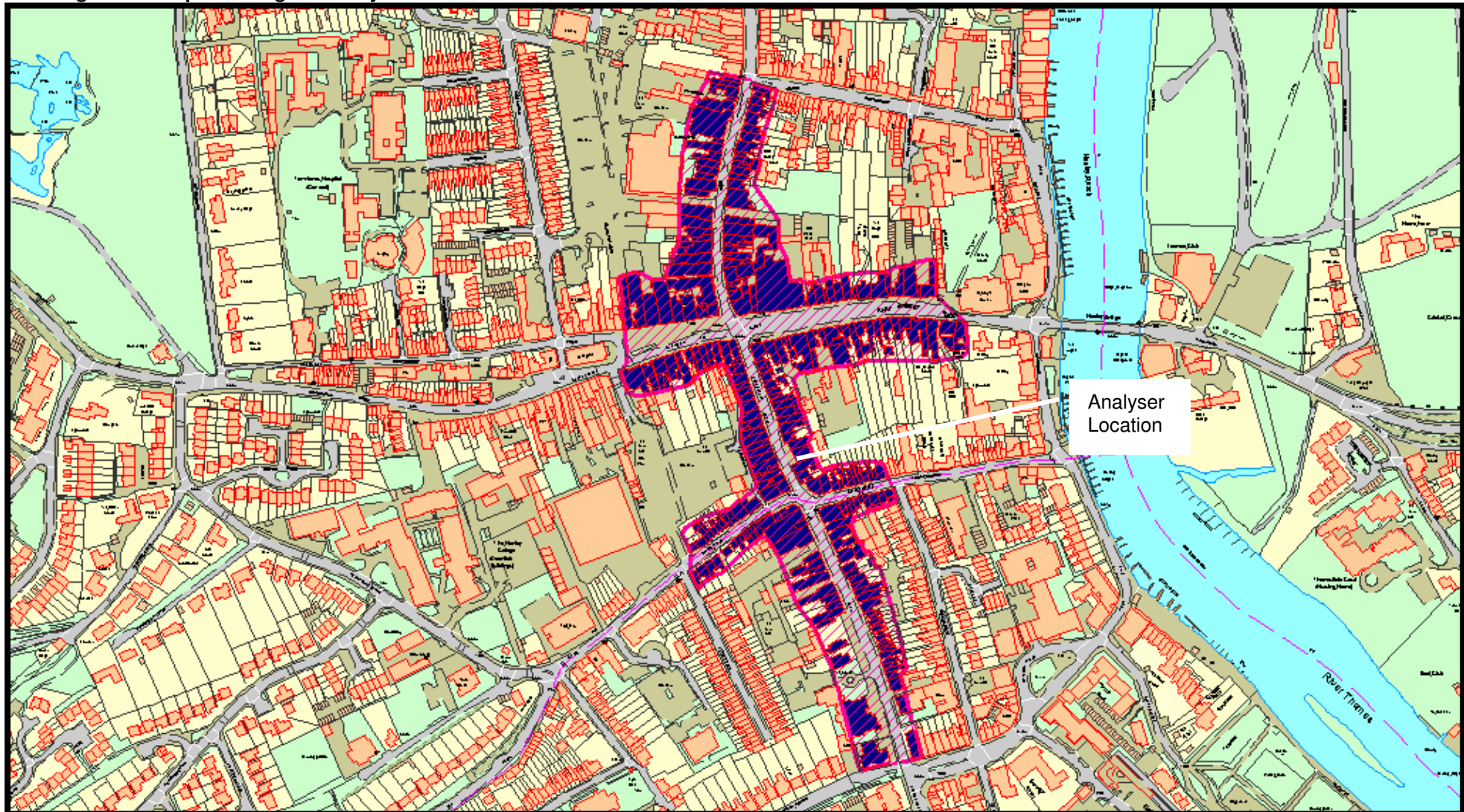


Figure 1.6 Map Wallingford AQMA

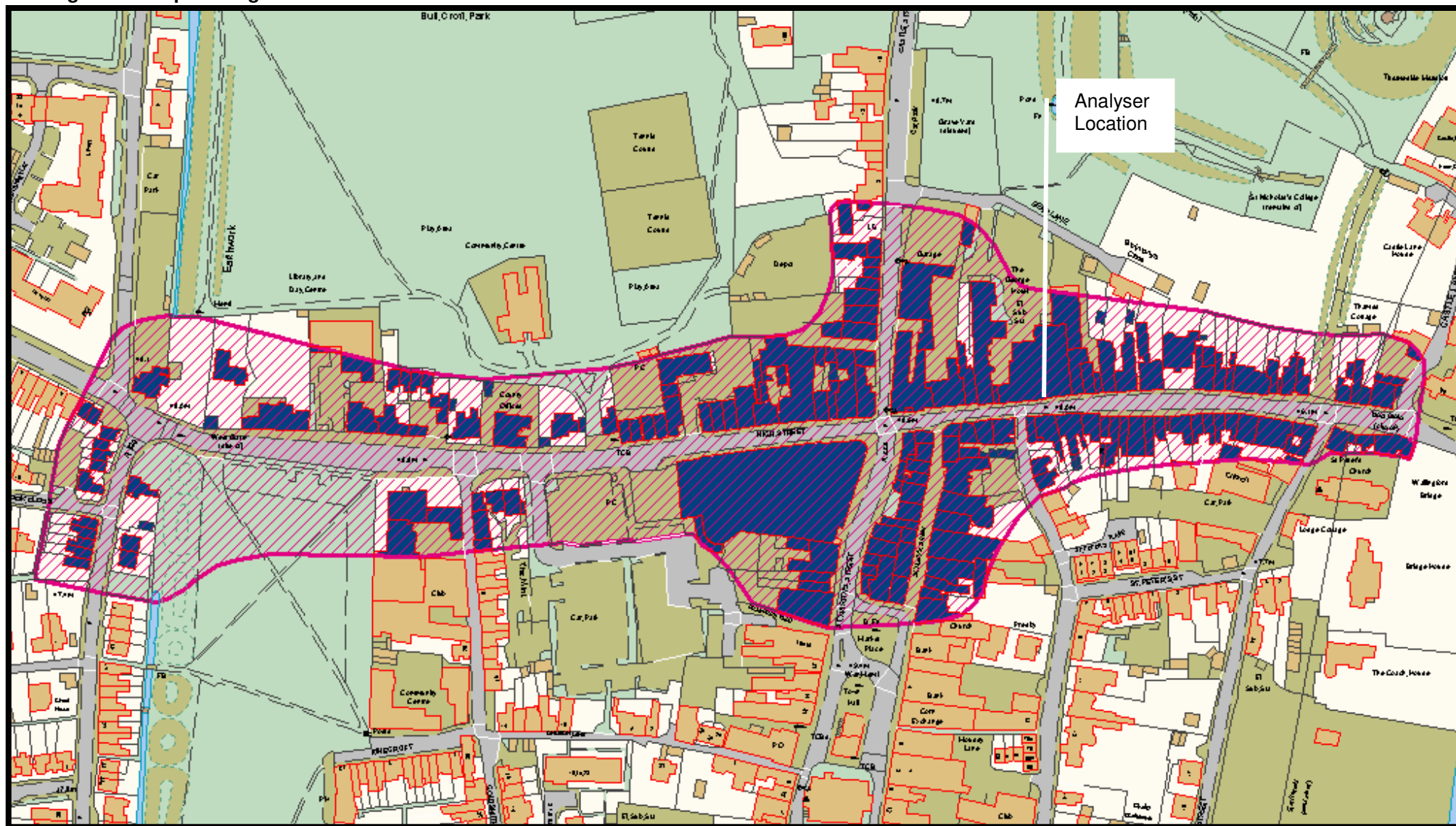
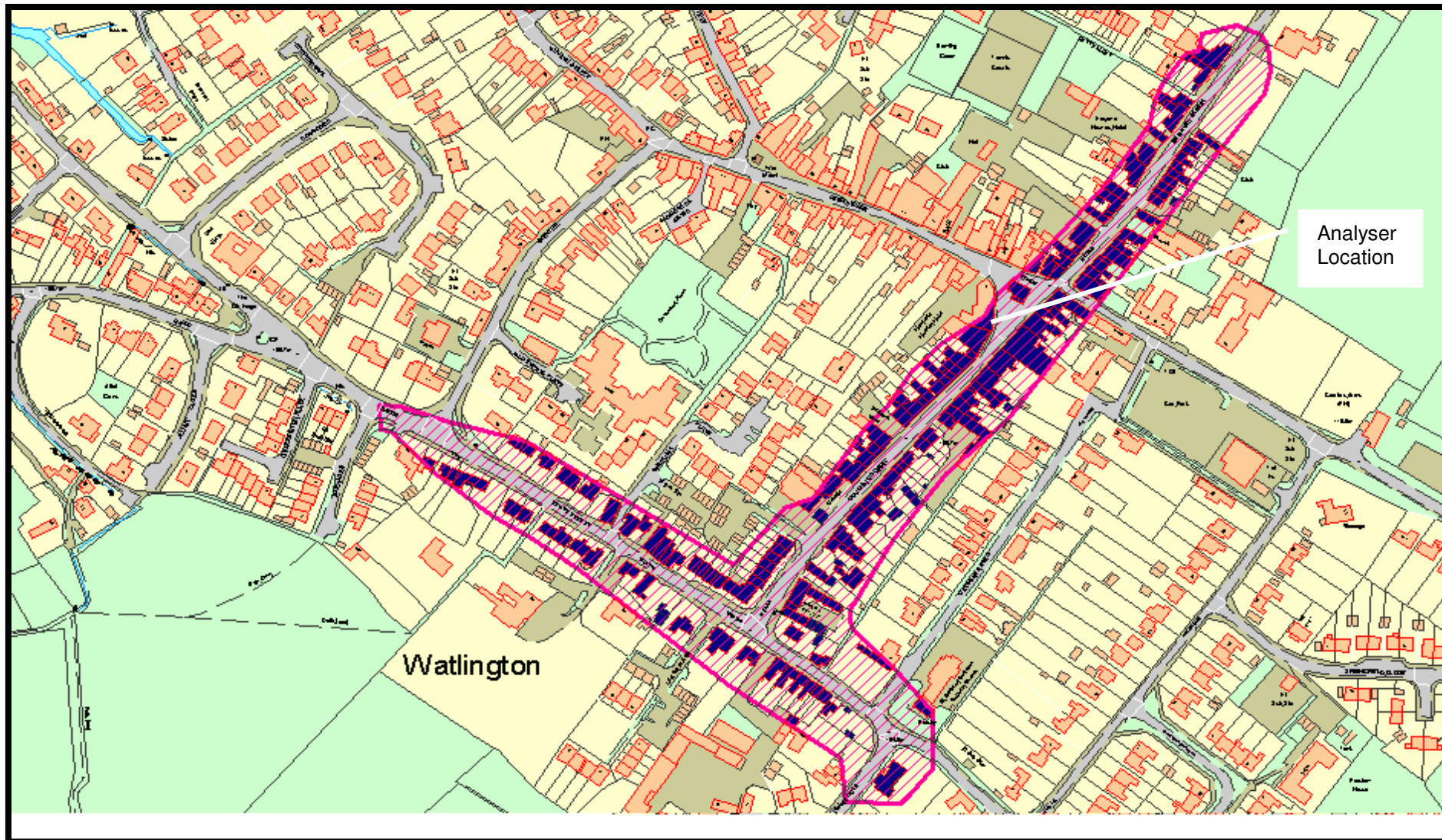


Figure 1.7 Map Watlington AQMA



2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

South Oxfordshire District Council currently operates three continuous monitoring sites. All sites are calibrated fortnightly by the LSO following Defra AURN network calibration procedures using certified calibration gasses. The location of these analysers within our three AQMA's is shown on the maps above.

All three sites are subject to six monthly audits carried out by the National Physics Laboratory (NPL) and the data is validated and ratified by the Environmental Research Group (ERG) based at Kings College London.

A dedicated supporting unit is also employed for each site, responding to equipment breakdowns and scheduled maintenance and servicing.

Table 2.1 below provides the basic details of each site

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	Monitoring Technique	In AQMA?	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?
Wallingford 83 High Street	Urban Kerbside	X460800	Y189500	NO ₂	chemiluminescent	Y	Y (1m)	1.2m	Y
Henley 45 Duke Street	Urban Roadside	X 476116	Y182531	NO ₂	chemiluminescent	Y	Y (2m)	3.5m	Y
Watlington 44 Couching Street	Urban Kerbside	X468951	Y194457	NO ₂	chemiluminescent	Y	Y (1m)	2.2m	Y

2.1.2 Non-Automatic Monitoring

In addition to the three continuous monitoring sites, South Oxfordshire District Council also operates a passive monitoring network made up of 42 Nitrogen Dioxide diffusion tubes and 2 BTX diffusion tubes.

Diffusion Tube QA/QC

All diffusion tubes are supplied and analysed by Bristol Scientific Services, using 50µl of 20% triethanolamine (TEA) in water preparation method. Preparation is carried out in line with procedures set out in the 'Diffusion Tubes for Ambient NO₂ Monitoring: Practical guidance' published by AEA Energy & Environment in Feb 2008. Results from the 2009 field trial QC data from NETCEN and the WASP (workplace Analysis Scheme for Proficiency) Scheme are included in **Appendix A**.

Diffusion tube monitoring is an indicative method and the tubes tend to over or under read to a certain extent. It is therefore necessary to apply a correction (bias adjustment) factor to the results to counter the percentage over/under read.

Bias adjustment factors are calculated by locating diffusion tubes, usually in triplicate, with continuous chemiluminescent analysers, thus allowing the comparison of the tube results to the more robust reference method.

A triplicate co-location study is carried out at each of the three continuous monitoring sites Wallingford, Watlington and Henley. All three sites are located within an AQMA within a street canyon situation, and are representative of the local diffusion network.

In addition to local bias adjustment factors, there is also a national bias adjustment factor available, this is found on the national database and is derived from the average bias from all listed local authorities using the same laboratory and preparation technique. TG09 lays out guidance as to scenarios when use of the local or national factors is more appropriate.

2009 Bias Adjustment Factor

The WASP field trial returned an adjustment factor of 0.86 and the NETCEN field trial returned an adjustment factor of 0.85, which are both very different to locally derived factor. Therefore, it is deemed in this case that the locally derived bias adjustment factor is more representative.

As stated above a fault with the analyser at the Wallingford automatic site has resulted in data capture of only 65% for 2009, obviously making it unsuitable for deriving a bias adjustment factor.

The January 2010 NPL audit found a converter efficiency of only 85% for the Henley analyser. The CEN standards state that all data logged with a CE below 95% should be excluded. Therefore, all data from the previous intervention (a service in November 2009) to the date of the fix (25 Jan 2010) has been excluded.

Following the TG09 guidance, the bias adjustment factor derived from the co-location study at Watlington has been deemed the most appropriate.

The different bias adjustment factors are listed in Table 2.3 below.

Table 2.3 – Bias Adjustment Factors

Co-location study	No. of months based upon	Continuous analyser annual data capture	Bias	Bias adjustment factor
NETCEN trial	12 Months	99%	18%	0.85
Henley	12 Months	75%	9%	0.91
Watlington	12 Months	96%	3%	0.97

Table 2.2 below shows the site information for each tube

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	In AQMA?	Relevant Exposure?	Distance to kerb of nearest road	Worst-case Location?
Henley - 66c Bell Street	Urban Roadside	X 476088	Y 182894	NO ₂	N	Y (1m)	2m	Y
Henley – 37 New Street	Urban Roadside	X 476221	Y 182829	NO ₂	N	Y (1m)	2m	Y
Henley – Northfield End	Urban Roadside	X 475870	Y 183217	NO ₂	N	Y (3m)	2m	Y
Henley – Station Road	Urban Roadside	X 476287	Y 182288	NO ₂	N	Y (6m)	2m	Y
Henley – 178 Reading Road	Urban Roadside	X 476549	Y 181734	NO ₂	N	Y (1m)	3m	Y
Henley – Reading Road / St Andrews Road	Urban Kerbside	X 476266	Y 182097	NO ₂	N	Y (9m)	1m	Y
Henley – 35 Reading Road	Urban Roadside	X 476175	Y 182397	NO ₂	Y	Y (3m)	2m	Y
Henley – 8 Reading Road	Urban Roadside	X 476131	Y 182457	NO ₂	Y	Y (1m)	9m	Y
Henley – 2 Greys Road	Urban Kerbside	X 476113	Y 182508	NO ₂	Y	Y (1m)	1m	Y
Henley – 45 Duke Street (Co-location)	Urban Roadside	X 476116	Y 182531	NO ₂	Y	Y (2m)	4m	Y
Henley – 4 Duke Street	Urban Kerbside	X 476075	Y 182614	NO ₂	Y	Y (1m)	2m	Y

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	In AQMA?	Relevant Exposure?	Distance to kerb of nearest road	Worst-case Location?
Henley – 4 Duke Street	Urban Kerbside	X 476075	Y 182614	NO ₂	Y	Y (1m)	2m	Y
Henley – Café Uno, Hart Street	Urban Roadside	X 476224	Y 182651	NO ₂	Y	Y (1m)	2m	Y
Henley – 27 Market Place	Urban Roadside	X 475999	Y 182615	NO ₂	Y	Y (1m)	3m	Y
Henley – 15 Lovell Close	Urban Background	X 475110	Y 181508	NO ₂ , BTX	N	Y (14m)	2m residential	N
Henley 31 Duke Street	Urban Roadside	X 476104	Y 182559	BTX	Y	Y (1m)	2m	Y
Henley – Townlands Hospital	Urban Background	X 475776	Y 182772	NO ₂	N	Y (10m)	N/A	N
Henley – 31 Bell Street	Urban Roadside	X 476050	Y 182743	NO ₂	Y	Y (1m)	2m	Y
Wallingford – 9 Station Road	Urban Roadside	X 460313	Y 189535	NO ₂	N	Y (1m)	3m	Y
Wallingford – 51a high Street	Urban Roadside	X 460462	Y 189487	NO ₂	Y	Y (1m)	4m	Y
Wallingford – Welcome Chinese 79 High Street	Urban Roadside	X 460706	Y 189491	NO ₂	Y	Y (1m)	2m	Y

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	In AQMA?	Relevant Exposure?	Distance to kerb of nearest road	Worst-case Location?
Wallingford – Stafford House 12 castle Street	Urban Roadside	X 460729	Y 189611	NO ₂	N	Y (1m)	2m	Y
Wallingford – Jumpers 24 Market Place	Urban Roadside	X 460738	Y 189411	NO ₂	Y	Y (1m)	2m	Y
Wallingford – 59 Brookmead Drive	Urban Background	X 460283	Y 188808	NO ₂	N	Y (16m)	1m residential	N
Wallingford – USA Chicken 6 St Martins Street	Urban Roadside	X 460692	Y 189339	NO ₂	N	Y (1m)	2m	Y
Wallingford – George Hotel, 83 High Street (Co-Location)	Urban Roadside	X 460800	Y 189500	NO ₂	Y	Y (1m)	2m	Y
Wallingford – 20 high Street	Urban Roadside	X 460822	Y 189493	NO ₂	Y	Y (1m)	1m	Y
Wallingford – The Town Arms, 102 High Street	Urban Roadside	X 461938	Y 189497	NO ₂	Y	Y (1m)	2m	Y
Wallingford – 28 The Street, Crowmarsh	Urban Roadside	X 461397	Y 189301	NO ₂	N	Y (1m)	3m	Y
Wallingford – 58 The Street, Crowmarsh	Urban Roadside	X 460560	Y 189233	NO ₂	N	Y (1m)	2m	Y

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	In AQMA?	Relevant Exposure?	Distance to kerb of nearest road	Worst-case Location?
Watlington – 8 Sherburn Street	Urban Roadside	X 469017	Y 194514	NO ₂	Y	Y (1m)	3m	Y
Watlington – 41 Couching Street (Co-location)	Urban Roadside	X 468951	Y 194457	NO ₂	Y	Y (1m)	2m	Y
Watlington – Co-op, 48 Couching Street	Urban Roadside	X 468962	Y 194458	NO ₂	Y	Y (1m)	2m	Y
Watlington – 9 Couching Street	Urban Roadside	X 468849	Y 194340	NO ₂	Y	Y (3m)	2m	Y
Didcot – 20 Wantage Road	Urban Roadside	X 451780	Y 189920	NO ₂	N	Y (9m)	1m	Y
Didcot – 100 Park Road	Urban Roadside	X 451653	Y 189384	NO ₂	N	Y (15m)	1m	Y
Didcot – 96 Broadway	Urban Roadside	X 452908	Y 189982	NO ₂	N	Y (1m)	3m	Y
Didcot – 55 Broadway	Urban Roadside	X 453099	Y 190031	NO ₂	N	Y (4m)	3m	Y
Didcot – Lune Close	Urban Background	X 453500	Y 190384	NO ₂	N	Y (2m)	2m Residential	N
Thame – 16 Ludlow Drive	Urban Background	X 471283	Y 205978	NO ₂	N	Y (6m)	2m Residential	N

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?
Thame – 16 Park Street	Urban Roadside	X 471010	Y 205598	NO ₂	N	Y (4m)	2m	Y
Wheatley – 37 Beech Road	Urban Background	X 459867	Y 205447	NO ₂	N	Y (16m)	2m Residential	N
Wheatley – 50 High Street	Urban Roadside	X 459533	Y 205740	NO ₂	N	Y (1m)	1m	Y
M40 – 9 Adwell Cottages	Urban Roadside	X 470200	Y 200197	NO ₂	N	Y (1m)	15m Motorway	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

The monitoring data below shows a number of exceedences for nitrogen dioxide within our three AQMA's and at two other locations within the district. These are discussed in further detail in the relevant sections below.

Automatic Monitoring Data

Tables 2.3a and 2.3b below show the previous three years data (if available) for continuous monitoring sites. Table 2.3a shows any exceedences of the annual mean objective and table 2.3b shows any exceedences of the hourly mean objective.

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 %	Data Capture for full calendar year 2009 %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
					2007	2008	2009 ^c
OX1	Henley-on-Thames	Y	-	75	44	47	38
OX2	Wallingford	Y	-	65	57	44 [†]	53*
OX3	Watlington	Y	-	96	-	47	50

*Due to the analyser only producing reliable data from 21 May – 31 Dec 2009.

[†] Due to a technical fault with the Wallingford analyser's air conditioning unit in 2008, the data capture rate is very low (24%).

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 ^a %	Data Capture for full calendar year 2009 ^b %	Number of Exceedences of hourly mean ($200 \mu\text{g}/\text{m}^3$)		
					2007 ^c	2008 ^c	2009
OX1	Henley-on-Thames	Y	-	75	0	3	0
OX2	Wallingford	Y	-	65	71*	0	17 [§]
OX3	Watlington	Y	-	96	2	6	2

*Mainly occurred in one period in April 2008 – Thought to be a fault with the analyser, however diagnostics are unable for this period to verify this conclusively.

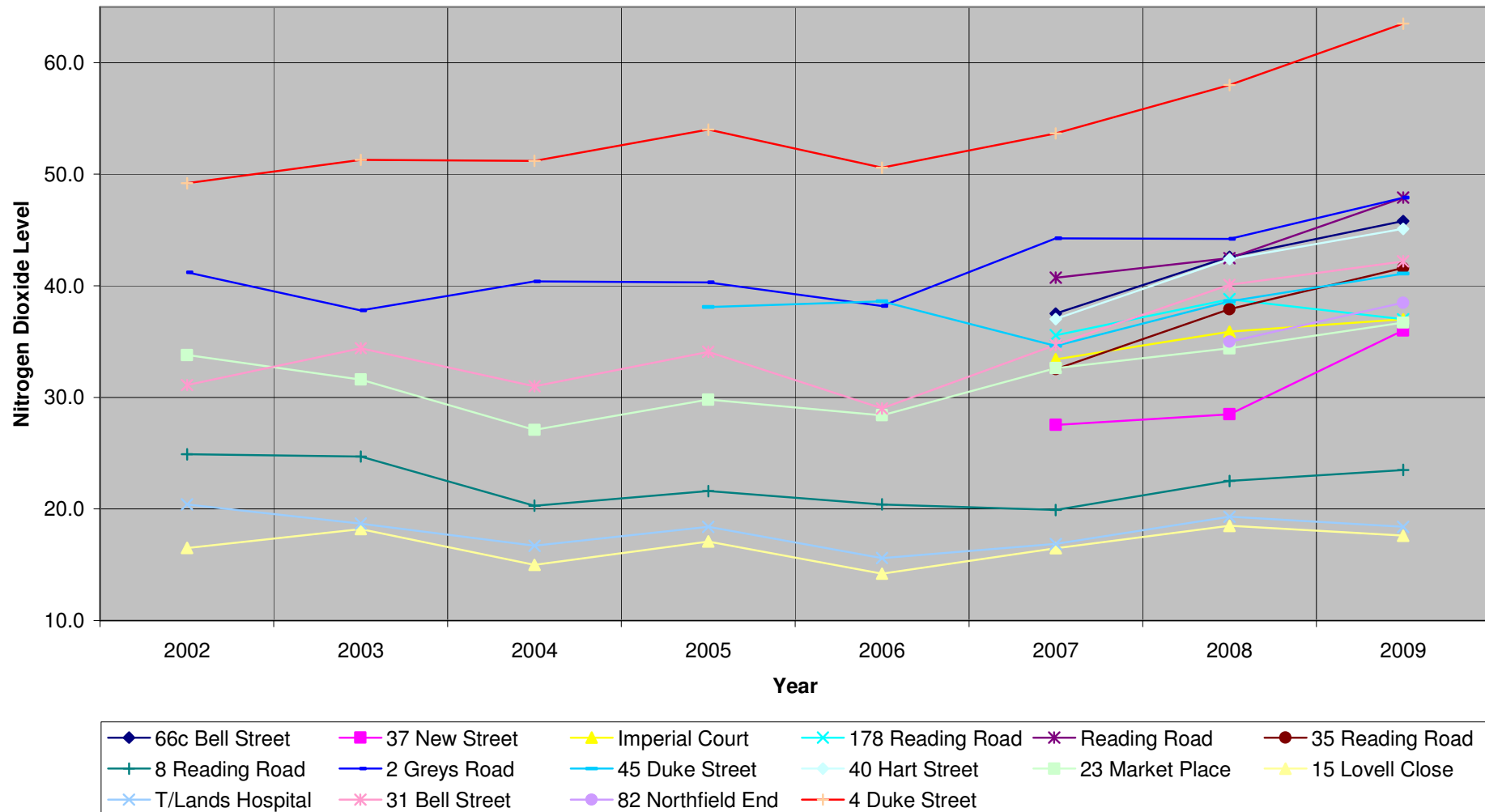
[§] Exceedences all take place within a short period of Sunday 27th Sep and Friday 2nd Oct 2009. This is expected to be due to essential road works/temporary traffic lights.

Two of the three continuous monitoring site within the three declared AQMA's have shown exceedences of the annual mean concentration for NO_2 .

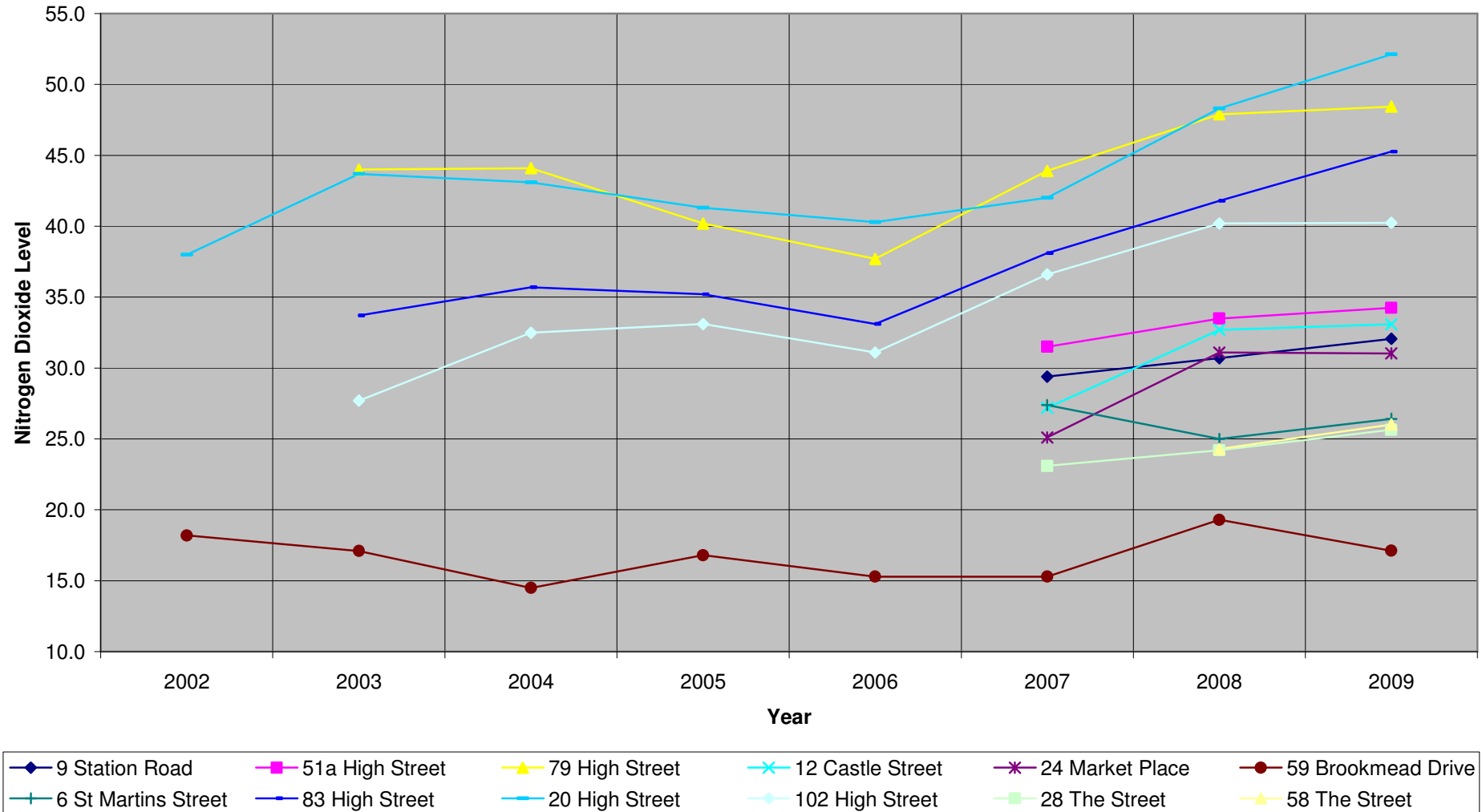
The 2009 data shows that none of the continuous monitoring sites are recording an exceedence of the hourly mean objective. All three continuous monitoring sites represent relevant receptor locations and are within existing air quality management areas, where action plans and mitigation measures are currently being progressed.

Figure 2.4 Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites (Henley, Wallingford and Watlington).

Henley Diffusion Tube Nitrogen Dioxide Trend



Wallingford Diffusion Tube Nitrogen Dioxide Trend



Watlington Diffusion Tube Nitrogen Dioxide Trends

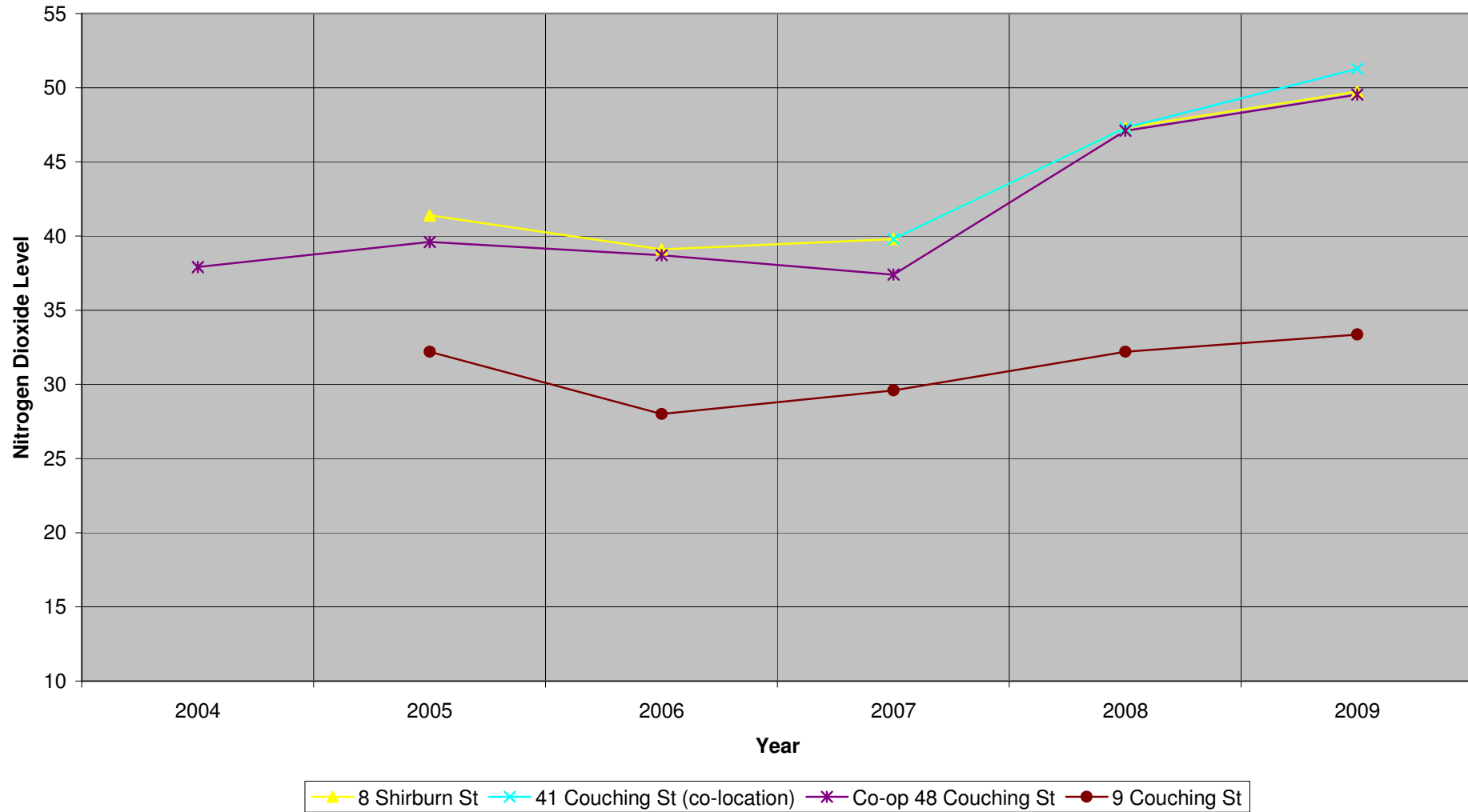


Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Data Capture for full calendar year 2009 %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
				2007	2008	2009
Henley	66C Bell Street	N	100	37.5	42.6	45.8
Henley	37 New Street	N	100	27.6	28.5	36.0
Henley	Northfield End	N	92	-	35.0	38.5
Henley	Station Road	N	100	33.4	35.9	37.0
Henley	178 Reading Road	N	100	35.6	38.8	37.0
Henley	Reading Rd / St And Rd	N	100	40.7	42.5	47.9
Henley	35 Reading Road	Y	92	32.5	37.9	41.6
Henley	8 Reading Road	Y	100	19.9	22.5	23.5
Henley	2 Greys Road	Y	92	44.3	44.2	47.9
Henley	45 Duke Street (Co-location)	Y	100	34.6	38.6	41.1
Henley	4 Duke Street	Y	100	53.7	58.0	63.5
Henley	Café Uno, Hart Street	Y	100	37.0	42.4	45.1
Henley	27 Market Place	Y	92	32.6	34.4	36.7
Henley	15 Lovell Close	N	100	16.5	18.5	17.6
Henley	Townlands Hospital, York Road	N	100	16.9	19.3	18.4
Henley	31 Bell Street	Y	100	34.7	40.1	42.2
Wallingford	9 Station Road	N	100	29.4	30.7	32.1
Wallingford	51a High Street	Y	100	31.5	33.5	34.3
Wallingford	Welcome Chinese, 7 High St	Y	100	43.9	47.9	48.4
Wallingford	Stafford House, 12 Castle St	N	100	27.2	32.7	33.1
Wallingford	Jumpers, 24 Market Place	N	100	25.1	31.1	31.0
Wallingford	59 Brookmead Drive	N	92	15.3	19.3	17.1
Wallingford	USA Chicken, 6 St Martins St	N	100	27.4	25.0	26.4
Wallingford	George Hotel (Co-location)	Y	100	38.1	41.8	45.3
Wallingford	20 High Street	Y	100	42.0	48.3	52.1
Wallingford	The Town Arms, 10 High St	Y	100	36.6	40.2	40.2
Wallingford	28 The Street, Crowmarsh	N	83	23.1	24.2	25.6
Wallingford	58 The Street, Crowmarsh	N	100	-	24.3	26.0
Watlington	8 Shirburn Street	Y	100	39.8	47.3	49.7
Watlington	41 Couching Street (Co-location)	Y	100	39.8	47.3	51.3
Watlington	Co-op, 48 Couching Street	Y	100	37.4	47.1	49.5
Watlington	9 Couching Street	Y	100	29.6	32.2	33.4

Site ID	Location	Within AQMA?	Data Capture for full calendar year 2009 %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
				2007	2008	2009
Didcot	20 Wantage Road	N	100	28.0	35.1	30.6
Didcot	100 Park Road	N	92	27.2	25.2	24.7
Didcot	55 Broadway	N	100	38.0	40.6	38.0
Didcot	96 Broadway	N	100	36.0	39.2	37.7
Didcot	Lune Close	N	100	19.4	25.0	23.8
Thame	1 Ludlow Drive	N	100	16.7	19.1	19.4
Thame	16 Park Street	N	100	27.0	28.8	30.9
Wheatley	37 Beech Road	N	100	18.6	21.2	21.6
Wheatley	50 High Street	N	100	28.0	30.4	30.9
M40	9 Adwell Cottages	N	100	37.1	40.2	44.0

* Bias adjustment factors:
 2009 – 0.97
 2008 – 0.94
 2007 – 0.80

The 2009 data has shown an increase at the majority of monitoring locations within or close to the declared AQMA's, but shows reductions in background sites.

This 2009 data shows an exceedence of the $40\mu\text{g}/\text{m}^3$ nitrogen dioxide annual mean objective at 16 locations, with a further two sites returning borderline results. Of the 16 exceedences, 13 are within existing AQMA declarations. The three sites showing an exceedence not currently within an AQMA are 66c Bell Street and Reading Road / St Andrews Road in Henley and Adwell Cottages adjacent to the M40 motorway.

Of the borderline levels there are two currently outside of an AQMA designation: Northfield End in Henley and 55 Broadway in Didcot.

Henley

2009 levels outside 66c Bell Street have risen again on levels from 2008 to $45.8\mu\text{g}/\text{m}^3$ which is showing an exceedence are located just outside of the AQMA boundary, indicating the boundary will need to be adjusted. Neither location showed an exceedence in 2007, but data in 2008 and 2009 has shown an exceedence in the annual mean.

Levels at 178 Reading Road have dropped and due to the fact that this location is situated approximately 9 metres away from the façade of the nearest residential property, is not felt to be a problem.

Wallingford

Wallingford's continuous analyser data shows a very poor capture rate due to further problems with the analyser. This housing was replaced in late 2008, but we were still having problems with the analyser. These analyser problems were finally rectified in May 2009, and the Defra air quality grant funded new analyser was installed in Jan 2010. Four of the diffusion tube locations show exceedences of the annual mean within the AQMA, these are marginally higher than those measured for 2008.

Watlington

An AQMA was declared on 31 March 2009. Watlington analyser has performed very well throughout 2009 with a 96% data capture rate, with continuous analyser data and results from the diffusion tubes showing exceedences in the annual mean. Levels at all monitoring sites have increased on 2008 levels.

Adwell Cottages

An exceedence of 44.0µg/m³ has been recorded at Adwell Cottages (next to the M40) for 2009. We have placed two extra tubes at the current monitoring location (i.e. 3 tube co-location) and additional tubes at two new locations along the façade of the two properties. This took place in Jan 2010. These tubes are to obtain further data to allow us to complete the Detailed Assessment later in 2010.

Didcot

Levels at both Broadway locations in Didcot were both borderline exceedence at 38.0µg/m³ (55 Broadway) and 37.7 µg/m³ (96 Broadway). We have placed extra diffusion tubes at four new locations along the Broadway with one of these sites being a co-location study. This took place in Jan 2010. Other locations monitored in Didcot fall below the annual mean concentration.

We are also bidding for Defra funding to install a continuous NO_x analyser for six months along the Broadway. This analyser and the additional tubes are to obtain further data to allow us to complete the Detailed Assessment later in 2010/early 2011.

2.2.2 Benzene

Table 2.5a 2009 Results of BTX Diffusion Tubes

Site ID	Location	Within AQMA?	Annual mean concentration ($\mu\text{g}/\text{m}^3$)		
			Benzene	Toluene	Xylene
Henley	Duke Street	N	0.5	4.1	1.2
Henley	Lovell Close	N	0.3	0.7	0.5

Table 2.5b Historic results of BTX Diffusion Tubes

Site ID	Location	Within AQMA?	Benzene Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
			2007	2008	2009
Henley	Duke Street	N	0.9	0.6	0.5
Henley	Lovell Close	N	0.6	0.6	0.3

South Oxfordshire District Council also monitors levels of Benzene at two locations in Henley, using BTX diffusion tubes. These tubes are exposed for the first fortnight in every diffusion tubes monitoring month. They are supplied and analysed by Bristol Scientific Services.

One tube is located at the background site in Lovell Close and the other is located at 31 Duke Street, this location was chosen as it was assumed to be the worst-case location for the town.

Tables 2.5a and 2.5b below show the results from the BTX diffusion tubes for the last 3 years. The annual mean for 2009 in Duke Street is 0.6 which is well below the objective of $5.00 \mu\text{g}/\text{m}^3$. Therefore a detailed assessment for Benzene is not required.

This Benzene monitoring ceased in December 2009 due to continual compliance with the emission limit.

2.2.3 Summary of Compliance with AQS Objectives

South Oxfordshire District Council has measured concentrations of nitrogen dioxide above the annual mean at relevant locations outside of an AQMA, and **will need to proceed to a Detailed Assessment**, for the Broadway in Didcot and Adwell Cottages next to the M40.

3 New Local Developments

South Oxfordshire 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.

3.1 Road Traffic Sources

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

3.2 Other Transport Sources

South Oxfordshire District Council confirms that there are no new/proposed other transport sources.

3.3 Industrial Sources

South Oxfordshire District Council confirms that there are no new/proposed industrial sources.

3.4 Commercial and Domestic Sources

South Oxfordshire District Council confirms that there are no new/proposed commercial and domestic sources.

3.5 New Developments with Fugitive or Uncontrolled Sources

South Oxfordshire District Council confirms that there are no new/proposed developments with fugitive or uncontrolled sources.

4 Planning Applications

No significant planning applications have been approved within this timescale.

5 Air Quality Planning Policies

The South Oxfordshire Local Development Framework (LDF) contains the policies used for determining planning applications and guiding new development. The South Oxfordshire Local Plan is one of the development plan documents within the LDF.

The Local Plan contains Policy EP1 on prevention of polluting emissions, and explanatory text about proposed developments which have a significant effect on air quality. Policy T3 requires transport assessments including, where appropriate, travel plans to be prepared and implemented. This policy is applied to significant proposals which might otherwise be refused on traffic grounds because of local traffic problems, including air quality.

Air quality issues are addressed in policies in the emerging Core Strategy, planned for adoption in 2011. Preparation of a Developer Contributions Supplementary Planning Document is also proposed, which could include developer contributions towards Air Quality Action Plan measures.

6 Local Transport Plans and Strategies

South Oxfordshire District Council is currently feeding into Oxfordshire County Council's consultation on Local Transport Plan 3 covering the period of 2011-2030.

Several recommendations and schemes have been put forward to help address the air quality problems within our three AQMAs and air quality throughout the wider district.

This process is still ongoing, so no further information is available at present.

7 Climate Change Strategies

The council does not currently have a Climate Change Strategy, but has implemented a Carbon Management Plan.

The council's Carbon Management Plan target is to reduce carbon dioxide emissions from its operations by 30% over five years from 2007 levels. Our plan sets out our baseline emissions and lists the practical projects that we have identified to meet our target.

We will be working closely with our new leisure and waste contractors to reduce energy use from our own operations. The new waste trucks use low carbon fuels and are using more efficient routes. Our leisure centres will receive lighting upgrades and more efficient pool pumps.

We are also reducing our energy use at the council offices. By topping up insulation all over the building, turning down the thermostat and turning off equipment when not in use, everyone will play their part. Over the next five years we will be looking at more ways to cut our CO2 emissions.

8 Implementation of Action Plans

The progress made on implementing the measures contained within the Henley Air Quality Action Plan is listed below using the method recommended in LAQM.TG (09), Chapter 4.

The council declared the Henley AQMA in January 2003. Further Assessment work found that the declaration was justified and work was done on the formulation of an Action Plan. This Action Plan has now been in place since May 2007, it is therefore proposed to revise and update this Plan during 2010.

Some of the key aims of this update shall be:

- incorporating the measures proposed during the ongoing consultation process for Oxfordshire Local Transport Plan 3 (LTP3) for 2011-2030)
- encouraging local businesses to develop and implement green travel plans
- encouraging greater usage of the edge of town car parks.

Progress is detailed in the table below:

Table 9.1 Henley Air Quality Action Plan Progress

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
1.0 ITS Town Centre Scheme											
1.1	Restricting vehicular access	One way system introduced in Duke Street to decrease vehicle numbers. Street improvement works, narrowing carriageway and implementing off-carriageway loading areas	Oxfordshire County Council	2006-07	2007-09	Average journey times	1.2 $\mu\text{g m}^{-3}$	Completed and signed off by the County Council Sept 2009.	Completed and signed off by the County Council Sept 2009.	Sep 2009	No further actions proposed. Some infrastructure proposes put forward under the Local Transport Plan 3 consultation process. Outcome as yet, unknown.
1.2	SMART traffic management	The signals act as a gating point to hold traffic	Oxfordshire County Council	2006- 08	2007- 09	Shorter wait times and queue lengths at junctions through Henley	1.2 $\mu\text{g m}^{-3}$	SCOOT traffic management system has been live since Nov 2006.	ITS works completed and signed off by the County Council Sept 2009. Monitoring SCOOT systems	Sep 2009	Issues with worsening air quality at several locations across Henley.

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
		outside of the town centre and allow better movement of traffic in the town centre							effectiveness since works completed.		Propose to bid for Defra Grant 2010/11 to model the local air quality now that the highway modifications have been completed. The aim being to amend the SCOOT system to address the ongoing air quality issues.
2.0 Sustainable travel to work, school and personal travel											
2.1	adoption of travel plans by all Henley schools	Improved fitness levels for pupils/parents walking/cycling to school, reduced	Oxfordshire County Council		April 2007			All maintained Henley Schools have developed and implemented green travel plans.	The two independent schools (Rupert House and St Mary) have draft Travel Plans. Henley College has a draft Travel Plan. Aim to	Ongoing	County Council school's travel group now focussing on schools with greatest potential for modal shift.

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
		congestion and improved safety outside the school gate and along routes to school							complete and approve these by Dec 2009.		Analysis of pupil postcode plots and modes of travel have indicated that Gillotts Secondary and Trinity Primary have the most modal shift potential. This means that there are a number of pupils at these two schools who live within a 15 minute cycle or a 10 minute walk who are currently being driven to school.
2.2	Promotion of workplace travel plans (see 3.2 below)	Potential life-style benefits for persons taking part	Oxfordshire County Council with support from South Oxfordshire District Council	Dec 2008	Ongoing	Adoption of formalised work travel plans.		Some information already available on OCC website	No additional formalised work travel plans adopted to date. SODC air quality officer has met with Henley Business Partnerships to promote green travel and travel	Ongoing	Considerable guidance already exists on the County Councils website. SODC air quality officer developing working relationship with Henley Business

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
									planning.		Partnership Green Group. SODC air quality officer also ran a stall at an Economic Development Business Seminar.
2.3	Explore re-routing buses, drop-off points and student parking at Henley schools and College	May increase vehicles in other areas. Improved safety for pupils walking and cycling to school. Issues to be explored as part of implementation of school travel plans	Oxfordshire County Council	2007	Ongoing			Coaches & buses already routed as to avoid congested areas as much as possible during peak hours	Continue to work with all Henley schools in developing and appraising traffic infrastructure and existing travel plans.	Ongoing	Continue to work with all Henley schools in developing and appraising existing travel plans. Henley College are still working on their draft Travel Plan. Possible improvements to bus routes, drop-off and student parking will be considered as

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
											part of this.
2.4	Explore provision of more pedestrian crossings to encourage walking to work/school	<p>Improved safety and fitness levels for pupils/parents walking/cycling to school. Pedestrian crossings can hinder smooth flow of traffic.</p> <p>Some crossings already provided as part of ITS. Possibility of others will be reviewed under 'Better ways to School'</p>	Oxfordshire County Council	2006	Ongoing			Major junctions have been made much more 'pedestrian friendly' hopefully encouraging more people to walk	<p>The Travel Plans Team has been working with five schools in Henley to recruit School Crossing Patrols to help pupils and parents to cross the road.</p> <p>A School Crossing Patrol has been successfully recruited for Vicarage Road and is shared between Trinity Primary and St Mary's School.</p> <p>Recruitment for the following schools and locations is ongoing:</p> <ul style="list-style-type: none"> •Sacred Heart Primary (Grey's Road) •Valley Road Primary (Grey's Road) 	Ongoing	Infrastructure proposals put forward under Local Transport Plan 3 formal consultation process and also through Traffic Advisor Group (run by Henley Town Council). Outcome unknown.

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
									<p>•Rupert House School (Bell Street).</p> <p>The pavement has also been widened along a small stretch of Grey's Road (near the junction with Elizabeth Road) to make it easier for children and parents with buggies to walk to Valley Road Primary.</p> <p>A pedestrian refuge has been installed at the junction of Grey's Road and Deanfield Avenue to help students of Henley College to cross at this point.</p> <p>Build-out installed on Grey's Hill to help pupils and</p>		

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
									parents of Sacred Heart Primary to cross Grey's Hill. New pedestrian access opened up into the back of Gillotts school from Makins Road so that they can avoid Gillotts Lane which can become very congested and dangerous.		
2.5	Explore promotion of public transport by retailers (e.g. money off on production of bus ticket)	Participating retailers may benefit from 'green' image and increased patronage	South Oxfordshire District Council	2007-2008	Not yet known	Number of retailer promotions of public transport		Discuss concept further with local businesses during seminar by Dec 2008. No further progress to date.	Currently no uptake by local businesses	Ongoing	Explore through links with the business partnership and local Waitrose supermarket.
3.0 Education											
3.1	Additional info on SODC website, incl.	More information available	South Oxfordshire District Council	2008	2009	Number of website hits received		More information available to the public.	Statistical air quality data/download package	Ongoing	Continue to improve and update SODC air quality

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
	AQ data, eco-driving, alternative fuels and children's section	to the public.							implemented August 2009. New website for Henley and SODC's website are completed and supplying real time air quality data to the residents of the district.		web pages.
3.2	Promotional material to local businesses, including advice on travel plans (see 2.2 above)	Local businesses may need to adapt the way they operate in some ways to achieve improvements	Oxfordshire County Council with support from South Oxfordshire District Council		Dec 2008				No additional formalised work travel plans adopted to date. SODC air quality officer has met with Henley Business Partnerships to promote green travel and travel planning.	Unknown	SODC air quality officer developing working relationship with Henley Business Partnership Green Group. SODC air quality officer also ran a stall at an Economic Development Business Seminar.
3.3	Local promotional events including	Raises 'green' environmental	South Oxfordshire District Council	Dec 2007				General response to the campaign	No further progress to report due to lack of funding available	Ongoing, but minimal resource available	Continue to update website with current developments,

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
	workshops for local businesses	awareness generally						has been very positive. With members of the public.			include links from SODC, and OCC website.
3.4	Involvement in national promotional events e.g. National Cycle Week	Raises 'green' environmental awareness generally	South Oxfordshire District Council			Raises 'green' environmental awareness generally		Ongoing	Ongoing	Ongoing	
3.5	explore use of text message to notify of raised pollution levels	Health benefits for sensitive individuals eg persons with asthma, respiratory disorders	South Oxfordshire District Council	April 2008	2007 data demonstrated levels did not rise above low 2 category.			Action will not be pursued	Action will not be pursued		
3.6	Promotion of 'Park and Stride' campaign	Improved fitness levels for persons walking to school/work from parking area. Reduced congestion	Oxfordshire County Council with support from South Oxfordshire District Council		December 2008			Badgemore and Sacred Heart are both investigating the use of park and stride campaigns	Sacred Heart Primary encourages parents to park in the Scout Hut car park across Greys Road and walk the remaining distance to the	Ongoing	

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
		and improved safety outside the school gate.							school. Continue to support those who are already investigating and encourage others.		
3.7	Promotion of 'Walk to School/Work week'	Improved fitness levels for pupils/parents walking/cycling to school. Reduced congestion and improved safety outside the school gate.	Oxfordshire County Council with support from South Oxfordshire District Council		Dec 2008	Increased number of parents and children walking to school.		Full take up by all maintained schools, Henley Town Council has funded six new walk to school week posters to be placed at the schools as well as two in the town centre and provided funding to schools to use in competitions etc.	All of the maintained primary schools have taken part in National Walk to School week for the past two years. OCC has provided them with free resources such as stickers for the pupils, and posters and banners to raise awareness of the event.	Ongoing	County Council's team continue to work with schools to promote walk to school week for 2010.

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
4.0 Cycling initiatives											
4.1	introduction of signed, formalised cycling routes	Improved fitness levels for persons cycling. Reduced congestion and improved safety outside the school gate.	Oxfordshire County Council, supported by Sustrans	2007		Increased use of cycle routes		Pre-feasibility studies carried out for all routes to schools, identified potential school crossing points, pavement widening and other works. Informal consultation complete, currently out to formal consultation. Still awaiting identification of funding.	New pedestrian access opened up into the back of Gillotts school from Makins Road so that they can avoid Gillotts Lane which can become very congested and dangerous. This can also be used by cyclists (if they dismount). BWTS proposed to widen the pathway running alongside Trinity Primary school between Vicarage Road and Church Street to provide a route for cyclists, particularly those travelling to Trinity Primary and Henley College. However, this did	Unknown	Continue to seek funding for implementation. Limited SEEDA funding maybe available. Proposals put forward under Local Transport Plan 3 formal consultation process. Outcome unknown.

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
									not go ahead as school Governors were opposed to the proposals due to safety concerns.		
4.2	Improved cycling facilities (racks etc)	Improved fitness levels for persons cycling. Reduced congestion and improved safety outside the school gate.	Oxfordshire County Council	Available in participating schools 2007. Provision elsewhere to be explored by April 2008	Ongoing			New cycle parking provided at Valley Road primary school, Badgemore primary school and Gillotts school. Badgemore also received new scooter parking.	Better Ways to school has installed cycle parking at Gillotts Secondary School, Valley Road Primary, and Badgemore Primary. Scooter parking was installed at Badgemore, Sacred Heart and Trinity.	Ongoing	Proposals in explore potential for improving cycle racks in town centre. Also proposal for Local Transport Plan 3 formal consultation
4.3	Support for introduction of OYBike scheme	Improved fitness levels for persons cycling. Tourism benefits	Oxfordshire County Council	April 2008				No progress to date.	Little ongoing funding is available for the scheme, therefore it is vital that once set up, participation rates are substantial	Unknown	Pursue further if an opportunity presents itself.

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
									enough to self fund. Investigated, but funding was problematic due to Henley being to small a location to self fund.		
5.0 Planning initiatives											
5.1	Advice note to go to all applicants seeking planning permission		South Oxfordshire District Council	April 2008					Produce draft planning guidance notes	Ongoing	Looking into developing supplementary planning guidance/S106 agreement funding. (Much like the Mid Devon Scheme)
5.2	Information on air quality issues on Planning web-pages		South Oxfordshire District Council	April 2008	Ongoing				New website launched August 2009. Ongoing process of updating.	Ongoing	Continue to improve and update SODC air quality web pages.
6.0 Idling vehicles											
6.1	Education of public, taxis and public transport providers		South Oxfordshire District Council		June 2009			Ongoing	Investigate possibility of introducing district-wide idling		Investigate inclusion into SODC's taxi policy.

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
	about idling vehicles								<p>education campaign.</p> <p>Investigate possibility of obtaining funding for promotional materials.</p> <p>Taxi Licensing policy includes measures to encourage cleaner vehicle usage through reduced licence fees.</p>		<p>Discussion directly with public transport providers is felt to be a better use of officer time.</p> <p>Looking at installing signage within AQMA to encourage vehicle users to switch engines off at traffic lights within AQMA. Currently Local Transport Plan 3 consultation proposal.</p>
6.2	Enforcement of idling vehicle legislation		South Oxfordshire District Council	April 2008				Ongoing	Further progress dependant on implementation of de-criminalised parking.	Ongoing	Further progress dependant on implementation of de-criminalised parking (2009/10).

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
									Some enforcement work being undertaken by Police/SODC funded PCSO's.		
7.0 Increased parking enforcement and car parking initiatives											
7.1	Enforcement of parking restrictions to avoid congestion	Increase number of vehicles parking in other areas close to the town centre	South Oxfordshire District Council	April 2008	Unknown			Limited	Further progress dependant on implementation of de-criminalised parking (2009/10).	Unknown	Further progress dependant on implementation of de-criminalised parking
7.2	Explore use of CCTV for parking enforcement, including delivery vehicles		South Oxfordshire District Council	April 2008	Unknown			Limited	Further progress dependant on implementation of de-criminalised parking (2009/10).	Unknown	Further progress dependant on implementation of de-criminalised parking
7.3	Explore ways to encourage use of edge/out-of-town parking		South Oxfordshire District Council	April 2008	Unknown			Limited	Henley Town Council launched a Out of Town Permit Parking	Ongoing	Propose re-launch of the Out of Town Permit Parking scheme in

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
	by adjusting car park fees and making edge of town parking more attractive								<p>scheme across their car parks (including Rugby Club) to encourage business users to park out of town centre car parks.</p> <p>Limited update to date.</p> <p>The First Great Western car park refusal to take part at present (negotiations are ongoing).</p>		<p>Spring 2010.</p> <p>Negotiations are ongoing with First Great Western re-joining the permitting scheme</p> <p>Pursue proposals/ideas of changing parking arrangements at Station Car Park to encourage greater usage.</p> <p>Investigation of Henley Car Park Signage. This is felt to be an issue by majority of stakeholders in Henley.</p>

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
8.0 Emission reduction through use of low emission fuels											
8.1	Report to SODC management team on SODC vehicles using low emission fuels		South Oxfordshire District Council	April 2008	Unknown				We have experienced difficulties in securing consistent local supply. SODC's Pest control servicing being outsourced. New SODC waste contract (launched June 2009) All HGV's are new and complying with Euro Emission Standard IV.	Unknown	Still experiencing difficulties sourcing supply of bio-fuels. Question validity of bio-fuels from a NO ₂ reduction viewpoint. Usage of council vehicle limited at present due to Service Team changes.
8.2	Encourage taxis etc to use low emission fuels by reducing		South Oxfordshire District Council	April 2008	April 2010				New taxi licensing policy has been implemented. Vastly	Ongoing	Investigate potential for inclusion of minimal Euro Emission Standard within fees

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
	licence fees								reduced costs proposed for DVLA CO2 emissions band A vehicles. Fee's shall be set at a later date (April 2010).		policy for 2010/11.
8.3	Explore feasibility of refuse vehicles and public service vehicles using low emission fuels		South Oxfordshire District Council	April 2008	June 2009				New SODC waste contract (launched June 2009) All HGV's are new and complying with Euro Emission Standard IV.	June 2009	Monitor progress in NOx reductions through National Indicator NI185/194
8.4	Explore free parking for vehicles using low emission fuels		South Oxfordshire District Council	April 2008	Ongoing				Management and Enforcement of any such a free parking scheme has been investigated, but has proved difficult. Not being pursued	Ongoing	Monitor update of half price season tickets.

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
									at present. From 01 Jan 2010, SODC offers half price parking season tickets for vehicles with less than 120 g/km CO ₂ .		
9.0 Improvements in Public Transport											
9.1	Explore improvements in local bus service		Oxfordshire County Council	April 2008	Unknown			No material progress to date.	No material progress to date.	Unknown	Being pursued through Local Transport Plan 3 formal consultation.
9.2	Explore inclusion of a condition within future bus service contracts to require improved emission standards		Oxfordshire County Council						County Council's Bus Strategy includes a price preference system for any newly tendered contracts. Under this system an operator can an offset of up to 30% of tender depending compliance with	Implemented	County Council is not due to re-tender any of our Henley area subsidised bus services until early 2012 (for introduction in June 2012).

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
									Euro emissions standards.		
9.3	Explore provision of river buses during Regatta/Festival week		South Oxfordshire District Council						Ongoing, being pursued through Licensing Department.	Ongoing	Ongoing
10.0 – Restricted access for HDVs											
10.1	Enforced restriction of HDV access to affected areas		Oxfordshire County Council, supported by South Oxfordshire District Council	Ongoing	Unknown			No material progress to date.	No material progress to date.	Unknown	<p>Investigating usage of Henley's CCTV system to carry out traffic counts.</p> <p>Trying to obtain historic counts of Henley traffic to ascertain the extent of the HGV problem.</p> <p>Investigating potential for introducing weight restrictions over Henley Bridge</p>

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
											(Listed)
10.2	Discussions with OCC to investigate adoption of restricted HDV access as part of next LTP (2011-16)		Oxfordshire County Council, supported by South Oxfordshire District Council	Ongoing	Unknown			No material progress to date.	No material progress to date.	Unknown	Investigating usage of Henley's CCTV system to carry out traffic counts. Trying to obtain historic counts of Henley traffic to ascertain the extent of the HGV problem. Investigating potential for introducing weight restrictions over Henley Bridge (Listed)
10.3	Workshops to gather local HDV data and to encourage businesses to voluntarily restrict HDV		SODC, supported by OCC and local business community	Ongoing	Unknown			No material progress to date.	No material progress to date.	Unknown	Investigating usage of Henley's CCTV system to carry out traffic counts. Trying to

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments relating to emission reductions
	access at peak times										<p>obtain historic counts of Henley traffic to ascertain the extent of the HGV problem.</p> <p>Investigating potential for introducing weight restrictions over Henley Bridge (Listed)</p>

9 Conclusions and Proposed Actions

9.1 Conclusions from New Monitoring Data

The 2009 monitoring data has shown a number of exceedences, from both continuous and passive monitoring locations. The following section is broken down into geographical location to discuss the new monitoring data.

The continuous monitoring sites in, Wallingford and Watlington have shown an exceedence of the annual mean objective for nitrogen dioxide with the results in Henley being just below the annual mean. All sites are located within existing AQMA's and results confirm the declaration decision.

Henley-on-Thames AQMA

An area of Henley-on-Thames is covered by an AQMA declaration, this is due to exceedences of the annual mean objective for nitrogen dioxide. The continuous analyser situated in Duke Street, within the AQMA, has returned an annual mean level of $38 \mu\text{g}/\text{m}^3$ for 2009 with no exceedences of the hourly mean exceeding $200 \mu\text{g}/\text{m}^3$. This confirms the declaration for the annual mean, however shows that the current levels are well below the short-term objective.

Six diffusion tube sites recorded exceedences of the $40 \mu\text{g}/\text{m}^3$ annual mean, with a further three being very close to this level.

Wallingford AQMA

Wallingford monitoring data has shown an exceedence of the annual mean objective for nitrogen dioxide. All the exceedence sites are located within existing AQMA's and confirm the declaration decision. The low level of data capture was due to the ongoing problems with the analyser. These issues were resolved in May 2009 resulting in us obtaining good data for the rest of the year.

Watlington AQMA

Watlington monitoring data has shown an exceedence of the annual mean objective for nitrogen dioxide. All the exceedences sites are located within existing AQMA's and confirm the declaration decision.

Adwell Cottages

This location is now clearly indicating an exceedence in the annual mean, with data for 2008 and 2009 both above the $40 \mu\text{g}/\text{m}^3$ target level. Further diffusion tube monitoring is to be carried out (from Jan 2010).

Didcot

Levels at both Broadway locations in Didcot were both borderline exceedence at $38.0 \mu\text{g}/\text{m}^3$ (55 Broadway) and $37.7 \mu\text{g}/\text{m}^3$ (96 Broadway). We have placed extra diffusion tubes at four new locations along the Broadway with one of these sites being a co-location study. This took place in Jan 2010. Other locations monitored in Didcot fall below the annual mean concentration.

9.2 Proposed Actions

Henley-on-Thames AQMA

Monitoring in Henley-on-Thames has indicated that the AQMA boundary shall have to be amended slightly to extend further to the north along Bell Street. South Oxfordshire District Council will continue to monitor in the current locations; implement the current and develop new action plans and then re-appraise the situation when undertaking the 2011 Progress Report.

Due to the current financial pressures on the council's air quality budget a bid will be submitted to Defra in the current air quality grant programme to fund modelling of the impact on local air quality of the new SCOOT traffic management system to see if any improvements can be made to help reduce NO₂ levels within the town. This is inline with Actions in the AQAP.

Wallingford AQMA

South Oxfordshire District Council will continue to monitor in the current locations; formally consult on and implement the Wallingford AQAP during 2010 and re-appraise the situation when undertaking the 2011 Progress Report.

Due to the current financial pressures on the council's air quality budget, a bid will be submitted to Defra in the current air quality grant programme to fund modelling of the impact on local air quality of the traffic gating trial and also the County Council's proposed speed cushions to see if any improvements can be made to help reduce NO₂ levels within the town. These measures are inline with actions in the Draft AQAP.

Watlington AQMA

South Oxfordshire District Council will be expanding its diffusion tube network (from Jan 2010) across the village and continue to monitor nitrogen dioxide at the current locations.

The Watlington Air Quality Steering Group and officers from the Oxfordshire County Councils' Transport Planning Team shall develop and consult on the Watlington Air Quality Action Plan and re-appraise the situation when undertaking the 2011 Progress Report.

Adwell Cottages

As a result of the higher diffusion tube readings for 2009 44µg/m³ of Nitrogen dioxide, additional diffusion tubes have been placed at the current monitoring location (co-location) and two additional locations along the façade of the two cottages facing the M40. This additional data shall be used to complete the Detailed Assessment during 2010/11.

Due to the current financial pressures on the council's air quality budget, a bid will be submitted to Defra in the current air quality grant programme to fund this Detailed Assessment. This situation will be reviewed in the 2011 progress report.

Didcot

As a result of further borderline exceedences of the annual objective for Nitrogen dioxide, additional diffusion tubes have been placed at extra locations along the Broadway. This additional data, in association with continuous analyser monitoring data (grant funding dependent) shall be used to complete the Detailed Assessment during 2010/11.

Due to the current financial pressures on the council's air quality budget, a bid will be submitted to Defra in the current air quality grant programme, this will involve funding the installation of continuous monitoring equipment for a six month period and also to fund the subsequent Detailed Assessment.

Oxfordshire County Council's Local Transport Plan 3 (2011-2030)

Several proposals have been put forward for Oxfordshire Local Transport Plan 3 (2011-2030). The result of this consultation process is not yet known, but the outcomes shall be incorporated in to the AQAPs associated with our three current AQMAs.

Summary of proposed actions for 2010

The proposed course of action (in order of priority) for South Oxfordshire District Council:

- 1) Formally consult on and implement Draft Wallingford Air Quality Action Plan
- 2) Install a NO_x monitoring station on the Broadway in Didcot (Defra grant funding dependent).
- 3) Detailed Assessments for Didcot and Adwell Cottages (Defra grant funding dependent).
- 4) Draft and begin implementing the Watlington Air Quality Action Plan
- 5) Update the Henley Air Quality Action Plan
- 6) Model the impacts of the traffic management systems with the view to adjust the systems in an attempt to improve local air quality in Henley and Wallingford (Defra grant funding dependent).
- 7) Submit a progress report in 2011.

10 References


South Oxfordshire District Council Stage 1 Assessment - 1998
South Oxfordshire District Council Stage 2 Assessment - 2000
South Oxfordshire District Council Stage 3 Assessment - January 2002
South Oxfordshire District Council Stage 4 Assessment - November 2004
South Oxfordshire District Council Updating & Screening Assessment - May 2003
South Oxfordshire District Council Detailed Assessment - August 2005
South Oxfordshire District Council Progress Report - November 2005
South Oxfordshire District Council Further Assessment - July 2006
South Oxfordshire District Council Updating & Screening Assessment - November 2006
South Oxfordshire District Council Progress Report - May 2007
South Oxfordshire District Council Henley Air Quality Action Plan - May 2007
South Oxfordshire District Council Detailed Assessment - July 2008
South Oxfordshire District Council Action Plan Progress Report - May 2008
South Oxfordshire District Council Updating & Screening Assessment – May 2009
South Oxfordshire District Council Henley Air Quality Action Plan Progress Report - Dec 2009
South Oxfordshire District Council Further Assessment Watlington - March 2010
LAQM TG(09)
LAQM PG (09)

Appendices

Appendix A: QA/QC Data for Diffusion tube bias corrections

2009 field trial QC data from NETCEN

Checking Precision and Accuracy of Triplicate Tubes



From the AEA group

Diffusion Tubes Measurements									
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 μgm^{-3}	Tube 2 μgm^{-3}	Tube 3 μgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	07/01/2009	04/02/2009	139.1	140.6	140.3	140	0.8	1	2.0
2	04/02/2009	04/03/2009	114.4	103.3	95.1	104	9.7	9	24.1
3	04/03/2009	31/03/2009	113.7	119.3	117.8	117	2.9	2	7.2
4	31/03/2009	29/04/2009	118.6	115.4	115.6	117	1.8	2	4.5
5	29/04/2009	03/06/2009	128.2	128.1	127.4	128	0.4	0	1.1
6	03/06/2009	01/07/2009	118.7	113.4	127.2	120	7.0	6	17.3
7	01/07/2009	29/07/2009							
8	29/07/2009	02/09/2009	124.6	122.6	140.0	129	9.5	7	23.7
9	02/09/2009	30/09/2009	103.4	108.4	110.8	108	3.8	4	9.4
10	07/10/2009	04/11/2009	132.2	133.7	131.0	132	1.4	1	3.4
11	04/11/2009	02/12/2009	160.9	157.5	159.1	159	1.7	1	4.2
12	02/12/2009	07/01/2010	126.1	121.4	133.4	127	6.0	5	15.0
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method	Data Quality Check
Period Mean	Tubes Precision Check / Automatic Monitor Data
114	99.1 / Good / Good
97	98.1 / Good / Good
112	99.4 / Good / Good
103	99.4 / Good / Good
107	99.5 / Good / Good
100	99.6 / Good / Good
117	99.6 / Good / Good
115	99.2 / Good / Good
84	95.1 / Good / Good
112	99.3 / Good / Good
126	99.6 / Good / Good
103	99.5 / Good / Good

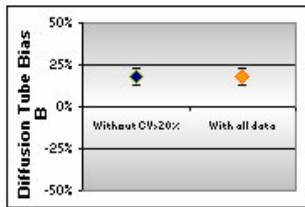
Overall survey -->

Good precision	Good Overall DC
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(Check average CV & DC from Accuracy calculations)

Site Name/ ID: Bristol - Intercomp 2009	Precision 11 out of 11 periods have a CV smaller than 20%
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Accuracy (with 95% confidence interval) without periods with CV larger than 20% Bias calculated using 11 periods of data Bias factor A 0.85 (0.81 - 0.89) Bias B 18% (13% - 23%) <hr/> Diffusion Tubes Mean: 125 μgm^{-3} Mean CV (Precision): 3 <hr/> Automatic Mean: 107 μgm^{-3} Data Capture for periods used: 99% Adjusted Tubes Mean: 107 (102 - 112) μgm^{-3}	Accuracy (with 95% confidence interval) WITH ALL DATA Bias calculated using 11 periods of data Bias factor A 0.85 (0.81 - 0.89) Bias B 18% (13% - 23%) <hr/> Diffusion Tubes Mean: 125 μgm^{-3} Mean CV (Precision): 3 <hr/> Automatic Mean: 107 μgm^{-3} Data Capture for periods used: 99% Adjusted Tubes Mean: 107 (102 - 112) μgm^{-3}
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 Version 03 - November 2006

2009 WASP Results**WASP Results Lab 152 Round 97 onwards:**

Round	97	98	99	100	101	102	103	104	105	106	107
Tube 1 ($\mu\text{g NO}_2$)	0.890	1.865	2.085	1.358	0.949	1.489	1.178	1.179	1.689	1.730	2.038
Tube 2 ($\mu\text{g NO}_2$)	1.573	1.228	2.093	1.474	2.576	1.431	0.916	1.108	1.006	1.662	2.154
Tube 3 ($\mu\text{g NO}_2$)	1.582	1.857	0.885	1.354	1.813	2.307	0.934	1.840	1.665	1.342	2.038
Tube 4 ($\mu\text{g NO}_2$)	0.914	1.217	0.879	1.467	0.914	1.960	1.071	1.960	0.992	1.394	2.227
Spike tube 1 ($\mu\text{g NO}_2$)	0.890	1.830	2.150	1.360	0.920	1.370	1.220	1.220	1.680	1.840	2.030
Spike tube 2 ($\mu\text{g NO}_2$)	1.580	1.190	2.150	1.470	1.860	1.370	0.940	1.220	0.960	1.840	2.200
Spike tube 3 ($\mu\text{g NO}_2$)	1.580	1.830	0.840	1.360	1.860	2.280	0.940	2.020	1.680	1.420	2.030
Spike tube 4 ($\mu\text{g NO}_2$)	0.890	1.190	0.840	1.470	0.920	2.280	1.220	2.020	0.960	1.420	2.200
Standardised result tube 1	1.000	1.019	0.970	0.999	1.032	1.087	0.966	0.966	1.005	0.940	1.004
Standardised result tube 2	0.996	1.032	0.973	1.003	1.385	1.045	0.974	0.908	1.048	0.903	0.979
Standardised result tube 3	1.001	1.015	1.054	0.996	0.975	1.012	0.994	0.911	0.991	0.945	1.004
Standardised result tube 4	1.027	1.023	1.046	0.998	0.993	0.860	0.878	0.970	1.033	0.982	1.012
Performance index	1.87	5.29	16.61	0.08	374.65	73.42	41.98	45.95	8.79	40.71	1.55
Rolling performance index (NOT best of 4 out of 5)				5.96	99.16	116.19	122.53	134.00	42.53	34.36	24.25
Rolling performance index (best 4 out of 5)				5.96	5.96	23.85	33.02	40.36	42.53	34.36	23.26
Performance classification (criteria from April 2009?) Good =<56.25 Acceptable =<225 Unacceptable >225				Good	Good	Good	Good	Good	Good	Good	Good

Field Trial Results 2009 - Lab 152

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
Ref conc ($\mu\text{g}/\text{m}^3$)	114	97	112	103	107	100		115	84	112	126	103
Mean of 3 tubes ($\mu\text{g}/\text{m}^3$)	140.00	104.27	116.93	116.53	127.90	119.77		129.07	107.53	132.30	159.00	127.00
CoV	0.57	9.29	2.48	1.54	0.34	5.81		7.38	3.51	1.02	1.00	5.00
Bias correction factor "A"	0.81	0.93	0.96	0.88	0.84	0.83		0.89	0.78	0.85	0.79	0.81
 Mean bias correction "A"	 0.85											

Appendix B: QA:QC Data

Diffusion Tube Bias Adjustment Factors

See main report for details.

Factor from Local Co-location Studies (if available)

See main report for details.

Discussion of Choice of Factor to Use

See main report for details.

QA/QC of automatic monitoring

See main report for details.

QA/QC of diffusion tube monitoring

See main report for details.