Date November 2011

Sevenoaks District Council
Argyle Road
Sevenoaks
Kent
TN13 1HG
01732 227000
www.sevenoaks.gov.uk

Authority Officer	Mrs Alex Dawson Assistant Environmental Health Manager Environmental Protection Team

Department	Community Services
Address	Sevenoaks District Council Argyle Road Sevenoaks Kent TN13 1HG
Telephone	01732 227000
e-mail	environmental.protection@sevenoaks.gov.uk

Report Reference number	SDC/PR/2011
Date	November 2011

Executive Summary

This Air Quality Progress Report has been prepared as part of the Local Air Quality Management (LAQM) system introduced in Part IV of the Environment Act 1995.

The Local Air Quality Management Technical Guidance LAQM.TG (09) has been closely followed in the preparation of this report.

Sevenoaks District Council, hereafter referred to as the District Council has used monitoring information to assess and predict future air quality against the objectives prescribed by the Air Quality Regulations 2000 (as amended).

There are no new local developments of sources which are considered to have a significant affect on the air quality of the district.

The District Council has declared 11 Air Quality Management Areas (AQMAs). and is currently undertaking two further Detailed Assessments(DA) at Swanley (Birchwood Road/London Road) and Sevenoaks Quarry, following the 2009 Updating and Screening Assessment (USA).

No significant improvement or deterioration in air quality has been observed. Most sites identified in 2009 as exceeding Nitrogen dioxide objectives continue to do so. Additional monitoring around Birchwood Road Swanley confirms the exceedances found in 2009. A detailed assessment of this area is being undertaken.

In addition to the indication of likely exceedance of the 1-hour NO2 objective in part of Sevenoaks High Street a potential exceedance has been found at St Johns Bat & Ball.

Additional monitoring along sections of the A25 have found other areas of likely exceedance of the NO2 annual mean objective. It was originally suggested that we should extend three of the existing 4 AQMAs along this busy road to cover these areas. However so much of this route would now be covered by AQMAs that it is now proposed to amalgamate all four AQMAs into one long corridor along this road as was done with the original motorway AQMAS. This should simplify administration, implementation of action plan measures, etc.

The Detailed Assessment into possible fugitive particulate emissions from Sevenoaks Quarry has been delayed by difficulties in obtaining permission from the County Council to install a monitor on their land.

The Air Quality Action Plan proceeds steadily assisted by some Section 106 funding from planning developments approved in 2009/2010. Future work will be tempered by the reductions in local authority funding arising from the national economic situation.

The Council is continuing with the set up of an Air Alert service to inform susceptible individuals and medical professionals of predicted episodes of poor air quality.

The 2009 Air Quality Action Plan will be amended to include any additionally extended AQMAs.

The District Council has made progress with undertaking an extensive variety of measures in our 2009 Air Quality Action Plan.

Under the Local Air Quality Management process, we will continue to monitor, review and assess air quality and undertake where possible appropriate action to ensure that the Air Quality Action Plan 2009 is delivered.

The next stage of the ongoing assessment of air quality within Sevenoaks District will be to submit the two Detailed Assessments and the 2012 USA.

Table of contents

		Page
1	Introduction	7
1.1	Description of Local Authority Area	7
1.2	Purpose of Progress Report	8
1.3	Air Quality Objectives	8
1.4	Summary of Previous Review and Assessments	10
2	New Monitoring Data	14
2.1	Summary of Monitoring Undertaken	14
2.2	Comparison of Monitoring Results with Air Quality Objectives	22
3	New Local Developments	34
3.1	Road Traffic Sources	34
3.2	Other Transport Sources	34
3.3	Industrial Sources	34
3.4	Commercial and Domestic Sources	34
3.5	New Developments with Fugitive or Uncontrolled Sources	35
4	Local / Regional Air Quality Strategy	36
5	Planning Applications	36
6	Air Quality Planning Policies	
7	Local Transport Plans and Strategies	37
8	Climate Change Strategies	37
9	Implementation of Action Plans	38
10	Conclusions and Proposed Actions	1
10.1	Conclusions from New Monitoring Data	1
10.2	Conclusions relating to New Local Developments	1
10.3	Other Conclusions	1
10.4	Proposed Actions	1
11	References	1

Appendices

Appendix 1	Monitoring QA/QC
Appendix 2	Maps of AQMAs
Appendix 3	NO2 Diffusion Tube Sites

List of Tables

Table 1 National Air Quality Objectives
Table 2.1 Details of Automatic Monitoring Sites
Table 2.2 Details of Non- Automatic Monitoring Sites
Table 2.3 (a) Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with Annual Mean Objective
Table 2.3 (b) Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective
Table 2.4 Sites indicating a possible exceedance of the NO_2 Air Quality Objective
Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes
Table 2.6 (a) Results of PM_{10} Automatic Monitoring: Comparison with Annual Mean Objective
Table 2.6 (b) Results of PM_{10} Automatic Monitoring: Comparison with 24-hour Mean Objective
Table 2.7 Results of SO_2 Automatic Monitoring: Comparison with Objectives

List of Figures

Fig 1 Map of Sevenoaks District showing Air Quality Management Areas
Fig 2 Map showing location of continuous monitoring sites.
Fig 2.1 Trends in Annual Air Pollution Concentrations Measured at Automatic Monitoring Sites.
Fig 2.2 Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites.

1 Introduction

1.1 Description of Local Authority Area

Sevenoaks District

Sevenoaks District is in west Kent, bordering Greater London, Surrey and East Sussex and covers and an area of 142 square miles.

The main towns are Edenbridge, Sevenoaks and Swanley and there are many other small villages and settlements, of which the largest are Hartley, Hextable, New Ash Green, Westerham and West Kingsdown.

The primary source of air pollution is from traffic. The district is traversed by three major motorways and these have a considerable flow of continental HGVs using the port at Dover and the Channel Tunnel. Local journeys, school runs, commuting to London or connection with London contribute significantly to a number of hot spots in Sevenoaks, Swanley and Westerham.

Main communications and transport links

The M25, M20 and M26 motorways cross the District. Gatwick and Heathrow airports and the Channel Ports and Channel Tunnel Rail Link are all within easy reach.

The railway service to London is very good. The average journey time is 35 minutes.

A description of Sevenoaks District

All of Sevenoaks District is within the Green Belt. Much of the area is rural in character and it includes many picturesque villages and hamlets and large areas of beautiful countryside. The area is rich in historical sites including Penshurst Place, Hever Castle, Winston Churchill's former home at Chartwell, Lullingstone Castle and Roman Villa, and Knole Park.

Each of the major towns has its own character. Edenbridge is a popular point of call for visitors to the area, while Sevenoaks offers a range of small to medium sized shops in a traditional high street setting. Swanley's market attracts shoppers from a wide area..

Sevenoaks District is a popular place to live. Because of the close proximity to London, there is considerable pressure for development and local planning policies attempt to achieve a balance between legitimate development needs and conserving the District's environment.

There are a wide range of leisure facilities, including community sports and leisure centres at Edenbridge, Sevenoaks, Wilderness and Swanley. There are also sports grounds, recreation areas and scenic country walks.

There are no major industrial sources within the district or close to its boundary.

There is one large sand quarry co-located with a landfill site and 35 authorised process, mainly petrol stations and dry cleaners.

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 exceedance 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

This table shows the objectives in units of microgram's per cubic metre $\mu g/m^3$ (for carbon monoxide the units used are milligram's per cubic metre, mg/m^3) and. includes the number of permitted exceedance in any given year (where applicable).

Table 1 – National Air Quality Objectives

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 $\mu g/m^3$	Running annual mean	31.12.2003
	5.00 $\mu g/m^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu g/m^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu g/m^3$	Annual mean	31.12.2004
	0.25 $\mu g/m^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu g/m^3$	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 $\mu g/m^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu g/m^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu g/m^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu g/m^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu g/m^3$, 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 Council has completed all 4 stages of Round 1 and all three stages (USA, DA, FA) of Rounds 2 and 3. Following the 2009 USA the Council is undertaking two Detailed Assessments expected to report later in early 2012.

Round 1

In 1999, the first round of Air Quality Review and Assessment, consultants, Kings College London, were employed to carry out the complex computer dispersion modelling required to identify any areas where objectives might be exceeded.

They reported that the daily objective for PM^{10} and the annual average objective for NO_2 were likely to be exceeded along the routes of the M20, M25, M26, A20 (T), A21, and at the junction of the A25 and A224 at Riverhead.

As a result AQMAs 1 to 5 were designated in 2002 for PM_{10} and NO_2.

A Further Assessment in 2004 confirmed exceedance of the PM_{10} and NO_2 objectives but with the PM_{10} affected areas being smaller in size and the NO_2 areas larger than had been originally thought.

In 2005, this reassessment resulted in the revocation of the PM_{10} designations for all but a section of the M25 which was then separately designated for PM_{10} and given the reference AQMA 6.

This overlaps AQMA 2 which covers the whole of the M25 within the district.

All the areas were enlarged due to NO_2 exceedance being more widely spread than originally predicted. Most areas are skewed to the north, northeast or east by the prevailing south-westerly winds.

AQMAs 1 - 6

AQMA 1 M20 - from Junction 3 of the M25 to the district boundary with Tonbridge and Malling Borough Council (6.9 miles).

AQMA 2 M25 - County border with Surrey to district border with Dartford, including Junctions 3, 4 and 5 and the extension of Junction 5 to connect with the A25 at Bessel's Green (13.5 miles).

AQMA 3 M26 - from junction 5 of the M25 to the district boundary with Tonbridge and Malling Borough Council (5.6 miles).

AQMA 4 A20 (T) Swanley Bypass - from junction 3 of the M25 to the district boundary with the London Borough of Bromley (2.7miles).

AQMA 5 A25 Riverhead - between its northern and southern junctions with the A224 (155m).

AQMA 6 M25 - Junction 5 to Kent / Surrey border

Round 2

In September 2006, following the second round of reviews, 5 further areas were designated for traffic-related exceedance of NO_2. A Further Assessment of these AQMAs was completed in 2007 which concluded that the concentrations of NO_2 in AQMAs 8-12 had not changed substantially since the Detailed Assessment carried out in 2006

AQMAs 8 – 12

AQMA 8	B2173	Swanley – London Road (East); High Street; Bartholomew Way and parts of Central town area	for NO_2
AQMA 9	A25	Seal – High Street	for NO_2
AQMA 10	A225	Sevenoaks – High Street	for NO_2
AQMA 11	A25	Westerham – High Street; Market Square; Vicarage Hill; London Road (A233)	for NO_2
AQMA 12	A25	Sevenoaks – Bat & Ball junction with A225	for NO_2

Please note: There is no AQMA 7

Round 3

During 2007 and following the third round of review and assessment, a Detailed Assessment concluded that the boundaries of existing AQMA's 1, 5 and 10 should be extended because of traffic related exceedance of NO_2.

The following areas were formally designated as AQMAs in December 2007:

a) Part of London Road, Sevenoaks (Extends AQMA 10)
b) Part of London Road, Riverhead (Extends AQMA 5 to join AQMA 3)
c) Part of London Road, Dunton Green (Extends AQMA 5 to join AQMA 3)
d) Part of the A20 Farningham (Extends AQMA 1)

A Further Assessment, November 2008, concluded that:

- AQMA 10 be modified to include the properties surrounding the London Road and Pembroke Road junction
- AQMA 5 is extended to cover the properties where exceedances were predicted to the west of the London Road and Maidstone Road (Bradbourne Vale) roundabout (London Road, Riverhead).
- No modifications to the boundary of the existing AQMA 1 - Farningham

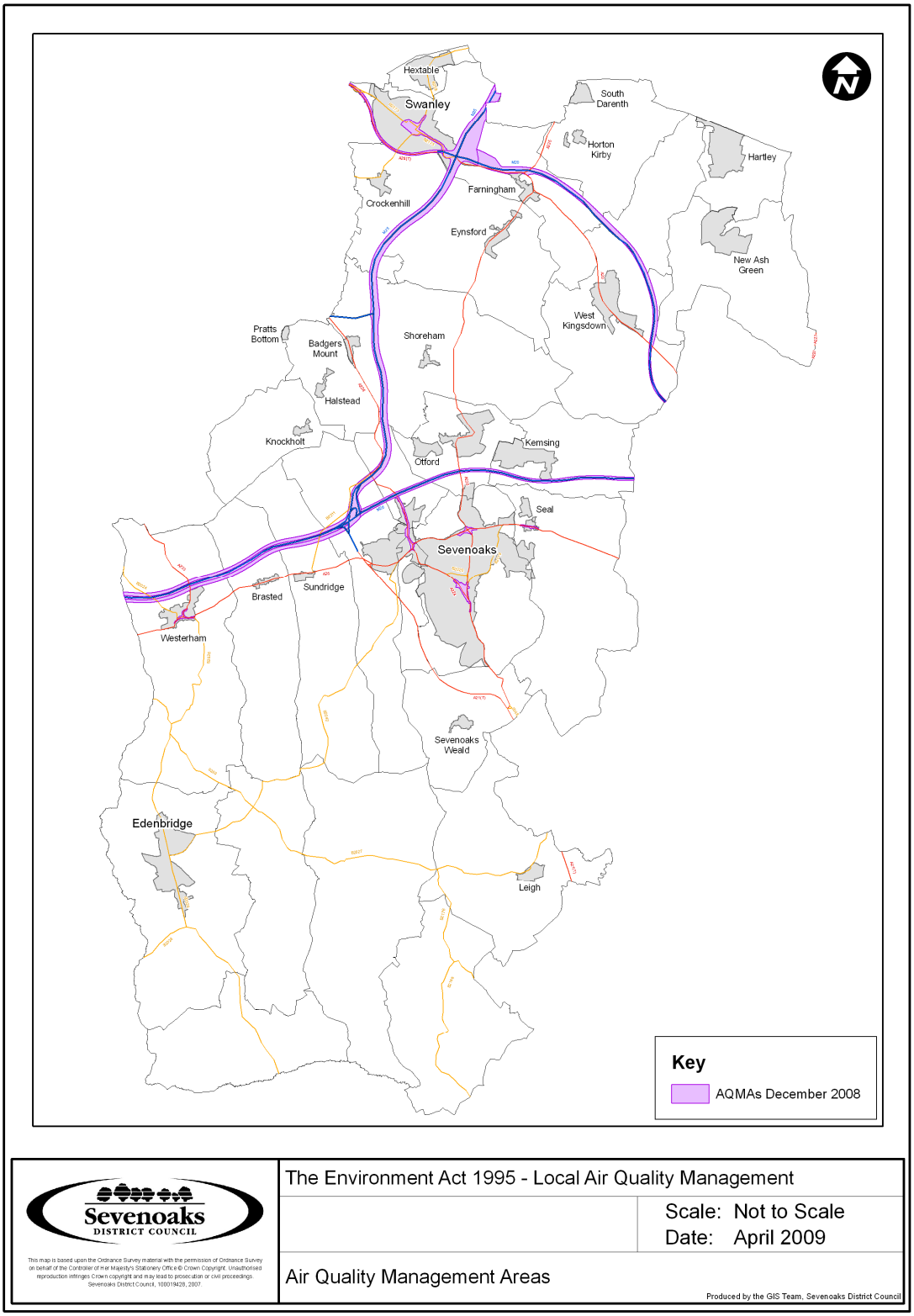
Round 4

The 2009 USA identified a road junction in Swanley (Birchwood Rd / London Rd) as an area of potential NO2 (annual) exceedance and an area adjacent to a large quarry/landfill in Sevenoaks as an area of potential fugitive PM10 exceedance.

Consultants have been engaged to undertake Detailed Assessments of these sites and PM_{10} monitoring is being installed close to the quarry. There have been significant delays in obtaining permission from Kent County Council to install this monitoring on their land. Installation is expected late 2011/early 2012 with DA completed Autumn 2012.

Extensions to existing AQMAs along the A25 have been identified as needed. It is proposed that as these AQMAs all arise from the heavy and at times congested traffic on this road to join up the AQMAs to form a single corridor along this road. The revised AQMA should be in place early 2012.

Fig 1 Map of Sevenoaks District showing Air Quality Management Areas



Please refer to Appendix 1 for more detailed Maps of individual AQMAs

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken in 2010

2.1.1 Automatic Monitoring Sites

The Council has two continuous automatic monitoring sites (CMS) both in the Sevenoaks town urban area. Greatness background site has monitored 5 pollutants (CO, SO_2, NO_X, PM_{10}, O_3) since 1997 and Bat & Ball roadside site, has monitored NOx and PM_{10} since 2006. Table 2.1 shows details of the two sites.

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Worst-case Location?
Greatness	Urban background	TQ 536 567	CO, SO_2 NOx, NO, NO_2, PM_{10}, O_3	N	40m	75m	N
Bat & Ball	Roadside	TQ 530 566	NOx, NO, NO_2, PM_{10}	Y	30m	10m	N

See Figure 2 for a map showing the location of these sites.

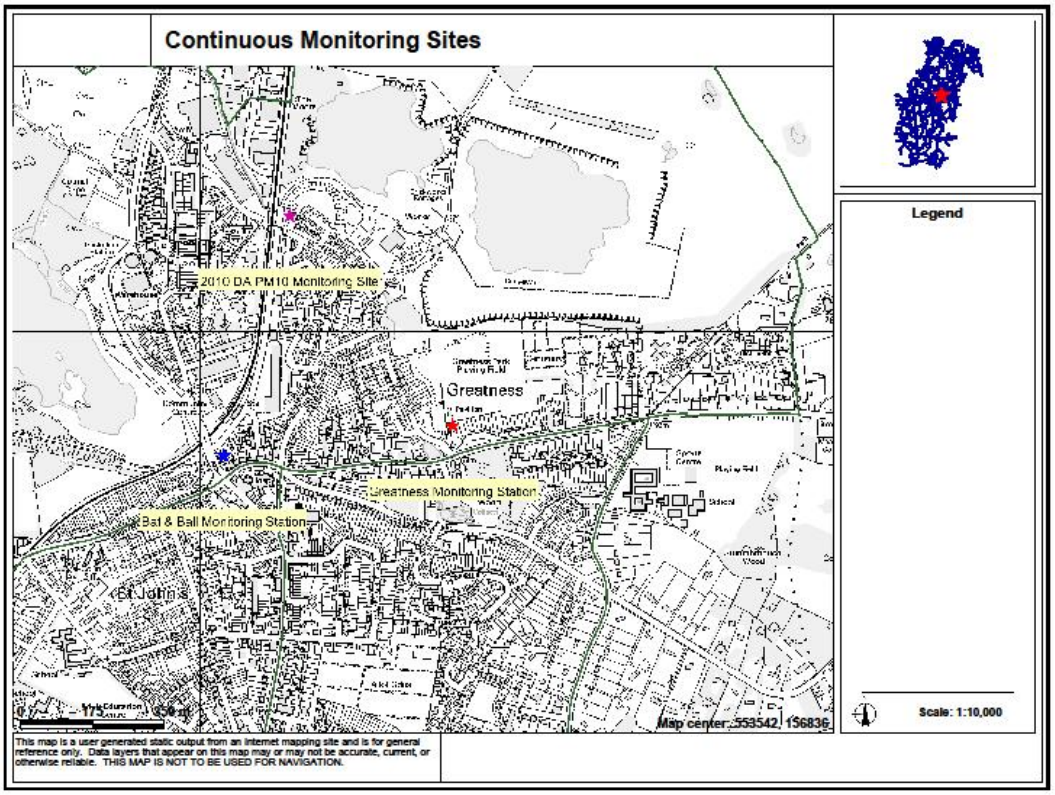
Local site operations and routine calibration/maintenance are carried out under contract by ERG Kings College London with service contract work by Supporting U. The sites are audited twice a year by NPL and the data collected, validated and ratified by ERG.

Annual reports are published and all data including current concentrations are available via the London Air Quality Network web site. The site is operated to the same standards as the rest of the London Air Quality Network.

2008 and earlier PM_{10} Data measured by TEOM has been corrected by applying a 1.3 factor.

From 2009 data has been corrected by ERG using their volatile correction model.

Figure 2 Location of Automatic Monitoring Sites



Non-Automatic Monitoring

Over the last three years, the diffusion tube programme has been rationalised for cost and efficiency purposes. There are currently 55 diffusion tube sites.

Table 2.2 gives details of these sites

NO_2 diffusion tubes are supplied and analysed by ESG Scientifics (formerly Harwell Scientifics at Didcot). This laboratory is UKAS accredited.

The tubes were prepared by spiking acetone:triethanolamine (50:50) on to grids prior to the tubes being assembled.

The laboratory confirms it follows the procedures set out in the Harmonisation Practical Guidance and that it is ranked 'Good' in the WASP inter-comparison scheme.

The tubes have been compared with the reference method by two triplicate co-location studies with the chemiluminescent NOX. analysers at Greatness and at Bat & Ball.

The locally derived Bias Factor from the above co-location study for 2010 was **0.83**

The National Bias Factor for 2010 for Harwell was **0.85**

The Local Bias factor has been used.

Please refer to Appendix 2 for details of data used to calculate bias

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?
Garvock Drive Sevenoaks	Urban Background	552467 154167	NO2	N	Y 17m	0m	N
High Street South 1 Sevenoaks	Roadside	553141 154263	NO2	Y	Y.. 0m	1m	Y
High Street South 2 Sevenoaks	Roadside	553139 154259	NO2	Y	Y 1m	3m	Y
High Street North 2 Sevenoaks	Kerbside	552045 154883	NO2	Y	Y 2m	0.5m	Y
High Street North 3 Sevenoaks	Roadside	553073 155026	NO2	Y	Y 3m	2 m	N
73 London Road Sevenoaks	Roadside	552867 154863	NO2	Y	Y 0m	1.5m	Y
20 London Road Sevenoaks	Roadside	553018 154654	NO2	Y	Y 0m	2m	N
130 London Road Sevenoaks	Kerbside	552662 155153	NO2	Y	Y 3m	0.5m	Y
133 London Road	Kerbside	552677 155117	NO2	Y	N 3m	0.5	N

Sevenoaks							
142 London Road Sevenoaks	Roadside	552506 155272	NO2	Y	Y 6m	2m	N
Montreal Road/ Amherst Hill Sevenoaks	Roadside	551529 155967	NO2	N	Y 4m	2m	Y
Bradbourne Vale Road South	Roadside	551640 156335	NO2	N	N 10m	2.5m	N
Bradbourne Vale Road North	Roadside	552963 156583	NO2	N	N 20m	1.5m	N
4a St Johns Hill Sevenoaks	Roadside	553140 155898	NO2	N	Y 8M	1.5m	N
Egden Walk St Johns Sevenoaks	Roadside	553123 155709	NO2	N	N	1.5m	N
Bat & Ball 1 Sevenoaks	Roadside	553059 156624	NO2	Y	N	4m	N
Bat & Ball 2 Sevenoaks	Roadside	553019 155692	NO2	Y	Y 7m	3m	N
Bat & Ball 3 Sevenoaks	Roadside	553154 156685	NO2	Y	Y 1.5m	1.5m	Y
Bat & Ball 4 Sevenoaks	Roadside	553151 156558	NO2	Y	Y 0m	1.5m	Y

Riverhead 2	Kerbside	551414 156197	NO2	Y	Y...1m	0.5m	Y
Riverhead 3	Roadside	551440 156165	NO2	Y	Y 6m	3m	Y
62 London Road Riverhead	Roadside	551318 156373	NO2	Y	Y 2m	2m	N
Worships Hill / Witches Lane Riverhead	Roadside	551026 155710	NO2	N	Y 36m School	2m	N
High Street East 1 Seal	Roadside	555092 156694	NO2	Y	Y 0m	1m	Y
High Street East 2 Seal	Roadside	555068 156711	NO2	Y	Y 0m	1.5m	Y
High Street West 1 Seal	Roadside	554991 156726	NO2	Y	Y 3m	3m	N
High Street West 2 Seal	Roadside	554637 156780	NO2	Y	Y 7m	2m	N
Seal Hollow Road / A25	Roadside	554093 156798	NO2	N	Y 18m	2.5m	N
Miners Arms London Road Dunton Green	Roadside	551281 156860	NO2	Y	Y 2.5m	2m	N
57 London Road Dunton Green	Roadside	551216 157007	NO2	Y	Y 8m	2m	N
193 London Road Dunton Green	Roadside	551007 157545	NO2	Y	Y 1.5m	2m	N
Westerham Road Bessels Green	Roadside	550782 155585	NO2	N	Y 8m	2m	N
8 Chevening Road	Roadside	548474 155424	NO2	N	N 7m	1.5m	N

Sundridge							

Farningha	Roadside	554217 167252	NO2	Y	Y 12m	5m to A20	N
High Street Westerham	Roadside	544415 153914	NO2	Y	Y 3m	90 m to M20 1m	N
Vicarage Hill Westerham	Roadside 544770	154000	NO2	Y	Y 3m	1M	N
Market Square Westerham	Kerbside	544594 154025	NO2	Y	Y 2m	0.5m	Y
London Rd 2 Westerham	Roadside	544600 154139	NO2	Y	Y 5m	1m	N
Bartholomew Way Swanley	Roadside	551492 168695	NO2	Y	Y 13m	2m	N
London Road 1 Swanley	Kerbside	551592 168499	NO2	Y	Y 2m	0.5m	Y
London Rd 2 Swanley	Roadside	552174 168162	NO2	Y	Y 6m	1.5m	Y
Wested Lane Swanley	Roadside	552610 167700	NO2	Y	Y 14m	5m	Y
Wadard Terrace Swanley	Roadside	553109 167880	NO2	Y	Y 15m	115m to M25	N
Farningham Hill Road Swanley	Urban	553416 167615	NO2	Y	Y 17m	27m to M20	Y
Birchwood Rd Swanley Jessamine	Roadside	550298 169582	NO2	N	Y 0.5m	1m	Y
Birchwood Road Pucknells	Roadside	550283 169743	NO2	N	N 10m	2m	N
Birchwood Road Malvern	Roadside	550377 169479	NO2	N	N 20m	2m	N
Birchwood Road Junction London Road	Roadside	550258 169575	NO2	N	N 10m	2m	N

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

Greatness CMS is an suburban background monitoring site in a park and is over 100m away from any busy road. Greatness shows a relatively steady background level of NO_2

Bat & Ball CMS is alongside a busy and congested junction which is within an AQMA and is approximately 10m from the roadside due to location difficulties. Since some housing in parts of the AQMA is only 1 m from the kerb, the site does not represent the worst case exposure.

There has been some very slight changes in some levels at Bat & Ball, which is probably due to metrological factors and/or economic recession. It is too early to observe the affect of junction improvements on results.

Diffusion tube results at sites in the area have recorded annual means of 55 and 61 ug/m^{-3}.

Table 2.3 (a) 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 (µg/m³)		
					2008	2009	2010
	Bat &Ball	Y		97	32.7	30.6	29.6
	Greatness	N		99	20.8	20.7	20.7

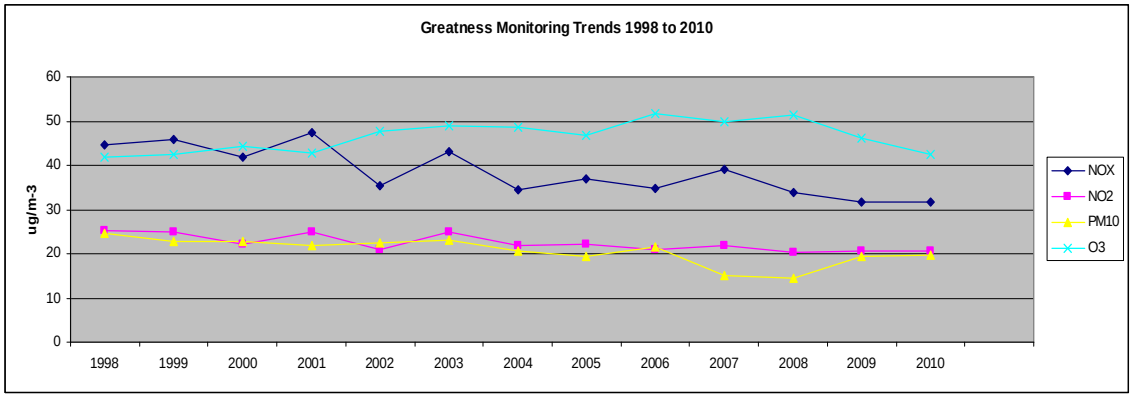
Table 2.3 (b) Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture for monitoring period [a] %	Data Capture for full calendar year 2009 [b] %	Number of Exceedance of hourly mean (200 µg/m³)		
					2008 [c]	2009 [c]	2010
	Bat & Ball	Y		97	0	0	0
	Greatness	N		99	0	0	0

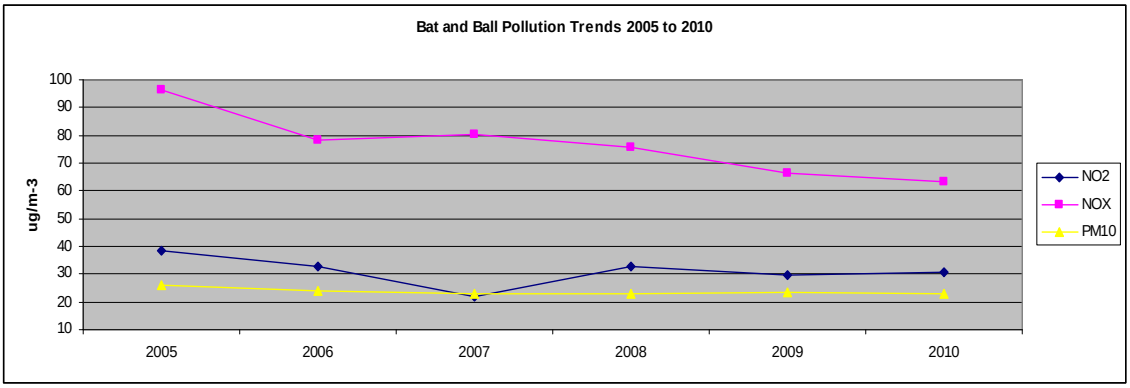
Figure 2.1

Trends in Annual Air Pollution Concentrations Measured at Automatic Monitoring Sites.

Greatness



Bat & Ball



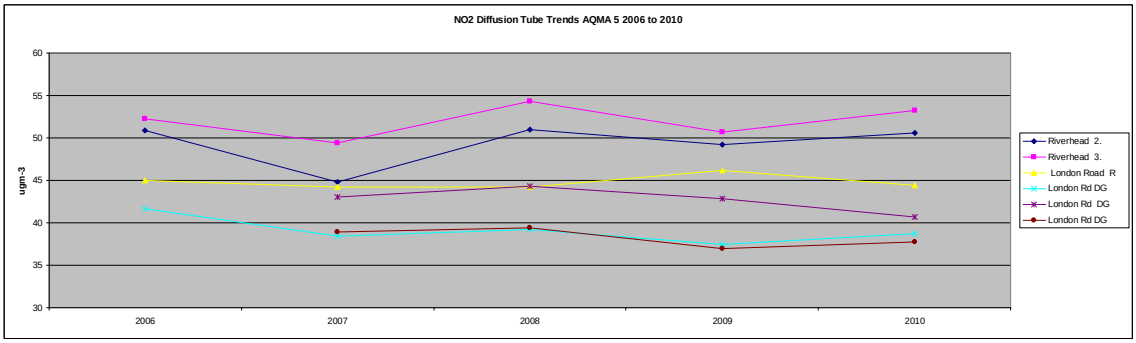
Diffusion Tube Monitoring

The following graphs illustrate possible trends in NO2 concentrations from 2006 to 2010 at sites within a number of our AQMAs. Changes in concentrations from year to year may be confounded by metrological effects. Whilst some sites show a slight fall in concentrations others remain level or show an increase.

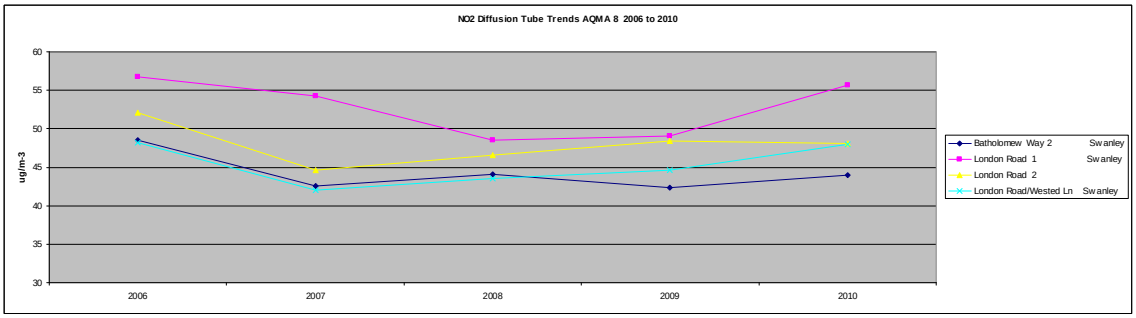
Figure 2.2

Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites.

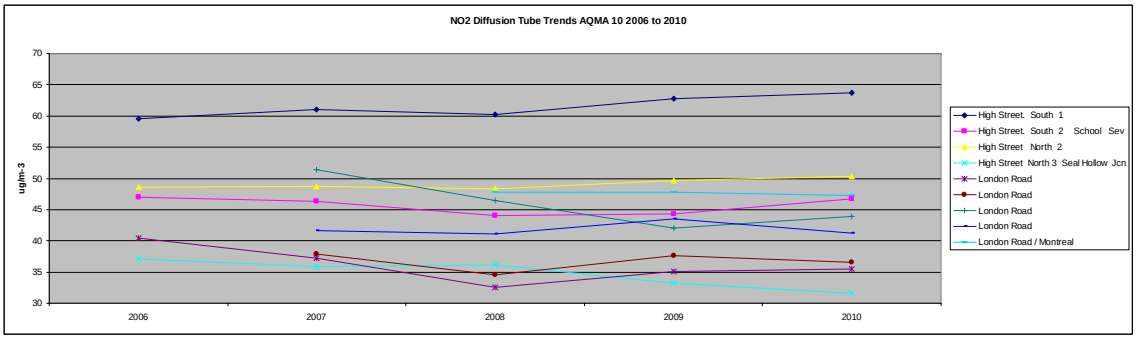
Riverhead and Dunton green



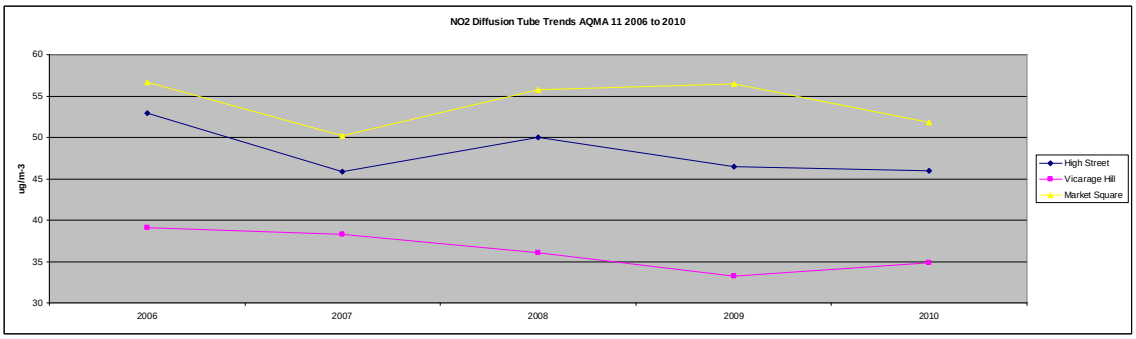
Westerham



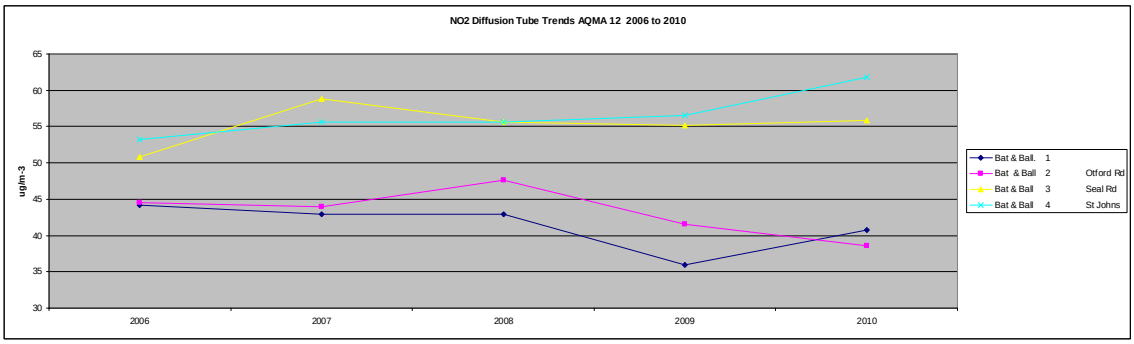
Sevenoaks



Westerham



Bat & Ball



Diffusion Tube Monitoring Data

The data for the last four years shows no significant trend with some sites showing slight improvement and others worsening, notably some of the more polluted sites in AQMAs.

Of note are the following sites which are not in existing AQMAs which are indicating possible exceedance of the annual mean objective of 40ugm^{-3}.

Table 2.4 Sites indicating a possible exceedance of the NO_2 Air Quality Objective

ref	Site	2009	2010
77	Montreal Ave/ Amherst Hill Sevenoaks	**47.8**	**47.3**
88	Bradbourne Road South. Sevenoaks	**54.1**	**41.5**
87	Bradbourne Road north. Sevenoaks	39.8	**40.8**
35	Seal Hollow Road / A25	**41.4**	**41.1**
74	Westerham Road Bessels Green	**42**	**40.3**
86	59 Westerham Road Bessels Green	**48.2**	**45.1**
85	Chart Lane Brasted	**52.7**	**52.2**
83	Birchwood Rd, Jessamine Swanley	**57.8**	**56.9**
	Birchwood Rd Malvern		39.6
	Birchwood Rd Junction		39.0

The sites at Birchwood Road Swanley is currently subject to a DA.

The sites in Bessels Green and Worships Hill abut the existing Riverhead AQMA and this will be extended without a further Detailed Assessment to include these areas.

Bradbourne Vale Road Sevenoaks, part of the busy A25, lies between the Riverhead and Bat & Ball AQMAs and these will be included in an AQMA corridor along the A25 amalgamating 4 existing AQMAS.

One site in Sevenoaks High Street and one at Bat and Ball are showing an annual mean in excess of 60ug/m^{-3} which guidance advises may indicate a breach of the 1 hour objective.

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Data Capture 2009 %	Annual mean concentrations in µg/m³ Adjusted for bias		
				2008	2009	2010
3	Garvock Drive Sevenoaks	N	100	16.1	14.1	15.8
2	High Street South 1 Sevenoaks	Y	91.6	58.8	62.8	63.7
27	High Street South 2 Sevenoaks	Y	100	43.0	44.3	46.7
28	High Street North 2 Sevenoaks	Y	91.6	43.0	49.6	50.4
29	High Street North 3 Sevenoaks	Y	83.3	32.9	33.2	31.6
48	73 London Road Sevenoaks	Y	100	32.6	35.1	35.5
49	20 London Road Sevenoaks	Y	100	33.1	37.6	36.5
51	130 London Road Sevenoaks	Y	100	41.1	42	43.9
89	133 London Road Sevenoaks	Y	33		36.4	35.8
52	142 London Road Sevenoaks	Y	100	39.1	43.5	41.3
77	Montreal Road/ Amherst Hill Sevenoaks	N	100	44.7	47.8	47.3
87	Bradbourne Vale Road South. Sevenoaks	N	100		54.1	53.7
86	Bradbourne Vale Road North. Sevenoaks	N	100		39.8	41.5
90	4A St Johns Sevenoaks	N				40.8
91	Egden walk St Johns Sevenoaks	N				22.2
23	Bat & Ball 1 Sevenoaks	Y	100	40.8	36	40.7
30	Bat & Ball 2	Y	91.6	42.9	41.5	38.6

	Sevenoaks					
31	Bat & Ball 3 Sevenoaks	Y	100	54.8	55.2	55.8
32	Bat & Ball 4 Sevenoaks	Y	91.6	53.8	56.5	61.9
5	Riverhead 2	Y	91.6	49.4	49.2	50.6
6	Riverhead 3	Y	100	49.8	50.7	53.2
42	62 London Road Riverhead	Y	100	40.4	46.2	44.4
76	Worships Hill / Witches Lane Riverhead	N	91.6	40.8	41.5	38.0
7	High Street East 1 Seal	Y	100	48.8	53.1	51.0
33	High Street East 2 Seal	Y	100	48.8	50.3	51.9
8	High Street West 1 Seal	Y	100	33.2	34.6	38.6
34	High Street West 2 Seal	Y	91.6	38.2	37.6	38.8
35	Seal Hollow Road / A25	N	100	38.6	41.4	41.1
43	Miners Arms London Road Dunton Green	Y	100	37.3	37.5	38.7
54	57 London Road Dunton Green	Y	100	42.4	42.8	40.7
74	Westerham Road Bessels Green	N	100	39.1	42	40.3
86	59 Westerham Road Bessels Green	N	100		48.2	45.1
92	8 Chevening Road Sundridge	N				33.9
24	High Street Westerham	Y	83.3	45.2	46.5	46.0
25	Vicarage Hill Westerham	Y	91.6	34.5	33.2	34.8
36	Market Square Westerham	Y	100	53.3	56.5	51.8
75	London Rd 2 Westerham	Y	100	34.0	34.8	33.5
39	Bartholomew Way Swanley	Y	91.6	41.1	42.3	44.0
40	London Road 1 Swanley	Y	100	47.2	49.1	55.7
41	London Rd 2	Y	100	44.9	48.4	48.1

	Swanley					
13	Wested Lane Swanley	Y	100	**41.7**	**44.6**	**48.0**
14	Wadard Terrace Swanley	Y	91.6	38.9	38.5	38.8
81	Farningham Hill Road Swanley	Y	91.6	37.4	**40.1**	34.8
93	Birchwood Road, Jessamine Swanley	N				56.9
95	Birchwood Road Pucknells Swanley					32.8
94	Birchwood Road Malvern Swanley					39.6
96	Birchwood Road Junction London Road, Swanley					39
26	Farningham Hill A20 Farningham	Y	100	**45.3**	**45.7**	**49.4**

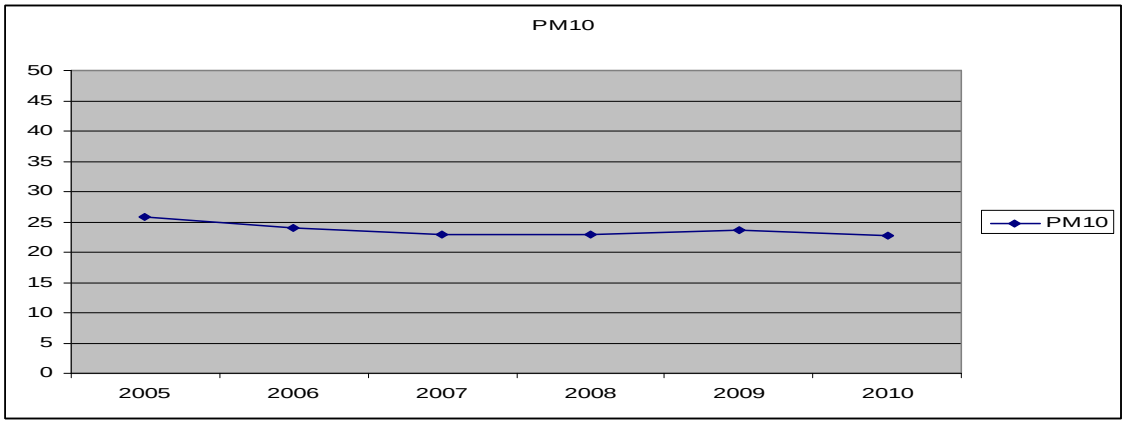
KEY

Bold Number		Exceeding annual mean objective
Blue Number		New exceedance of annual mean objective in 2010
Purple Number		Very close to exceeding annual mean objective in 2010
Red Number		Risk of exceeding 1 hour objective
.....		Exceedance not in existing AQMA
		Monitoring not started till 2009 and/or 2010

2.2.2 PM_{10}

No exceedance of the annual mean concentration of 40 µg/m³ were recorded in 2010 and the number of days when the 24-hour concentration exceeded 50 µg/m³ was less than 35.

Background levels at Greatness appear to have increased slightly but the number of days of exceedance of the 24-hour concentration of 50 µg/m³ remains low. Levels at Bat & Ball appear to have steadied since 2007.



All results have been corrected by ERG Kings College with their Volatile Correction Model.

Table 2.6 (a) Results of PM_{10} Automatic Monitoring: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture for full calendar year 2010 %	Annual mean concentrations (µg/m³)		
					2008	2009	2010
	Bat & Ball	Y		99	23.1	23.7	22.7
	Greatness Park	N		93	17.1	19.3	19.6

Table 2.6 (b) Results of PM_{10} Automatic Monitoring: Comparison with 24-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture 2010 %	Number of Exceedance of daily mean objective (50 µg/m³)		
					2008 [c]	2009 [c]	2010
	Bat & Ball	Y		99	8	2	1
	Greatness Park	N		93	3	4	2

2.2.3 Sulphur Dioxide

SO_2 monitoring is only undertaken at the Greatness urban background continuous monitoring site where only minimal levels have been detected.

There were no annual 15 minute means exceeding 266 µg/m^3, 1 Hour means exceeding 350 µg/m^{3}t or 24 hour means exceeding 125 µg/m^3 in 2009.

The 2010 annual mean was 1.2 µg/m^3

Table 2.7 Results of SO_2 Automatic Monitoring: Comparison with Objectives

Site ID	Location	Within AQMA?	Data Capture 2010 [b] %	Number of Exceedance of: (µg/m^3)		
				15-minute Objective (266 µg/m^3)	1-hour Objective (350 µg/m^3)	24-hour Objective (125 µg/m^3)
	Greatness	N	89%	0	0	0

2.2.4 Benzene

Benzene is not monitored.

2.2.5 Other pollutants monitored

Carbon Dioxide

This is monitored at Greatness background site

In 2010 there were no exceedances of the objective. .

Ozone

This is monitored at Greatness background site

In 2010 there were 12 days when the rolling 8hr mean exceeded 100ug/m^{-3} thus breaching the air quality strategy objective of no more than 10 days.

The average 8hr concentration in 2010 was 42.5 ug/m^{-3} with a maximum 15 minute mean during the year of 140.7ug/m^{-3}.

To date there have been 24 days exceeding the 8hr mean objective in 2011

2.2.6 Summary of Compliance with Air Quality Objectives

The District Council has continued to measure concentrations of Nitrogen dioxide above the annual mean objective at relevant locations outside of the existing AQMAs.

The District Council is currently in the process of amalgamating four existing AQMAs to cover these exceedances along the A25 between existing AQMAs and also extend the Riverhead AQMA

Exceedances at Swanley and fugitive particulate emissions from Sevenoaks Quarry are already subject to a Detailed Assessments.

There is a likely exceedance of the NO_2 hourly mean objective at sites in both the Sevenoaks High Street and Bat and Ball AQMAs. The AQMA orders are in the process of being amended to include the hourly objective.

3 New Local Developments

3.1 Road Traffic Sources

Sevenoaks DC confirms that there are no new or newly identified

- Narrow congested streets with residential properties close to the kerb.
- Busy streets where people may spend one hour or more close to traffic.
- Roads with a high flow of buses and/or HGVs.
- Junctions.
- New roads constructed or proposed since the last Updating and Screening Assessment.
- Roads with significantly changed traffic flows.
- Bus or coach stations.

which may have an impact on air quality within the Local Authority area.

3.2 Other Transport Sources

Sevenoaks DC confirms that there are no new or newly identified

- Airports.
- Locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.
- Locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.
- Ports for shipping.

which may have an impact on air quality within the Local Authority area.

3.3 Industrial Sources

Sevenoaks DC confirms that there are no new or newly identified

- **Industrial installations:** new or proposed installations for which an air quality assessment has been carried out.
- **Industrial installations:** existing installations where emissions have increased substantially or new relevant exposure has been introduced.
- **Industrial installations:** new or significantly changed installations with no previous air quality assessment.
- Major fuel storage depots storing petrol.
- Petrol stations.
- Poultry farms.

which may have an impact on air quality within the Local Authority area.

3.4 Commercial and Domestic Sources

Sevenoaks DC confirms that there are no new or newly identified local sources which may have an impact on air quality within the Local Authority area.

3.5 New Developments with Fugitive or Uncontrolled Sources

Sevenoaks DC 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

Sevenoaks DC does not currently have a local Air Quality Strategy. We have declared 11 Air Quality Management Areas within the District and have developed an associated and recently updated Air Quality Action Plan for which a progress report is provided within Chapter 9 of this document.

5 Planning Applications

The application for the enlargement of the Sevenoaks Sainsbury store was granted on appeal and construction has commenced.

An air quality assessment indicated an adverse impact on the already congested junction at Bat & Ball (already an AQMA for NO_2). Highway/traffic investigations of the junction indicated that substantial improvements including land take would be required to reduce congestion, cope with additional flows, and reduce pollution to below objective levels.

Section 106 funding towards air quality and highway works has been agreed.

6. Air Quality Planning Policies

The District Council is in the process of developing its Local Development Framework (LDF). The Core Strategy of the LDF was adopted in February 2011.

The LDF Core Strategy seeks to direct development towards settlements and locations with the greatest range of jobs, shops and services and which provide the most viable opportunities for travel by modes other than the car. This provides an opportunity to reduce the need to travel by car and, therefore, cut congestion and air quality problems linked to vehicle emissions.

Core Strategy Policy SP2 proposes that the design and location of new development will take account of the need to improve air quality in accordance with the Air Quality Action Plan 2009. Planning permission will be refused where unacceptable impacts on air quality can not be overcome by mitigation.

Policy SP2 of the submitted Core Strategy also sets out the District Council's support for measures to enhance the safety and convenience of public and community transport and improve facilities for cyclists and pedestrians.

The impact of the governments proposed changes to the planning system and to guidance such as PPS23 is not known.

7. Local Transport Plans and Strategies

A Sevenoaks District Strategy for Transport has been prepared by Kent County Council (KCC) with support from the District Council. It sets out a vision for the District's transport network for the next 16 years (from 2010 – 2026). The document has been subject to public, member and officer consultation and a final version is awaiting adoption by KCC.

The Transport Strategy sets out a target to work towards achieving the national air quality objectives for nitrogen dioxides and particulates by implementing the actions and measures contained within the Air Quality Action Plan 2009. The Strategy seeks to prioritise investment in the local road network at existing or potential congestion hotspots, including Air Quality Management Areas. It also sets out a commitment to lobby the Highways Agency to consider air quality issues in decisions on the development of the motorway and trunk road network.

The Transport Strategy sets out Kent County Council's intention to resolve congestion primarily through development of other transport modes. It, amongst other things, sets out policies and draft proposals to improve railway stations and bus waiting facilities and proposes the development of a Sevenoaks Cycling Strategy.

Kent County Council has also recently prepared its Local Transport Plan (LTP) for the period 2011-2016. This was adopted in April 2011. The LTP proposes that one of the objectives for investment in transport during the period will be achieving 'a healthier and safer county', through, amongst other things, tackling poor air quality in Air Quality Management Areas. The LTP proposes that approximately £250,000 will be available for schemes specifically relates to air quality over the period.

It is not known if any funds for projects which would improve air quality in the Sevenoaks District will be available.

8. Climate Change Strategies

The District Council has been working with KCC and other county LA partners to develop a county-wide adaptation plan, which is now complete. The current Carbon Reduction Management Action Plan is in the process of being updated and is due to be completed in 2011/12. The above two plans will provide the framework for a climate change strategy, which is on course to be completed in 2011/12.

The Corporate Climate Change Working Group has now become the LSP Climate Change Sub-group and reports directly to the main LSP against carbon-related objectives in the Sustainable Community Action Plan.

Changing national policy and the upcoming Green Deal retrofit programme is being factored into strategy development and will see a different work programme in 12/13 onwards.

9 Implementation of Action Plans

9.1 Introduction

The first Air Quality Action Plan 2006, covering AQMAs 1-6 was superseded by the 2009 Air Quality Action Plan, which incorporated the first 6 AQMAs and a further 5 AQMAs. Ten AQMAs have been declared for traffic related exceedance of Nitrogen Dioxide (NO_2) national objective levels and one for similar traffic related exceedance of the Fine Particles (PM_{10}) national objective.

The Air Quality Action Plan 2009 outlines a number of measures and actions which are aimed at reducing levels of air pollution within AQMAs and generally across the District. The Plan is measured via an annual air quality progress report which is submitted to Defra.

The District Council is committed to working towards improving the air quality in order to improve the quality of life of its residents.

Please refer to Appendix 3 for Table 9.1 which summarises the results of the progress of the above action plan so far.

9.1.1 Additional Supporting Information regarding the progress of specific measures in the last 12 months.

Measure (Action) 12 - Development and Promotion of workplace travel plans.

In October 2011 there were 14 workplace travel plans adopted or under development in Sevenoaks District, including the District Council's own travel plan.

Both the Adopted LDF Core Strategy (February 2011) and the Sevenoaks District Strategy for Transport (KCC) encourage an increase in the number of workplace travel plans. Policy SP2 of the Core Strategy states that Travel Plans and other appropriate measures will be required in new developments that generate significant volumes of traffic. The Transport Strategy was also agreed and sets a target for all employers in the District with more than 100 staff to have Travel Plans by 2015.

The District Council completed a review of its own Travel Plan, with the aim of improving its effectiveness in achieving more sustainable staff travel, in January 2011.

Sevenoaks District Council and Kent County Council, along with other stakeholders, are also working to develop a partnership of public and private sector organisations, under the name 'New Ways to Work', to promote sustainable transport through workplace travel plans and to share best practice on how this can be achieved.

Measure (Action) 12 - Provision and promotion of Mini bus service

Unfortunately due to essential budget savings the Council's provision of a mini-bus service has ceased from 1st April 2011. However charitable organisations are intending to provide some of the mini-bus journeys previously undertaken by SDC helping to reduce the impact of this change.

Measure (Action) 12 - Private mini bus hire

Final figures for the period April 2010 and March 2011 are unavailable. However the Council's mini-bus fleet provided 83 private hire trips against a target of 124 between April 2010 and January 2011. This reduced number reflects the current economic climate and the prolonged bad weather during December 2010. However this equates to approximately 1200 individual passenger journeys.

Measure (Action) 12 - Concessionary travel schemes

There are currently 17,000 concessionary travel passes holders in the district. The scheme continues to operate in line with national guidance. Please note that the concessionary travel function moves to KCC with effect from 01/04/11 so SDC will no longer provide this service

Measure (Action) 13 - Review parking restrictions in AQMAs

New restrictions introduced in Sevenoaks High Street to better control parking, preventing parking on both sides of the road at peak times to improve the flow of traffic. Approach lanes to the Bat and Ball traffic light junction, Sevenoaks reviewed and improved in conjunction with Kent Highway Services in order to reduce queue lengths. Minor improvements to reduce obstructions and improve traffic movements in Seal and Swanley suggested to Kent Highways Services for assessment with a view to implementation. Parking restrictions in Riverhead reviewed but unlikely to be able to improve on the current situation

Measure (Action) 14 - Carbon Reductions Management Plan

SDC has worked with KCC to develop the Kent Adaptation Action Plan. Further District-specific issues are dealt with in The District Council's own emergency plan document. SDC's Carbon Reduction Management Action Plan is being updated to reflect a wide range of change and new emissions baselines are being developed in order to effectively measure progress in the coming years.

Measure (Action) 14 - Energy efficiency schemes.

A second phase of stock thermal imaging has taken place and provided an accurate picture of inefficient housing in the District. Surveyors have been following up on these findings and contacting households likely to benefit from retrofit. Installations, specifically following up from thermal imaging and as at February 2011, have so far been 339 with 5.825 tonnes of carbon savings projected from that initiative alone in the next 25-years. A further 387 installed measures were administered through CEN - the highest level in West Kent

Measure (Action) 14 - Promotion of Fuel Poverty initiative

Fuel poverty is identified and addressed through multi-agency assessments including The District Council's own HERO scheme which includes energy related assessment as part of a wider enhanced housing options service. The District Council's retrofit programmes continue to lower household bills and take residents out of fuel poverty. In-Touch, The District Council's home improvement agency, continues to work with older and vulnerable residents, both in identifying and reducing fuel poverty.

Measure (Action) 14 - Recycling

The annual target rate of 36% for recycled household waste remains elusive (currently around 32%) without the introduction of a separately collected waste stream. However in order to assist local businesses a commercial paper and card recycling initiative is being trialled from May 2011

9.2 Achievement of Air Quality Objectives

It is the aim of the Action Plan to reduce NO_2 and PM_{10} levels where possible to help achieve the national objectives.

9.3 Main Outcomes

The Air Quality Action Plan 2009 contains 17 actions and 71 individual measures within the actions. In year 2, of the 5 year plan, an extensive variety of measures continue to be progressed..

9.4 Future Progress

To continue to work towards achieving the Actions and measures within them.

10 Conclusions and Proposed Actions

10.1 Conclusions from New Monitoring Data

Various sites continue to show likely exceedance of the NO_2 annual mean objective. Levels in Sevenoaks High Street can exceed 60ugm-s NO_2 annual mean indicating a possible exceedance of the 200ug/m^{-3} 1 hour mean during peak traffic hours (this is a congested canyon site). Similar exceedances appear likely in a narrow congested part of St Johns, Bat & Ball.

10.2 Conclusions relating to New Local Developments

The Sevenoaks Sainsbury development was approved on appeal despite concerns that if permitted it will hinder efforts to reduce traffic through the Bat & Ball junction AQMA and may even result in a deterioration of air quality. Section 106 funding for improvements to the junction was obtained but such works will require private land take and additional funding.

10.3 Other Conclusions

Funding and spatial constraints restrict physical improvements to roads and junctions to reduce congestion.

10.4 Proposed Actions

- To continue monitoring and reassess sites during the 2012 review and assessment round.
- To amalgamate four existing AQMAs along the A25 into a single corridor and extend the Riverhead AQMA.
- To amend the Sevenoaks and Bat and Ball AQMA Orders to include the NO_2 hourly objective.
- To continue to implement measures within the Action Plan
- To undertake an Updating and Screening Assessment in 2012

11 References

11.1. LAQM. PRG (03). Part IV of the Environment Act 1995. Local Air Quality Management Progress Report Guidance. December 2003.

11.2. LAQM.TG (03) Part IV of the Environment Act 1995. Local Air Quality Management Technical Guidance. January 2003.

11.3. Sevenoaks District Council Air Quality Action Plan 2009

11.4. Sevenoaks District Council Updating and Screening Assessment 2009

Appendices to 2010 Air Quality Progress Report

Appendix 1 Monitoring QA : QC

Appendix 2 Maps of AQMAs

Appendix 3 Table 9.1 Progress of Action Plan

Appendix 1

Monitoring Data QA:QC

Diffusion Tube Bias Adjustment Factors

Nitrogen dioxide diffusion tubes are supplied and analysed by ESG Scientifics (formerly Harwell Scientifics at Didcot). This laboratory is UKAS accredited.

The tubes were prepared by spiking acetone:triethanolamine (50:50) onto grids prior to the tubes being assembled.

The lab confirms it follows the procedures set out in the Harmonisation Practical Guidance and that it is ranked 'Good' in the WASP inter comparison scheme.

The tubes have been compared with the reference method by two triplicate co-location studies with the chemiluminescent NOX.analyser at Greatness and at Bat & Ball.

The nationally derived Bias Factor for 2010 is 0.85

ESG calculate a Bias factor for their tubes of 0.83

The locally derived Bias Factor from the above co-location study for 2010 was 0.83

Data used to calculate bias factors given below

Diffusion Tube Bias Factor calculation for 2010

GREATNESS BACKGROUND ug/m^{-3}

Month	DT 1	DT 2	DT 3	DT AV	GREAT RT	RT / DT AV
Jan	37.9	34.8	33.1	35.3	31.1	.88
Feb	29.8	26.9	27.2	28	24.7	.88
Mar	20.5	21.1	21.3	21	16.9	.80
Apr	19.7	18.5	17.9	18.7	18.9	1.01
May	19.5	16.6	17.6	17.9	14.9	.83
Jun	15.1	14.9	14.5	14.8	15.9	1.07
July	12.2	10.9	12.3	11.8	11.8	1
Aug	16.4	15.2	15.4	15.7	11.1	.70
Sep	21.9	22.2	22.4	21.2	17.7	.83
Oct	23	22	23.8	22.9	18.5	.80
Nov	41.5	39.9	41.3	40.9	35.4	.86
Dec	40.6	26.8	25	30.8	31.4	1.01
Running Bias						0.89

BAT & BALL ROADSIDE ug/m^{-3}

Month	DT 1	DT 2	DT 3	DT AV	B&B RT	RT / DT AV
Jan	53.4	48.4	53.9	51.9	41.2	.79
Feb	44.1	43	44.1	43.7	35	.8
Mar	41.2	32.5	41.4	38.4	27.8	.72
Apr	32.8	32.2	31.1	32	27.4	.85
May	34.7	33.9	33.6	34.1	24.4	.71
Jun	29	30	25.8	28.3	21.2	.75
July	27.7	26	29	27.6	23.3	.84
Aug	32.1	31.7	30.4	31.4	18.3	.58
Sep	38.6	38.3	37.3	38.1	25	.65
Oct	43.2	43.4	42.8	43.1	31.7	.73
Nov	50.7	51.2	51.2	51	41.7	.81
Dec	45.1	40.2	50.6	45.3	38.5	.85
Running Bias						0.76

0.89 + 0.76 = 1.65 / 2 =0.83

National comparison study gives average of Bias Factors as 0.85

Discussion of Choice of Factor to Use

A local factor has been used as being more representative of local conditions and is recommended by guidance, the national factor is made up from a number of different results showing some spread in values.

PM Monitoring Adjustment

All PM10 monitoring is by TEOM. Data is collected and ratified by ERG Kings College London. They have corrected all results using their Volatile Correction Model.

Short-term to Long-term Data adjustment

No data adjustment has been necessary.

QA/QC of automatic monitoring

LSO, routine calibration/span checks, etc are carried out by ERG Kings College London to London Air Quality Network standards and the National Physical Laboratory visit twice a year to undertake full calibration checks.

Appendix 2

Maps of AQMAS and location of NO_2Diffusion Tubes.

Sent by separate attachment

Appendix 3

Table 9.1 Summary of progress of Air Quality Action Plan 2009.

Sent by separate attachment

Appendix 3

Table 9.1 Action Plan Progress