2012 Air Quality Updating and Screening Assessment for **Sevenoaks District Council**

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

Date January 2012

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Executive Summary

Monitoring continues to find potential and actual exceedences at relevant locations inside and outside of the existing AQMAs.

Most monitoring results within AQMAs are not below the current NO2 air quality objective, such that it is not appropriate to revoke any of the AQMAs at this time.

From the limited data available NO2 levels have fallen slightly over the last 3 years at some sites, in many cases trends are flat, a few sites show arising trend.

A Detailed Assessment of Birchwood Road Swanley found that a new AQMA needs to be declared. A DA is still in progress regarding Sevenoaks Quarry. Likely exceedance of the 1 hour NO2 objective continues in part of the High Street Sevenoaks and this is already an AQMA.

Monitoring by diffusion tube for Nitrogen dioxide has identified potential exceedances outside of the current AQMAs along the A25. The Council is therefore proceeding to extend and join up the existing 4 AQMAs along this road to form one AQMA corridor along most of this busy main road.

Our next course of action;-

- Amend AQMAs
- Complete Detailed Assessment of Sevenoaks Quarry
- Submit 2013 Progress Report
- Implement and monitor Action Plan

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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.

Main communications and transport links

The M25, M20 and M26 motorways are easily accessible as they 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 lsports 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. There are XX part B process, mainly petrol stations and dry cleaners.

The primary source of air pollution is from traffic, local, the school run, commuting to London or to connect to London bound rail services. The district is traversed by three major motorways and these take a considerable flow of continental HGVs using the port at Dover and the Channel Tunnel.

1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where exceedences are considered likely, the local authority must then declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

The objective of this Updating and Screening Assessment is to identify any matters that have changed which may lead to risk of an air quality objective being exceeded. A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment. The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM **in England** are set out in the Air Quality (England) Regulations 2000 (SI 928), The Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre $\mu g/m^3$ (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

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

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene			
	16.25 $\mu g/m^3$	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.

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

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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

A DA has just reported the need to designate an AQMA at Birchwood Road Swanley and a DA is in progress concerning fugitive particulate emissions from Sevenoaks Quarry.

No AQMAs have been revoked

Maps showing the AQMAs are attached – Appendix A.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

The Council has only two automatic monitoring sites both in the Sevenoaks town urban area. Greatness background site has monitored 5 pollutants (CO, SO2, NOx, Pm10, O3) since 1997 and Bat&Ball roadside monitors NOx and PM10 since 2006.

A map showing the location of these sites is attached – Appendix B.

Local site operations and routine calibration/maintenance are carried out under contract by ERG Kings College London. Twice per year the sites are audited by NPL. The data is collected by, 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 – 'LondonAir'. The site is operated to the same standards as the rest of the London Air Quality Network.

2008 and earlier PM10 Data measured by TEOM has been corrected by applying a 1.3 factor. Subsequent results are corrected to ERG volatile correction model re FDMS monitoring by ERG.

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	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, SO2, NOx, NO, NO2, PM10, O3	N	NO2 Chemiluminescence PM10 TEOM Ozone UV Photometric Carbon monoxide Infa Red Sulphur dioxide UV Flurescence	40m	75m	N
Bat & Ball	Roadside	TQ 530 566	NOx, NO, NO2, PM10	Y	NO2 Chemiluminescence PM10 TEOM	30m	10m	N

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2.1.2 Non-Automatic Monitoring

The council now deploys 55 Nitrogen dioxide diffusion tubes, mainly within the AQMAs. Results for 2011 are given in the table below.

Table 2.2 Details of Non- Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA ?	Collocated with continuous analyser	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	N	Y 17m	0m	N
High Street South 1 Sevenoaks	Roadside	553141 154263	NO2	Y	N	Y.. 0m	1m	Y
High Street South 2 Sevenoaks	Roadside	553139 154259	NO2	Y	N	Y 1m	3m	Y
High Street North 2 Sevenoaks	Kerbside	552045 154883	NO2	Y	N	Y 2m	0.5m	Y
High Street North 3 Sevenoaks	Roadside	553073 155026	NO2	Y	N	Y 3m	2 m	N
73 London Road Sevenoaks	Roadside	552867 154863	NO2	Y	N	Y 0m	1.5m	Y
20 London Road Sevenoaks	Roadside	553018 154654	NO2	Y	N	Y 0m	2m	N
133 London Road	Roadside	552677 155117	NO2	Y	N	Y 3m	0.5m	N
130 London Road Sevenoaks	Kerbside	552662 155153	NO2	Y	N	Y 3m	0.5m	Y
142 London Road Sevenoaks	Roadside	552506 155272	NO2	Y	N	Y 6m	2m	N
Bradbourne Vale Road South Sevenoaks	Roadside	551640 156335	NO2	N	N	N 10m	2.5m	N
Bradbourne Vale Road North Sevenoaks	Roadside	552963 156583	NO2	N	N	N 20m	1.5	N
4A St John's Hill Sevenoaks	Roadside	553140 155898	NO2	N	N	Y 8m	1.5	N
Egdean Walk Sevenoaks	Roadside	553123 155709	NO2	N	N	N	1.5	N
Montreal Road/ Amherst Hill Sevenoaks	Roadside	551529 155967	NO2	N	N	Y 4m	2m	Y
Bat & Ball 1 Sevenoaks	Roadside	553059 156624	NO2	Y	N	N	4m	N
Bat & Ball 2 Sevenoaks	Roadside	553019 155692	NO2	Y	N	Y 7m	3m	N
Bat & Ball 3 Sevenoaks	Roadside	553154 156685	NO2	Y	N	Y 1.5m	1.5m	Y
Bat & Ball 4 Sevenoaks	Roadside	553151 156558	NO2	Y	N	Y 0m	1.5m	Y

Riverhead 2	Kerbside	551414 156197	NO2	Y	N	Y…1m	0.5m	Y
Riverhead 3	Roadside	551440 156165	NO2	Y	N	Y 6m	3m	Y
62 London Road Riverhead	Roadside	551318 156373	NO2	Y	N	Y 2m	2m	N
Worships Hill / Witches Lane Riverhead	Roadside	551026 155710	NO2	N	N	Y 36m School	2m	N
High Street East 1 Seal	Roadside	555092 156694	NO2	Y	N	Y 0m	1m	Y
High Street East 2 Seal	Roadside	555068 156711	NO2	Y	N	Y 0m	1.5m	Y
High Street West 1 Seal	Roadside	554991 156726	NO2	Y	N	Y 3m	3m	N
High Street West 2 Seal	Roadside	554637 156780	NO2	Y	N	Y 7m	2m	N
Seal Hollow Road / A25	Roadside	554093 156798	NO2	N	N	Y 18m	2.5m	N
Miners Arms London Road Dunton Green	Roadside	551281 156860	NO2	Y	N	Y 2.5m	2m	N
57 London Road Dunton Green	Roadside	551216 157007	NO2	Y	N	Y 8m	2m	N
193 London Road Dunton Green	Roadside	551007 157545	NO2	Y	N	Y 1.5m	2m	N
Westerham Road Bessels Green	Roadside	550782 155585	NO2	N	N	Y 8m	2m	N
59 Westerham Road Bessels Green	Roadside	550782 155585	NO2	N	N	Y 8m	2m	N
High Street Eynsford	Roadside	554007 165477	NO2	N	N	Y 9m	1.5m	N
204 Main Road Sundridge	Roadside	548251 155354	NO2	N	N	Y 5m	2m	N
8 Chevening Road Sundridge	Roadside	548474 155424	NO2	N	N	N 7m	1.5m	N
High Street Westerham	Roadside	544415 153914	NO2	Y	N	Y 3m	1m	N
Vicarage Hill Westerham	Roadside	544770 154000	NO2	Y	N	Y 3m	1M	N
Market Square Westerham	Kerbside	544594 154025	NO2	Y	N	Y 2m	0.5m	Y
London Rd 2 Westerham	Roadside	544600 154139	NO2	Y	N	Y 5m	1m	N
High Street Westerham	Roadside	544415 153914	NO2	Y	N	Y 3m	1m	N

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Bartholomew Way Swanley	Roadside	551492 168695	NO2	Y	N	Y 13m	2m	N
London Road 1 Swanley	Kerbside	551592 168499	NO2	Y	N	Y 2m	0.5m	Y
London Rd 2 Swanley	Roadside	552174 168162	NO2	Y	N	Y 6m	1.5m	Y
Wested Lane Swanley	Roadside	552610 167700	NO2	Y	N	Y 14m	5m	Y
Wadard Terrace Swanley	Roadside	553109 167880	NO2	Y	N	Y 15m	115m to M25	N
Beechenlea Lane Swanley	Roadside	552529 168459	NO2	N	N	Y 400m (M25)	1m to B Ln 420m M25	N
Farningham Hill Road Swanley	Urban	553416 167615	NO2	Y	N	Y 17m	27m to M20	Y
Jessamine Birchwood Rd Swanley	Roadside	550298 169582	NO2	N	N	Y 0m	1m	Y
Pucknells Birchwood Rd Swanley	Roadside	550283 169743	NO2	N	N	N 10M	1m	N
Malvern Birchwood Rd Swanley	Roadside	550377 169479	NO2	N	N	N 20m	1m	N
Birchwood Rd / London Rd Junction	Roadside	550258 169575	NO2	N	N	N 10m	1m	N
Farningham Hill A20 Farningham	Roadside	554217 167252	NO2	Y	N	Y 12m	5m to A20 90 m to M20	N
Brands Hatch Road / Ash Road West Kingsdown	Roadside	558033 164933	NO2	N	N	Y 150m	1m to Ash Rd 50m to M20	N

Nitrogen dioxide diffusion tubes are supplied and analysed by ESG 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 tubes are desorbed with distilled water and the extract analysed using segmented flow autoanalyser with ultraviolet detection.

The lab confirms it follows the procedures set out in the Harmonisation Practical Guidance and that it is ranked 'Good' in the WASP intercomparison 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 2011 was **0.91**

Data used to calculate bias factors attached – Appendix D

Using the AEA spreadsheet for calculating precision and accuracy of diffusion tube results the tubes exposed in the co-location study all showed good precision in 2011.

2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

In 2011 neither Greatness or Bat & Ball continuous monitoring sites recorded any exceedance of the 40 µg/m^3 and the 200 µg/m^3 objectives.

Of the 55 NO2 diffusion tubes deployed in 2011 31 sites exceeded the 40 µg/m^3 objective. 21 of the 31 sites are in existing AQMAs. The following 10 sites not in AQMAs showed exceedances:-

Site 77 at Amherst Hill Sevenoaks	48.2 µg/m^3
Site 87 on Bradbourne Vale Road Sevenoaks	56.4 µg/m^3
Site 90 on St Johns Hill Sevenoaks	41.4 µg/m^3
Site 35 at the Seal hollow / A25 Junction	40.8 µg/m^3
Sites 74 and 86 on A25 Bessels Green	45.7 and 49.1 µg/m^3
Sites 84 and 85 on A25 Brasted	55.4 and 47.8 µg/m^3
Sites 83 and 94 at Birchwood Road Swanley	57.4 and 42.1 µg/m^3

Sites 77, 87, 35, 74, 86, 84, and 85 will all be included in the merger of the existing 4 AQMAs along the A25 which runs East/West through the district and is heavily trafficked with congested black-spots where old buildings constrict the carriageway and create small canyons. Some housing is close to the road and based on this monitoring may be exceeding the objective. DEFRA have agreed to this merger of AQMAs without carrying out additional DAs.

Sites 83 and 94are near the junction of Birchwood Road and the B2070 London Road Swanley which t is subject to queuing traffic. A DA of this site has just been completed and found 24 properties subject to exceedance of the annual mean and the Council is proceeding to designation of an AQMA.

The following sites gave borderline results (within 10% of objective):-

In existing AQMA

Site 34 at High Street Seal	36.8 µg/m^3
Sites 48 and 49 on the London Rd Sevenoaks	36.9 and 36.3 µg/m^3
Sites 54 and 57 on the London Road Dunton Green	38.0 and 37.1 µg/m^3
Site 30 Bat & Ball	37.7 µg/m^3
Site 81 Farningham Hill Road	39.6 µg/m^3

Not in existing AQMA

Site 88 on Bradbourne Vale Road Sevenoaks	39.1 µg/m^3
Site 76 Worships Hill Sevenoaks	38.1 µg/m^3
Site 71 A25 Sundridge	39.6 µg/m^3
Site 95 on Birchwood Road Swanley	39.4 µg/m^3

Sites 88, 76 and 71 will be included in the merger of AQMAs along the A25.

Site 95 is included in the recent DA and will be part of a new AQMA

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Automatic Monitoring Data

The Council has only two automatic monitoring sites both in the Sevenoaks town urban area. Greatness background site has monitored NO2 since 1997 and the Bat&Ball roadside site since 2006.

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

Site ID	Location	Within AQMA?	Valid Data Capture 2011	Annual mean concentrations (µg/m^3)				
				2007 *	2008	2009	2010	2011
SEV 2	**Greatness**	**N**	**93%**	22	20	21	21	19
SEV 3	**Bat & Ball**	**Y**	**99%**	34	32	31	30	29

Table 2.4 Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective

No exceedances of 1 hour mean objective recorded

Diffusion Tube Monitoring Data

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2011

Data is not distance corrected
Monthly Mean Values attached – Appendix C …

Site ID	Sit Type R=Roadside K=Kerb	Location	Within AQMA?	Data Capture 2011 %	Annual mean concentrations 2011 (μg/m^3) Adjusted for bias Factor used 0.91
3		Garvock Drive Sevenoaks	N	91.6	13.6
2		High Street South 1 Sevenoaks	Y	100	**63.5**
27		High Street South 2 Sevenoaks	Y	100	**45.0**
28		High Street North 2 Sevenoaks	Y	100	**48.2**
29		High Street North 3 Sevenoaks	Y	91.6	30.5
48		73 London Road Sevenoaks	Y	100	36.9
49		20 London Road Sevenoaks	Y	100	36.3
51		130 London Road Sevenoaks	Y	100	**42.3**
89		133 London Road Sevenoaks	Y	100	36.9
52		142 London Road Sevenoaks	Y	91.6	**42.3**
77		Montreal Road/ Amherst Hill Sevenoaks	N	100	**48.2**
87		Bradbourne Vale Road South Sevenoaks	N	100	**56.4**
88		Bradbourne Vale Road North Sevenoaks	N	100	39.1
90		4A St John's Hill Sevenoaks	N	100	**41.4**
91		Egdean Walk Sevenoaks	N	100	23.3
23		Bat & Ball 1 Sevenoaks	Y	91.6	**42.7**
30		Bat & Ball 2 Sevenoaks	Y	100	37.7
31		Bat & Ball 3 Sevenoaks	Y	91.6	**56.1**
32		Bat & Ball 4 Sevenoaks	Y	100	**58.8**
5		Riverhead 2	Y	91.6	**53.3**
6		Riverhead 3	Y	100	**51.2**
76		Worships Hill / Witches Lane Riverhead	N	100	38.1
7		High Street East 1 Seal	Y	100	**52.1**
33		High Street East 2 Seal	Y	100	**49.0**
8		High Street West 1 Seal	Y	100	36.5
34		High Street West 2 Seal	Y	100	36.8

35		Seal Hollow Road / A25 Seal	N	100	**40.8**
43		Miners Arms London Road Dunton Green	Y	100	36.7
54		57 London Road Dunton Green	Y	100	38.0
57		193 London Road Dunton Green	Y	100	37.1
74		Westerham Road Bessels Green	N	91.6	**45.7**
86		59 Westerham Road Bessels green	N	100	**49.1**
96		High Street Eynsford	N	100	29.9
71		204 Main Road Sundridge	N	100	39.6
92		8 Chevening Road sundridge	N	100	32.4
12		Station Road Brasted	Y	100	**47.8**
85		Chart Lane Brasted	N	100	**47.6**
84		West End Brasted	N	100	**55.4**
24		High Street Westerham	Y	100	**46.4**
25		Vicarage Hill Westerham	Y	91.6	32.7
36		Market Square Westerham	Y	100	**53.6**
37		London Road Westerham	Y	100	**51.3**
75		London Rd 2 Westerham	Y	100	32.9
39		Bartholomew Way Swanley	Y	100	**45.1**
40		London Road 1 Swanley	Y	100	**52.3**
41		London Rd 2 Swanley	Y	100	**45.1**
13		Wested Lane Swanley	Y	100	**42.0**
14		Wadard Terrace Swanley	Y	100	**41.6**
81		Farningham Hill Road Swanley	Y	91.6	39.5
83		Birchwood Rd Jessamine Swanley	N	100	**57.4**
93		Birchwood Road Pucknells Swanley	N	100	31.9
95		Birchwood Road Malvern Swanley	N	100	39.4
94		Birchwood Rd / London Road Swanley	N	100	**42.1**
26		Farningham Hill A20 Farningham	Y	100	**44.3**
67		Brands Hatch Road / Ash Road West Kingsdown	N	91.6	36.5

Table 2.6 Results of Nitrogen Dioxide Diffusion Tubes 2007 to 2011

Site ID	Location	Within AQMA?	Annual mean concentrations ($\mu g/m^3$) Adjusted for bias				
			2007 *	2008	2009	2010	2011
	Bias Factor		0.8	0.8	0.87	0.83	0.91
3	Garvock Drive Sevenoaks	N	16.9	16.1	14.3	15.8	13.5
2	High Street South 1 Sevenoaks	Y	**61.1**	**58.8**	**62.8**	**63.7**	**63.5**
27	High Street South 2 Sevenoaks	Y	**46.3**	**43.0**	**44.3**	**46.7**	**45**
28	High Street North 2 Sevenoaks	Y	**48.7**	**43.0**	**49.6**	**50.4**	**48.2**
29	High Street North 3 Sevenoaks	Y	35.9	32.9	33.2	31.6	30.5
48	73 London Road Sevenoaks	Y	37.2	32.6	35.1	35.5	36.9
49	20 London Road Sevenoaks	Y	37.9	33.1	37.6	36.5	**42.3**
51	130 London Road Sevenoaks	Y	**51.4**	**41.1**	**42.0**	**43.9**	36.9
89	133 London Road Sevenoaks	Y	#	#	36.4	35.8	36.9
52	142 London Road Sevenoaks	Y	**41.7**	39.1	**43.5**	**41.3**	**42.3**
77	Montreal Road/ Amherst Hill Sevenoaks	N	#	**44.7**	**47.8**	**47.3**	**48.2**
87	Bradbourne Vale Road North Sevenoaks	N	#	#	39.8	**41.6**	39.1
88	Bradbourne Vale Road South Sevenoaks	N	#	#	**54.1**	**53.7**	**56.4**
90	4A St Johns Hill Sevenoaks	N	#	#	#	#	**41.4**
91	Egdean Walk Sevenoaks	N	#	#	#	#	23.3
23	Bat & Ball 1 Sevenoaks	Y	**42.9 ***	**40.8**	**36.0**	**40.7**	**42.7**
	Bat & Ball 2 Sevenoaks	Y	**43.9**	**42.9**	**41.5**	38.6	37.7
31	Bat & Ball 3 Sevenoaks	Y	**58.8**	**54.8**	**56.2**	**55.8**	**55.1**
32	Bat & Ball 4 Sevenoaks	Y	**55.6**	**53.8**	**56.5**	**61.9**	**58.8**
5	Riverhead 2	Y	**44.8**	**49.4**	**49.2**	**50.6**	**53.3**
6	Riverhead 3	Y	**49.4**	**49.8**	**50.7**	**53.2**	**51.2**
42	62 London Road Riverhead	Y	**44.2**	**40.4**	**48.2**	**44.4**	**44.5**
76	Worships Hill / Witches Lane Riverhead	N	#	**40.8**	**41.8**	38.0	38.1
7	High Street East 1 Seal	Y	**49.1**	**48.8**	**53.1**	**51.0**	**52.1**

Council Name - Sevenoaks

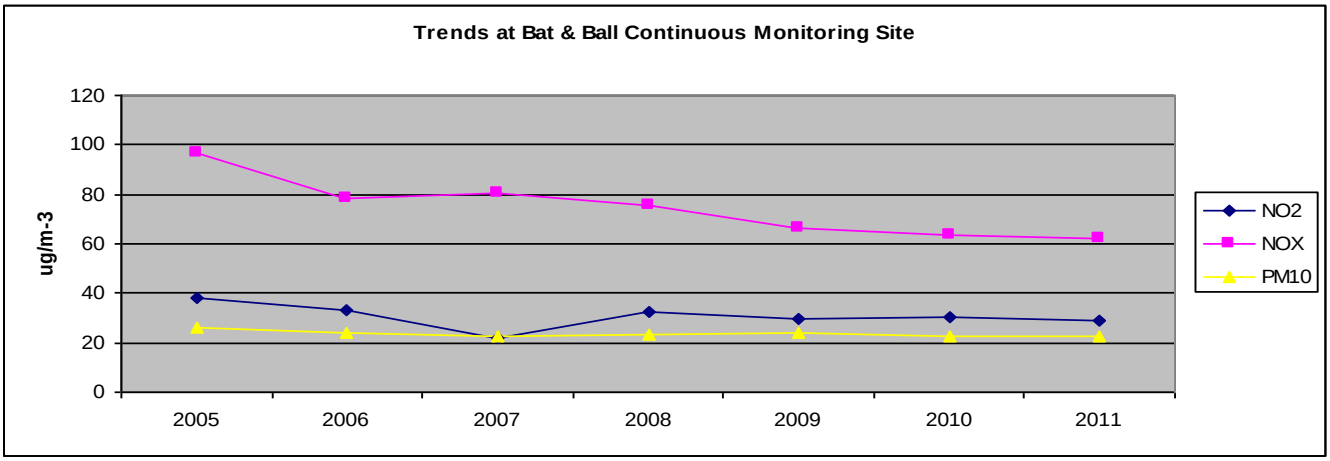
		AQMA	**2007**	**2008**	**2009**	**2010**	**2011**
33	High Street East 2 Seal	Y	**50.3**	**48.8**	**50.3**	**51.9**	**52.1**
8	High Street West 1 Seal	Y	35.8	33.2	34.6	38.6	36.5
34	High Street West 2 Seal	Y	37.1	38.2	37.6	38.8	36.8
35	Seal Hollow Road Jcn Seal	N	36.9	38.6	**41.4**	38.8	**40.8**
43	London Road Dunton Green	Y	38.4	37.3	37.5	**41.1**	35.7
54	London Road (57) Dunton Green	Y	**43.0**	**42.4**	**42.8**	38.7	38.0
57	London Road (193) Dunton Green	Y	38.9	37.5	37.0	**40.7**	37.1
74	Westerham Road Bessels Green	N	#	39.1	**42.0**	37.7	**45.7**
86	Westerham Road (59) Bessels Green	N	#	#	**48.2**	**40.3**	**49.1**
96	High Street Eynsford	N	#	#	#	29.8	29.9
71	204 Main Road Sundridge	N	#	#	39.8	36.3	39.6
92	Chevening Road Sundridge	N	#	#	#	33.9	32.4
12	Station Road Brasted	Y	**48.4**	**48.2**	**48.8**	**50.1**	**47.6**
85	Chart Lane Brasted	N	#	#	**52.7**	**52.2**	**55.4**
84	West End Brasted	N	#	#	**41.7**	35.7	34.4
24	High St Westerham	Y	**45.9**	**45.2**	**46.5**	**46.0**	**48.6**
25	Vicarage Hill Westerham	Y	38.3	**34.5**	33.2	34.8	32.7
36	Market Square Westerham	Y	**50.2**	**53.3**	**56.5**	**51.8**	**53.5**
75	London Road 2 Westerham	Y	#	34.0	34.8	33.5	32.9
39	Bartholomew Way 2 Swanley	Y	**42.6**	**41.1**	**42.3**	**44.0**	**45.4**
40	London Road 1 Swanley	Y	**54.3**	**47.2**	**49.1**	**55.7**	**52.3**
41	London Road 2 Swanley	Y	**44.6**	**44.9**	**48.4**	**48.1**	**45.1**
13	Wested Lane Swanley	Y	**42.0**	**41.7**	**44.5**	**48.0**	**45.1**
14	Wadard Terrace Swanley	Y	**41.9**	38.9	38.5	38.8	**42.0**
81	Farningham Hill Road Swanley	Y	#	37.4	**40.1**	34.8	**41.8**
83	Jessamine Birchwood Rd Swanley	N	#	**56.3**	**57.8**	**56.9**	**57.4**
93	Pucknells Birchwood Road Swanley	N	#	#	#	32.8	31.9
95	Malvern Birchwood Road Swanley	N	#	#	#	39.6	39.4
94	Birchwood Road / London Road Jcn	N	#	#	#	39.0	**42.1**
26	Farningham Hill A20 Farningham	Y	**47.3**	**45.3**	**45.7**	**49.4**	**44.1**
67	Brands Hatch Road / Ash Road West Kingsdown	N	35.1 *	36.5	39.5	32.3	36.4

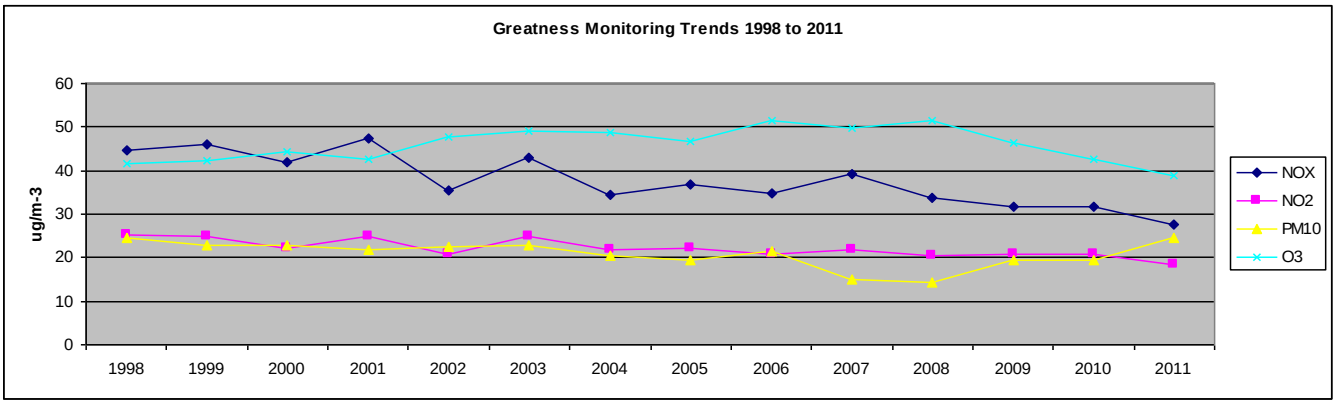
Trends

Figure 2.4

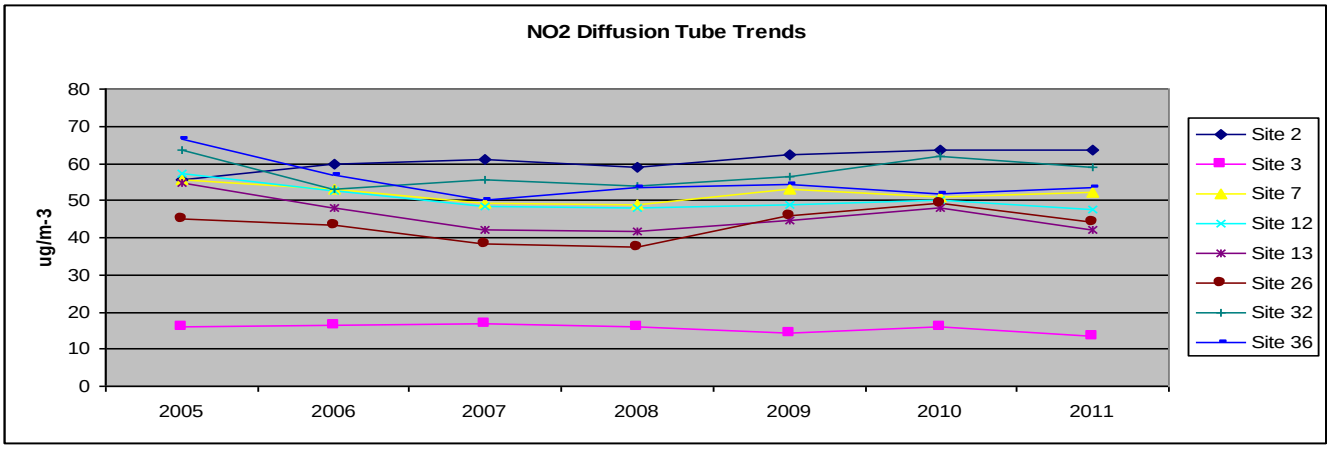
The following charts show trends for sites with long term monitoring:-

2.4a Continuous monitoring sites





2.4b NO2 Diffusion Tubes Example of Trends



High Street Sevenoaks	Garvock Drive, Sevenoaks, background	A25 Seal	M25 Brasted, southern boundary	Wested Ln adj M25/M20 Jcn3	Farningham near M20	Bat & Ball	Westerham Market Square
Site 2	Site 3	Site 7	Site 12	Site 13	Site 26	Site 32	Site 36

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2.2.2 PM_{10}

SDC only monitors PM10 at the Greatness background site and at the roadside Bat & Ball site.

PM10 monitoring is by TEOM.

The annual mean at both sites did not exceed 40 μg/m^3

Neither site had more than 35, 24-hour exceedences of 50 μg/m^3

The 90th percentile of 24-hour concentrations did not exceed 50 μg/m^3 at either site

Greatness is a background site and there is no relevant exposure. Bat & Ball is in an AQMA but not located close to exposed housing duty sitting issues. Site used for model validation.

2009-2011 data has been VCM corrected. Pre 2009 data adjusted by applying a 1.3 factor.

The reason for the increase in days over 50 μg/m^3 is not known. There have been no local changes in the monitoring area e.g significant increase in traffic, new industrial development, which might account for this increase.

Table 2.7 Results of PM_{10} Automatic Monitoring: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2011	Annual mean concentrations (μg/m^3)					
				2006 *	2007 *	2008	2009	2010	2011
SEV 2	Greatness	N	93%	22	19	19	20	19.7	24.6
SEV 3	Bat & Ball	Y	98%	27	26	26	23.4	19.5	22.3

Table 2.8 Results of PM_{10} Automatic Monitoring: Comparison with 24-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2011	Number of Exceedences of hourly mean (50 μg/m^3) *If data capture < 90%, include the 90th %ile of hourly means in brackets.*					
				2006 *	2007 *	2008	2009	2010	2011
SEV 2	Greatness	N	93%	3	2	2	5	1	11
SEV 3	Bat & Ball	Y	98%	10	9	6	4	2	17

PM10 Trend

See Table 2.4a above.

2.2.3 Sulphur Dioxide

Sulphur dioxide is only monitored at our background site at Greatness.

No exceedances of any of the three SO2 objectives was recorded in 2011.

The annual mean was 1.5 µg/m^3 in 2009, 1.1 µg/m^3 in 2010 and 0.9 µg/m^3 in 2011

Data capture rate in 2011 was 95%

2.2.4 Benzene

Benzene is not monitored

2.2.5 Other pollutants monitored

Carbon monoxide and Ozone are monitored at our Greatness background site

Carbon monoxide.

There were no exceedances of the 10 mg/m^{-3} maximum running 8 hour mean in 2011.

The annual average level was > 0.1 mg/m^{-3} and the maximum 15min reading was 8.7 mg/m^{-3}

Ozone

The 100 ug/m^{-3} 8 hour mean was exceeded on 24 days in 2011. The Objective (not in regulations) of no more than 10 days per year was breached.

The 2011 annual average was 38.7 ug/m^{-3} and the maximum 15 min mean was 163.6 ug/m^{-3}

Council Name - Sevenoaks

2.2.6 Summary of Compliance with AQS Objectives

Sevenoaks District Council has measured concentrations of Nitrogen dioxide above the annual mean objective at locations outside of existing AQMAs. The Council will not be proceeding to a Detailed assessment as sites along the A25 are to be included in a merger of 4 existing AQMAs and sites at Birchwood Rd Swanley have just been subject to a DA which confirms the need to declare an AQMA.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Sevenoaks District Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic

Sevenoaks District Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

3.3 Roads with a High Flow of Buses and/or HGVs.

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

3.4 Junctions

Diffusion tube monitoring close to housing in Birchwood Road close to its junction with the London Road Swanley has shown substantial exceedance of the annual mean NO2 objective in 2008, 2009, 2010, 2011.

This area has been subject to a Detailed Assessment completed December 2011. It finds likely exceedances of the No2 annual mean objective with 24 dwellings exposed. An AQMA will therefore be declared.

3.5 New Roads Constructed or Proposed Since the Last Round of Review and Assessment

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

3.6 Roads with Significantly Changed Traffic Flows

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

3.7 Bus and Coach Stations

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

4 Other Transport Sources

4.1 Airports

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

4.2 Railways (Diesel and Steam Trains)

Train services through the district consist of 3rd rail electric commuter trains and a mixture of electric and diesel freight primarily electric channel tunnel services. There are no depots or freight yards.

4.2.1 Stationary Trains

Sevenoaks District Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

4.2.2 Moving Trains

Sevenoaks District Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

4.3 Ports (Shipping)

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

5 Industrial Sources

5.1 Industrial Installations

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

Sevenoaks District Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been Introduced

Sevenoaks District Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment

Sevenoaks District Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or to its knowledge nearby in a neighbouring authority.

5.2 Major Fuel (Petrol) Storage Depots

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

5.3 Petrol Stations

The Council has identified 13 petrol stations with annual throughput greater than 2000m3. Five do not require Stage 2 vapour recovery, the remainder have Stage 2 fitted. No station is on a road with a traffic flow greater than 30,000vpd.. Most do not have relevant exposure (10m)….

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

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

5.4 Poultry Farms

Sevenoaks District Council confirms that there are no known poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

Sevenoaks District Council does not know of the existence of any biomass combustion plant in the Local Authority area.

6.2 Biomass Combustion – Combined Impacts

Sevenoaks District Council does not know of the existence of any biomass combustion plant in the Local Authority area.

6.3 Domestic Solid-Fuel Burning

Sevenoaks District Council confirms that there are no areas of significant domestic solid fuel or oil fuel use in the Local Authority area.

7 Fugitive or Uncontrolled Sources

There is one operational sand Quarry in Sevenoaks (Tarmac) and immediately adjacent a Landfill site (Cory Environmental) which has another 5-6 years life. The quarry has recently obtained planning permission to extend its excavation area and to operate for another 30 years.

There have been complaints about the landfill site (odour, vermin, failure to cover waste) and legal action has been taken by the Environment Agency.

Nearby residents have made occasional complaints of dust nuisance, thought to be from vehicles/haul roads. There were no complaints in 2011.

There are no assessments of the sites available and no monitoring for dust/PM10 from the site.

There is one small combined sand quarry / landfill site in the London Borough Of Swanley which immediately abuts the district boundary and an AQMA in Swanley. Whilst complaints of dust nuisance were made by residents at a time when a planning inquiry into the site was being held no recent complaints of nuisance have been received.

There are no assessments of the site available and no monitoring for dust/PM10 from the site.

It is not thought that a DA of the Bourne Woods site is necessary.

Sevenoaks District Council has identified potential sources of fugitive particulate matter (Sevenoaks quarry and landfill) that meet the specified criteria in TG(09) [Box 5.10], and is undertaking a Detailed Assessment for PM^{10}**.**

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

Monitoring has identified potential and actual exceedences at relevant locations outside of the existing AQMAs.

All monitoring results within AQMAs are not below all air quality objective, such that it is not appropriate to revoke any of the AQMAs at this time.

From the data available NO2 levels have fallen slightly over the last 6 years but appear to be levelling out and at some sites showing a rise.

A Detailed Assessment of the Birchwood Road / London Road Swanley has found that an Air Quality Management area needs to be declared.

Exceedances (NO2) outside the existing four AQMAs along the A25 will be dealt with by extending and merging the AQMAs to form one long corridor along the road. DEFRA have agreed that further Detailed Assessments are not required.

A small section of Sevenoaks High Street were the road is narrow and forms a street canyon requires an additional designation to include the Nitrogen dioxide one hour objective within the existing AQMA, which covers a larger area for NO2 annual mean objective exceedance.

8.2 Conclusions from Assessment of Sources

No significant new impacts have been identified.

However due to the possibility of fugitive emissions from a local landfill/quarry site the Council is in accordance with TG(09) undertaking a Detailed Assessment for PM^{10}.

8.3 Proposed Actions

Complete the Detailed Assessment for PM10 fugitive emissions from Sevenoaks quarry/landfill site.

Designate an Air Quality Management Area as advised by the December 2011Detailed Assessment around the Birchwood Road / London Road junction in Swanley for traffic related NO2.

The Seal, Bat & Ball, Riverhead and Westerham AQMAs to be extended and merged to include exceedances found along the A25 outside of the existing AQMAs.

None of the existing AQMAs can yet be revoked.

Maintain monitoring where possible subject to severe financial constraints arising from current economic situation and reductions in local authority budgets.

Continue to implement and review current Air Quality Action Plan

Submit Progress Reports in 2012 and 2013.

9 References

- Local Air Quality Management Technical Guidance
- LAQM LA Tools
- Sevenoaks District Council Action Plan 2009
- Sevenoaks District Council NO2 Diffusion Tube monitoring data for 2007/8/9/10/11.
- Sevenoaks District Council continuous monitoring data – ERG, Kings College London

Appendices

Appendix A: Maps of Existing AQMAs

Appendix B: Maps showing Monitoring Sites

Appendix C: Monthly NO2 Diffusion Tube Data for 2011

Appendix D: Diffusion Tube Bias