Reigate & Banstead
BOROUGH COUNCIL
Banstead | Horley | Redhill | Reigate

Progress Report (2010) on Air Quality within the Borough of Reigate and Banstead.

March 2011

Reigate and Banstead Borough Council, Environmental Health Services,
Town Hall, Castlefield Road, Reigate, Surrey, RH2 0SH. Telephone: 01737 276403 Fax: 01737 276404.

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Client	Reigate and Banstead Borough Council	**Principal Contact**	Leon Hibbs

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Report Prepared By:	Dr Clare Beattie

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Air Quality Consultants Ltd
23 Coldharbour Road, Bristol BS6 7JT Tel: 0117 974 1086
12 Airedale Road, London SW12 8SF Tel: 0208 673 4313
aqc@aqconsultants.co.uk

Registered Office: 12 St Oswalds Road, Bristol, BS6 7HT
Companies House Registration No: 2814570

Executive Summary

Part IV of the Environment Act 1995 requires local authorities to periodically review air quality in their area against current and future air quality objectives as set out in the Air Quality Strategy 2007, and associated Regulations.

Under requirements set out in the Environment Act, and associated Government guidance, the Council is required to produce a 'Progress Report' detailing any new developments within the borough that may affect air quality, the results of any air pollution monitoring to date, and where an Air Quality Management Area (AQMA) has been declared, an update on any Action Plan the Council has.

Within Reigate and Banstead Borough the concentration of six of the seven pollutants that have been assessed i.e. carbon monoxide, benzene, 1,3 butadiene, lead, sulphur dioxide, and particulate matter (PM_{10}), continue to meet and in most cases are considerably lower than the relevant UK objectives. There have been no new developments either within or in the immediate vicinity of the borough that would affect the concentrations of these pollutants.

The main pollutant of concern within the borough remains nitrogen dioxide from road traffic. In terms of nitrogen dioxide, at the majority of sites in the borough in 2009, concentrations were below relevant air quality objectives. However, there are sites within already declared AQMAs which are exceeding the annual mean objective. In addition, there are four diffusion tube sites which are exceeding the annual mean objective, but are not currently in AQMAs. The two in Hooley (RB136 and RB137) are also over, or near, 60 $\mu g/m^3$ suggesting potential issues with the nitrogen dioxide hourly mean objective. These two sites were new in 2009 and a Detailed Assessment will be required at this location.

Sites near the Drift Bridge Hotel and Ladbrook Grove, Redhill are also showing exceedences, but neither of these sites are representative of relevant exposure and hence no further action is necessary.

A monitoring site at Reigate Hill was the subject of a recent Detailed Assessment and will be declared an AQMA in 2011. In 2009 this site has dropped marginally below the objective.

In addition, air pollutant concentrations within AQMAs have also been assessed. The Dean Lane AQMA has been well below the objective for a number of years and it is therefore recommended that the Dean Lane AQMA is revoked.

The M23 South AQMA has a surrogate site set up in a field 2km to the north of the AQMA at a comparable distance from the motorway. This site is significantly below the objective. It is therefore recommended that the M23 South AQMA is revoked.

Nitrogen dioxide concentrations within the Rushworth Road AQMA have now met the relevant air quality objective for a number of years, and based on current concentrations, it is recommended that this AQMA is revoked.

The Blackhorse Lane AQMA had a much reduced concentration in 2009, well below the objective. It is unclear why this occurred as the kerbside site remains at about the same concentration as previous years. As the concentration at the façade has only been below the objective in 2009, it is considered too early to consider revoking the AQMA.

There are a large number of diffusion tubes within the Reigate High Street AQMA showing exceedences both at kerbside and building facades. This AQMA should therefore be retained.

The Drift Bridge AQMA consists of two properties with concentrations generally just above or below the objective level. This AQMA should therefore be retained.

Concentrations within the Merstham AQMA in 2009 were below air quality objectives at the majority of sites. However, one site is over the objective, even at relevant exposure, and trend data do not show significant reductions. This AQMA should therefore be retained.

The M25 AQMA is located between junctions 7 and 9 of the M25 within the borough boundaries and consists of a 30m strip either side of the motorway. All monitoring sites within the AQMA have shown no exceedences of the annual mean objective for the last 3 years. However, there is relevant exposure closer to the motorway than the nearby monitor, and when the concentration is adjusted to relevant exposure, a marginal exceedence is identified. Because of this, and the proposed widening of the motorway from J5 to J7, and plans for a controlled motorway covering the length of the AQMA, it is recommended that the M25 AQMA is retained.

In 2009, only one monitoring site with relevant exposure within the Horley AQMA exceeded the nitrogen dioxide annual mean objective, while to date, nitrogen dioxide concentrations at the centre of the AQMA have consistently met the relevant air quality objectives. However, with continuing uncertainty over the impact of airport development on nitrogen dioxide concentrations to the south/ south-west of the AQMA, the impact of diesel emissions on the north and north-western side of the AQMA and to avoid the creation of a ‘polo’ shaped AQMA, the spatial extent of the current AQMA remains unchanged.

There are no identified new developments which will need to be considered in the next Updating and Screening Assessment or be considered within a Detailed Assessment.

Implementation of measures to improve air quality is progressing, both through formally adopted Air Quality Action Plans for the M25 and Horley AQMAs, and through the progression of Action Plans for the other AQMAs within Reigate and Banstead. In addition, the Local Transport Plan (LTP) is due to be updated before April 2011 and partnership working between transport planners and air quality professionals has identified the need for an Air Quality Strategy as part of that document. It is hoped that as the LTP and Air Quality Strategy are taken forward, there will be consequent reductions in pollutant emissions.

Contents

Reigate and Banstead Borough Council confirms that it accepts the recommendations made in this report.

Acknowledgements

Many thanks to Leon Hibbs of Reigate and Banstead Borough Council for use of previous trend data and spreadsheets.

1 Introduction

Description of Local Authority Area

1.1 Reigate and Banstead Borough Council is located in Surrey, just to the north of Gatwick Airport and to the South of the London Boroughs of Sutton and Croydon. It includes the towns of Reigate, Banstead, Redhill and Horley. There are a number of already identified air quality issues within the borough, relating to both traffic and pollution from Gatwick Airport.

Purpose of Progress Report

1.2 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.

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

Air Quality Objectives

1.4 The air quality objectives applicable to Local Air Quality Management (LAQM) in **England** are set out in the Air Quality (England) Regulations 2000 (SI 928), and the Air Quality (England) (Amendment) Regulations 2002 (SI 3043). They are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre μg/m^3 (for carbon monoxide the units used are milligrammes per cubic metre, mg/m^3). Table 1.1 includes the number of permitted exceedences in any given year (where applicable).

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

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

Summary of Previous Review and Assessments

1.5 In the first round of review and assessment, potential exceedences of the annual mean nitrogen dioxide air quality objective were identified and a number of AQMAs were declared close to busy roads and to Gatwick Airport. Several of these AQMAs were subsequently revoked, leaving three AQMAs: one beside the M25, one beside the M23, and one in Horley, close to Gatwick Airport.

1.6 The Updating and Screening Assessment carried out at the start of the second round of Review and Assessment for Reigate and Banstead in 2003 indicated a further risk of exceeding the annual mean nitrogen dioxide and PM_{10} objectives at residential properties at the junction of Rushworth Road and the A217, and recommended a Detailed Assessment for this area.

1.7 The Detailed Assessment concluded that an AQMA was required at this location for nitrogen dioxide, but not for PM_{10}. It also investigated air quality within current AQMAs and at a number of locations where AQMAs had previously been in place, but which had been subsequently revoked. The most significant conclusions for these locations were that a previously revoked AQMA at the junction of the A23 and Dean Lane should be redeclared, and that the three remaining AQMAs should be retained.

1.8 The 2005 Progress Report presented monitoring data for 2004. Nitrogen dioxide concentrations predicted for 2005 from concentrations measured during 2004 within the newly declared Rushworth Road and redeclared Dean Lane AQMAs showed that the annual mean nitrogen dioxide objective would be met. However, the results were close to the objective and a Further Assessment of air quality at these locations was undertaken.

1.9 Routine monitoring of nitrogen dioxide concentrations elsewhere within the Borough identified a further three sites where the concentrations were likely to breach the annual mean objective. These included residential properties at the junction of the A240 Reigate Road and the A2022 Fir Tree Road (Drift Bridge), along Reigate High Street and Church Street (between the High Street and Bancroft Road) and a property on the A217 near Blackhorse Lane and the M25 junction 8 interchange. Following the completion of a detailed assessment in 2006 the Drift Bridge site was declared an AQMA, based on an exceedence of the annual average nitrogen dioxide objective. On Reigate High Street and at the Blackhorse Lane site, nitrogen dioxide concentrations were such that the Council declared the AQMAs without a Detailed Assessment, and proceeded direct to a Further Assessment. The Updating and Screening Assessment of 2006 concluded that there was a potential exceedence of the annual mean nitrogen dioxide objective in Merstham and a Detailed Assessment was subsequently undertaken along the A23 London Road North. This Detailed Assessment (2007) concluded that an AQMA was required in this location and further monitoring should be undertaken. The Further Assessment subsequently confirmed the need for an AQMA in this location.

1.10 By 2009 the increasing proportion of diesel vehicles in the UK fleet and associated increase in primary nitrogen dioxide emissions meant that the 2009 USA identified a number of sites outside the AQMAs where measured concentrations of nitrogen dioxide were above the objective. The USA concluded that a Detailed Assessment should be carried out for nitrogen dioxide for Redhill Town Centre and also for Reigate Hill.

1.11 The 2010 Detailed Assessment concluded that the Council should declare AQMAs for both Reigate Hill and Redhill.

1.12 Figures 1.1 to 1.9 show the currently declared AQMAs in Reigate and Banstead, which range from individual properties to larger residential areas.

Figure 1.1. A217 Blackhorse Lane AQMA © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

Figure 1.2. Dean Lane AQMA

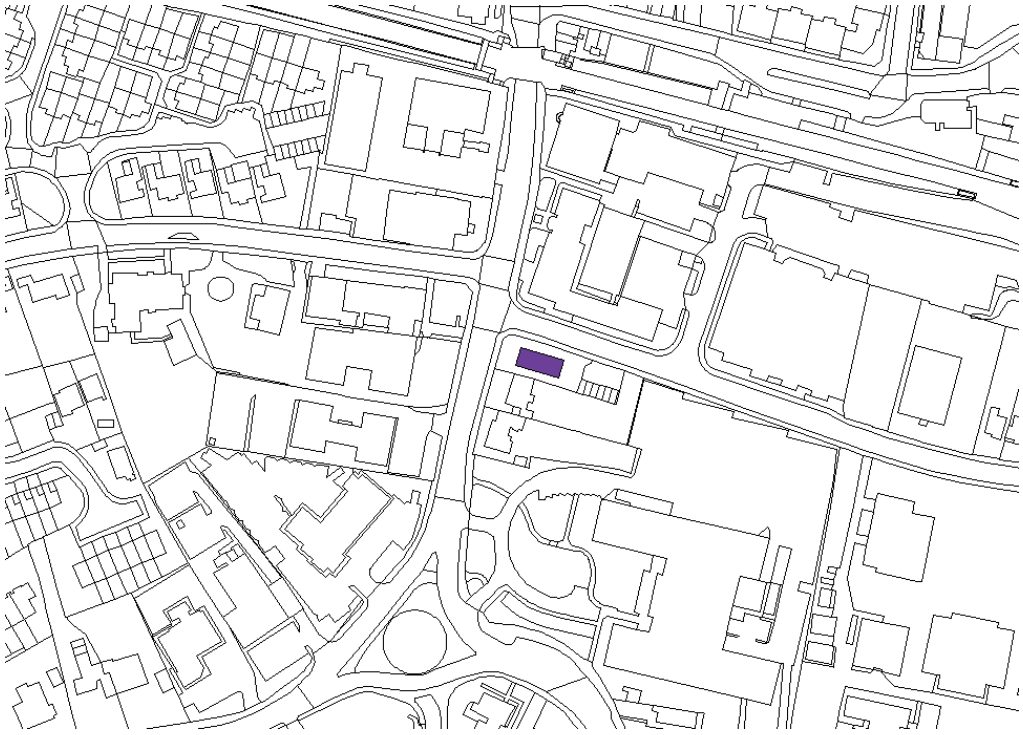


Figure 1.3. Rushworth Road AQMA

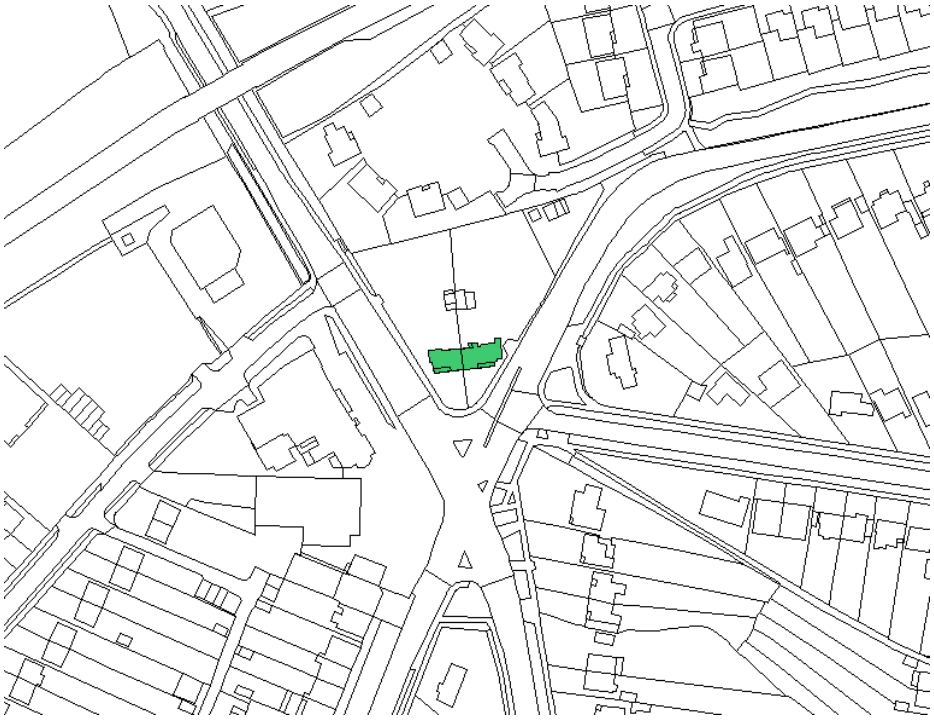


Figure 1.4. Drift Bridge AQMA © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

Figure 1.5. Reigate High Street AQMA © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

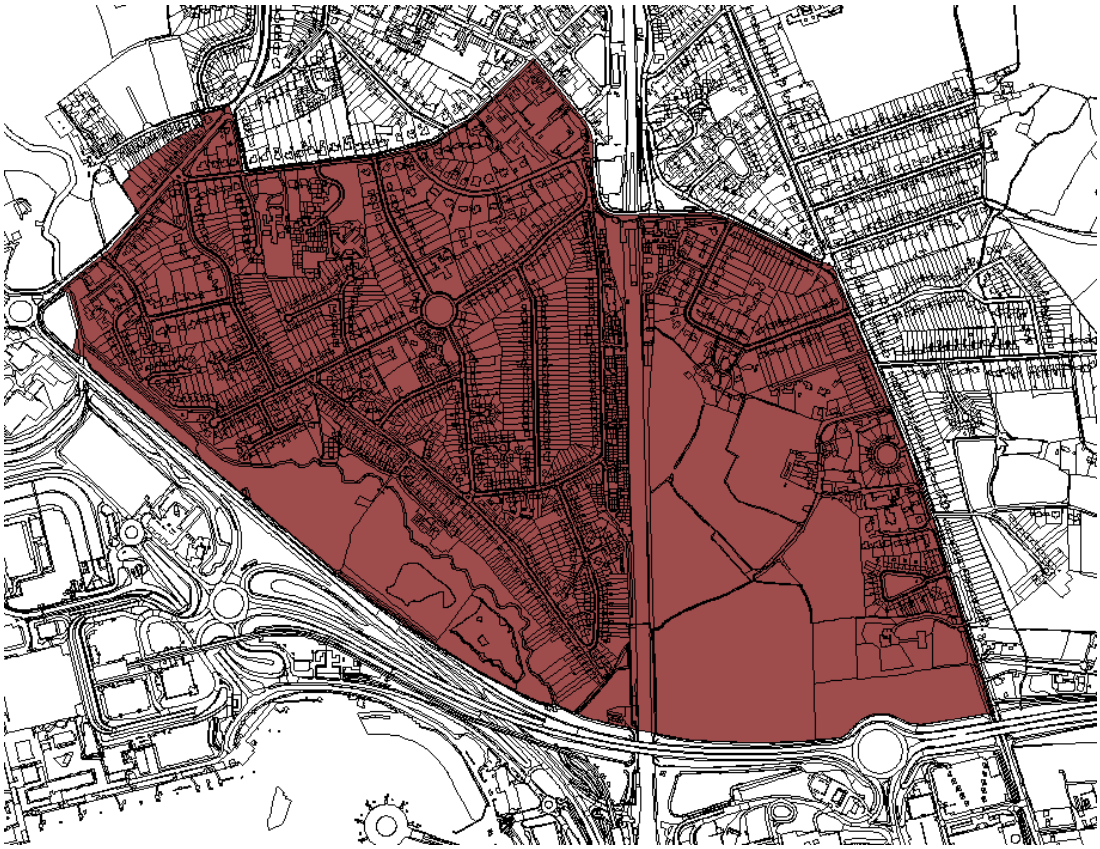


Figure 1.6. Horley AQMA © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

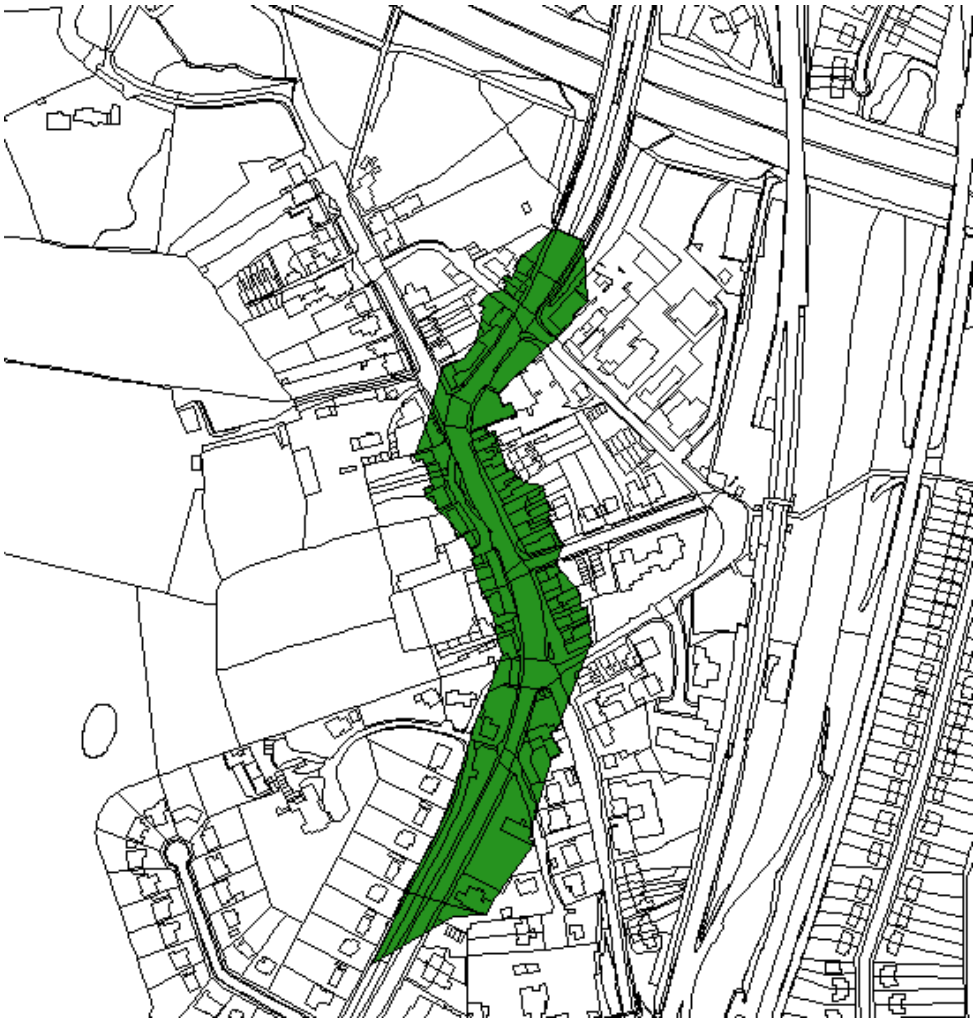


Figure 1.7. Mersham AQMA © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

Figure 1.8. M23 AQMA © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

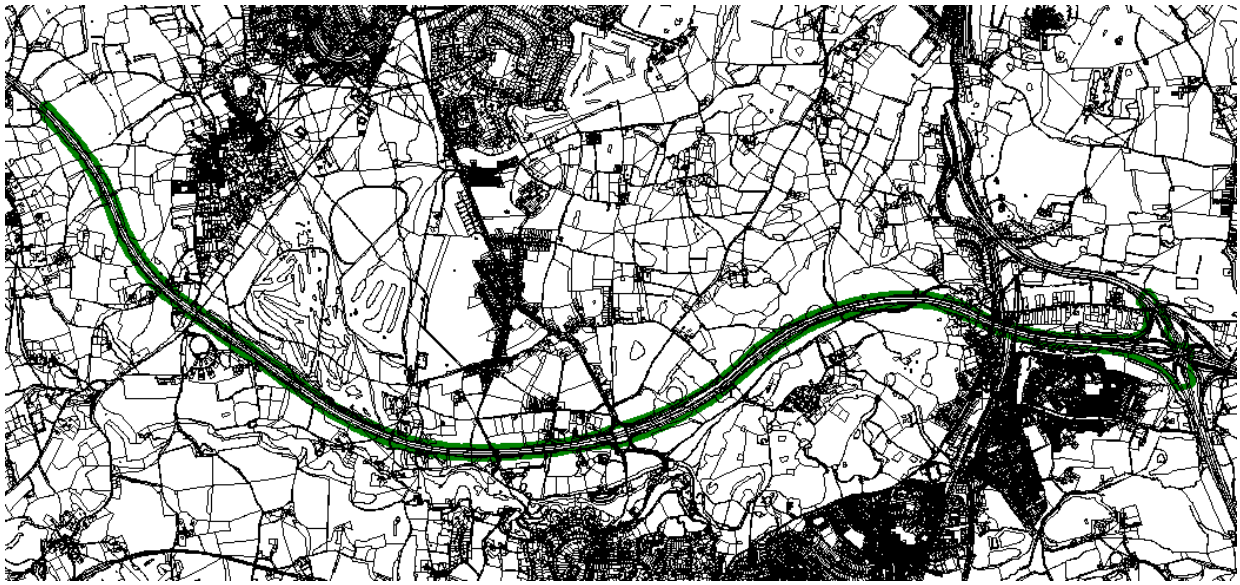


Figure 1.9. M25 AQMA © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

2 New Monitoring Data

Summary of Monitoring Undertaken

Automatic Monitoring Sites

2.1 Reigate and Banstead Borough Council operates four automatic monitors (RG1, RG2, RG3 and RG4). RG4 began operation on Reigate High Street mid 2009. The locations of RG1 to RG3 are shown in Figure 2.1. RG4 is located at the same site as the diffusion tubes RB142, 143 and 144 in Figure A1.8 (Area G).

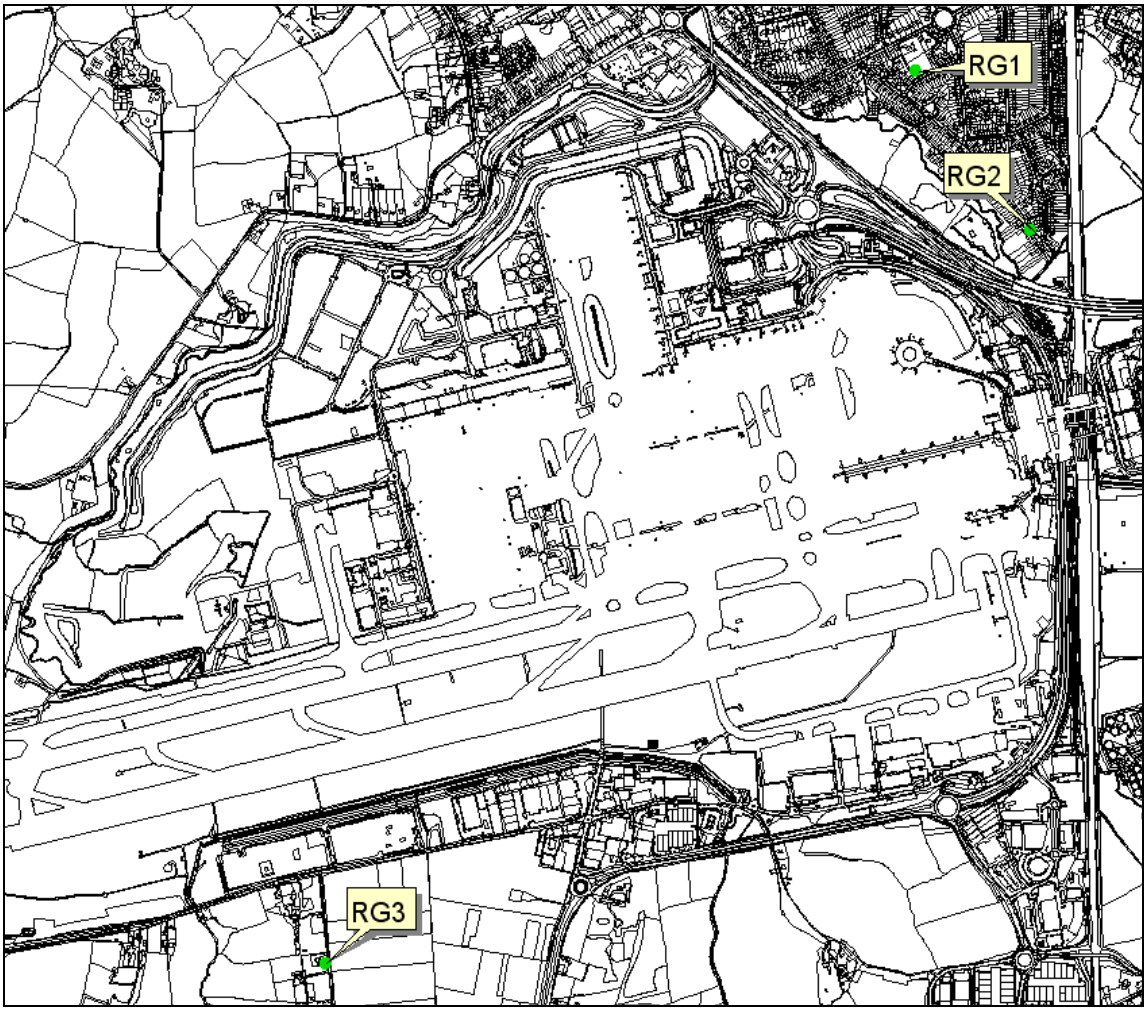


Figure 2.1. Automatic Monitor Locations © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

2.2 These are calibrated automatically overnight and manually calibrated every 14 days. Data are ratified and verified by ERG. QA/QC is carried out by NPL.

Table 2.1: Details of Automatic Monitoring Sites

Site Name	Site Type	Grid Reference	Pollutants Monitored	In AQMA?	Relevant Exposure?	Distance to kerb?	Worst-Case Exposure?
RG 1 - Michael Crescent, Horley	Suburban	528208 142337	NOx PM_{10} O_3[1]	Y	Y	19m	N
RG 2 - 74 The Crescent, Horley	Suburban	528554 141855	NOx	Y	Y	3m	N
RG 3 - Poles Lane Pumping Station, Crawley	Suburban	526420 139638	NOx O3	N	Y	11m	N
RG 4 – Reigate High Street	Kerbside	525335.3 150250.4	NOx	Y	Y	1m	Y

Non-Automatic Monitoring

2.3 Reigate and Banstead Borough Council operates diffusion tubes at 107 sites, details of which are in Table 2.2. Detailed maps of diffusion tube locations are included in Appendix A. Reigate and Banstead Borough Council uses diffusion tubes prepared and analysed by Lambeth Scientific Services (50% TEA in acetone). Results from the WASP scheme[2] show acceptable performance for Lambeth Scientific Services, and the laboratory precision is good overall (precision spreadsheet 09/10). The Council operates three co-location studies at the automatic sites. The 2009 local bias correction factor for Lambeth is 1.014. All 2009 data have been adjusted using this figure.

Table 2.2: Details of Non-Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure?	Distance to Kerb of Nearest Road (m)	Worst-Case Location?[a]
RB1	Near Road	525246 150252	NO_2 benzene	Y	Y	5.1	N
RB3	Urban Background	524943.89 159629.82	NO_2	N	N	n/a	n/a

[1] Ozone only monitored for 6 months in 2008 as part of a short term study

[2] The Workplace Analysis Scheme for Proficiency (WASP) is an independent analytical performance testing scheme, operated by the Health and Safety Laboratory (HSL).

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure?	Distance to Kerb of Nearest Road (m)	Worst-Case Location?[a]
RB8	Intermediate	525246 150286	NO_2	N	Y	39.5	N
RB9	Urban Background	525750 149677	NO_2	N	Y	n/a	n/a
RB11	Other - Gatwick	528102.62 142228.33	NO_2 benzene	Y	Y	n/a	n/a
RB12	Kerbside	528424 142934	NO_2	Y	N	0.4	N
RB13	Intermediate	528362 142983	NO_2	N	Y	53.7	N
RB17	Urban Background	528511 149715	NO_2	N	N	n/a	n/a
RB18	Urban Background	529263 153156	NO_2	N	N	n/a	n/a
RB19	Intermediate	529067 153375	NO_2	N	N	62.1	N
RB20	Roadside	529026 153420	NO_2 benzene	Y	N	2.8	Y
RB21	Roadside	523198 160095	NO_2	N	N	1.8	Y
RB22	Intermediate	523260 160111	NO_2	N	N	21.8	N
RB23	Urban Background	523612 159906	NO_2	N	N	n/a	n/a
RB24	Background	528208 142337	NO_2	Y	Y	n/a	n/a
RB25	Background	528208 142337	NO_2	Y	Y	n/a	n/a
RB26	Background	528208 142337	NO_2	Y	Y	n/a	n/a
RB27	Roadside (M25)	521873 153896	NO_2	Y	Y	18.1	Y
RB28	Roadside (M25)	521913 153940	NO_2	N	Y	76.5	N
RB29	Roadside (M25)	521921 153937	NO_2	N	Y	80.1	N
RB30	Roadside (M25)	522112 153728	NO_2	Y	Y	31.1	Y

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure?	Distance to Kerb of Nearest Road (m)	Worst-Case Location?[a]
RB31	Roadside (M25)	525506 152366	NO_2	N	Y	138.3	N
RB33	Roadside (M25)	524080.85 152579.53	NO_2	N	Y	58.6	N
RB34	Roadside (M25)	524177 152393	NO_2	N	Y	64.5	N
RB36	Roadside (M25)	528887 153760	NO_2	N	Y	76.1	N
RB37	Roadside (M25)	529217 153605	NO_2	N	Y	68.3	N
RB38	Roadside (M25)	529208 153584	NO_2	N	Y	46.2	N
RB39	Roadside (M25)	529205 153572	NO_2	N	Y	34.8	N
RB40	Roadside (M23)	529252 154291	NO_2	N	Y	26.3	Y
RB41	Roadside (M23)	529293 154281	NO_2	N	Y	44.1	N
RB42	Roadside	529234 154317	NO_2	N	N	29.2	Y
RB43	Roadside (M25)	528797 153612	NO_2	N	Y	50.8	
RB44	Roadside	525532 150316	NO_2	Y	Y	14.6	Y
RB45	Roadside	525431 150270	NO_2	Y	N	0	N
RB46	Roadside	525345.93 150240.61	NO_2	Y	N	0	Y
RB47	Roadside	525114 150276	NO_2	Y	Y	8.2	N
RB49	Roadside (Near A217)	525705 152947	NO_2	Y	Y	11.2	Y
RB50	Roadside (Near A217)	525705 152967	NO_2	N	Y	19.1	N
RB51	Roadside (Horley AQ)	527873 142606	NO_2	Y	Y	15.2	N
RB52	Roadside (Horley AQ)	527892 142463	NO_2	Y	Y	14.2	N

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure?	Distance to Kerb of Nearest Road (m)	Worst-Case Location?[a]
RB53	Roadside (Horley AQ)	528030.46 142372.83	NO_2	Y	N	4.9	N
RB54	Roadside (Horley AQ)	528112.26 142321.37	NO_2	Y	N	7.2	N
RB55	Roadside (Horley AQ)	528254 142195.55	NO_2	Y	N	1.4	N
RB56	Roadside (Horley AQ)	528385.82 142080.48	NO_2	Y	N	2.7	N
RB57	Roadside (Horley AQ)	528498.91 141952.96	NO_2	Y	N	2.8	N
RB58	Roadside (Horley AQ)	528538.3 141896.96	NO_2	Y	N	2.6	N
RB59	Other - Airport (Horley AQ)	528602.17 141788.94	NO_2	Y	N	42.6	Y
RB60	Roadside (Horley AQ)	528607.43 141910.2	NO_2	Y	N	2.8	Y
RB61	Kerbside (Horley AQ)	528577.52 142005.81	NO_2	Y	N	1	N
RB64	Urban background (Horley AQ)	528589 142552	NO_2	Y	Y	18.3	n/a
RB65	Urban background (Horley AQ)	528581 142635	NO_2	Y	Y	17.1	n/a
RB66	Urban background (Horley AQ)	528499 142512	NO_2	Y	Y	18.4	n/a
RB67	Urban background (Horley AQ)	528462 142366	NO_2	Y	Y	16.4	n/a
RB68	Urban background (Horley AQ)	528505 142246	NO_2	Y	Y	18.7	n/a
RB69	Urban background (Horley AQ)	528335 142224	NO_2	Y	Y	14.3	n/a
RB70	Urban background (Horley AQ)	528360 142384	NO_2	Y	Y	17.8	n/a
RB72	Urban background (Horley AQ)	528220 142583	NO_2	Y	Y	20.5	n/a
RB73	Urban background (Horley AQ)	528172 142679	NO_2	Y	Y	18.6	n/a
RB74	Urban background (Horley AQ)	529149 141953	NO_2	Y	N	146.1	n/a

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure?	Distance to Kerb of Nearest Road (m)	Worst-Case Location?[a]
RB75	Urban background (Horley AQ)	529203 142192	NO_2	Y	Y	20.8	n/a
RB76	Urban background (Horley AQ)	528958 142468	NO_2	Y	Y	144.1	n/a
RB77	Urban background (Horley AQ)	528789 142570	NO_2	Y	Y	12.4	n/a
RB78/79/80	Roadside (Horley AQ)	528553.38 141857.47	NO_2	Y	N	2.6	N
RB81	Roadside	527594 149236	NO_2	N	Y	5.7	Y
RB82	Suburban (A23 AQMA)	528770 155797	NO_2	Y	Y	31.2	Y
RB95	Roadside	525381.77 150639.09	NO_2	Y	Y	5.9	Y
RB98	Other - Airport (Horley AQMA)	527930.64 142230.59	NO_2	Y	N	n/a	N
RB99/100/101	Other - Airport	526421.2 139638.8	NO_2	N	Y	n/a	N
RB102	Other - M23	530937.38 144271.9	NO_2	N	N	42.1	N
RB103	Roadside - A217	525704.22 152951.31	NO_2	Y	Y	12.0	Y
RB104	Roadside	525203.76 150254.14	NO_2	Y	Y	4.6	N
RB105	Roadside	525202.97 150239.06	NO_2	Y	Y	2.8	Y
RB106	Roadside	523249.94 160055.78	NO_2	Y	Y	2.2	Y
RB107	Roadside	525466.63 150292.04	NO_2	Y	N	2.4	N
RB109	Roadside	525387.06 150178.37	NO_2	Y	Y	3.6	Y
RB110	Roadside	529015.78 153438.94	NO_2	Y	Y	5.0	N
RB111	Roadside	525031.12 150291.07	NO_2	Y	Y	4.2	Y
RB112	Roadside	524962.6 150332.64	NO_2	Y	Y	2.0	N

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure?	Distance to Kerb of Nearest Road (m)	Worst-Case Location?[a]
RB113	Roadside	524794.78 150404.21	NO_2	Y	Y	2.4	N
RB114	Roadside	524368.03 150476.7	NO_2	N	N	1.5	N
RB115	Roadside	524766.12 150426.78	NO_2	Y	Y	2.7	N
RB116	Kerbside	525010.94 150320.98	NO_2	Y	Y	0.6	N
RB117	Roadside	525075.53 150326.73	NO_2	Y	Y	3.2	Y
RB118	Roadside	525151.22 150467.26	NO_2	Y	Y	14.2	N
RB119	Roadside	525477.38 150385.72	NO_2	N	Y	12.7	N
RB120	Roadside	528195.5 150421.4	NO_2	N	Y	2.7	Y
RB121	Roadside	528092.4 150785.5	NO_2	N	N	2.1	n/a
RB122	Roadside	528012.7 150474.9	NO_2	N	N	2.4	N
RB123	Kerbside	527838.5 150473.9	NO_2	N	N	0.4	N
RB124	Roadside	529013 153285.15	NO_2	Y	N	4.4	N
RB125	Roadside	525589.1 151654.9	NO_2	N	N	2.5	Y
RB126	Roadside	525313.8 159671.3	NO_2	N	N	5.0	N
RB128	Roadside	528502.1 142952.1	NO_2	Y	Y	2.3	N
RB129	Roadside	528250.4 142806.2	NO_2	Y	Y	2	N
RB130	Roadside	528263.2 142765.6	NO_2	Y	Y	2	N
RB131	Roadside	528401.6 142736.5	NO_2	Y	Y	2	N
RB132	Roadside	528533.4 142779.3	NO_2	Y	Y	2	N

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Relevant Exposure?	Distance to Kerb of Nearest Road (m)	Worst-Case Location?[a]
RB136	Roadside	528810.4 156478.4	NO_2	Y	N	1.8	Y
RB137	Roadside	528828 156642	NO_2	Y	N	1.8	Y
RB138	Roadside	525490.7 159729.3	NO_2	Y	N	3.7	Y
RB139	Roadside	525772.2 159895	NO_2	Y	N	1.5	Y
RB140	Roadside	528121.9 150798.7	NO_2	Y	N	14	N
RB141	Roadside	527372.7 150596	NO_2	Y	N	3.1	N
RB142	Kerbside	525335.3 150250.4	NO_2	Y	Y	0.5	Y
RB143	Kerbside	525335.3 150250.4	NO_2	Y	Y	0.5	Y
RB144	Kerbside	525335.3 150250.4	NO_2	Y	Y	0.5	Y
RB145	Roadside	527851.9 150158.1	NO_2	Y	N	2	N

[a] Locations where concentrations are expected to be the highest (issues such as proximity to junctions, proximity of exposure to the carriageway, levels of congestion, street canyons etc. have been taken into account). This does not apply to background sites.

Comparison of Monitoring Results with Air Quality Objectives

2.4 The following section presents all monitoring data in Reigate and Banstead, and where relevant, trends of monitoring data and traffic data (particularly in the vicinity of the AQMAs).

Nitrogen Dioxide

Automatic Monitoring Data

2.5 Reigate and Banstead Borough Council monitor nitrogen dioxide concentrations at four locations. Concentrations for 2007 – 2009 are presented in Tables 2.3a and 2.3b below.

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

Site Name	Location	In AQMA?	Data Capture for 2009 Calendar Year (%)	Annual Mean Concentrations (µg/m^3)		
				2007	2008	2009[a]
RG 1	RG 1 - Michael Crescent, Horley	Y	99.6	28.8	26.9	25.3
RG 2	RG 2 - 74 The Crescent, Horley	Y	94.9	33.7	32.5	31.3
RG 3	RG 3 - Poles Lane Pumping Station, Crawley	N	98.6	20.8	18.9	18.2
RG4[b]	RG4 – Reigate High Street	Y	52.4	n/a	n/a	52.4

[a] Data downloaded from the London Air Quality Network (www.londonair.org.uk/london/asp/default.asp)

[b] Data still provisional.

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

Site Name	Location	In AQMA?	Data Capture for 2009 Calendar Year (%)	Number of Exceedences of Hourly Mean (200 µg/m^3)		
				2007	2008	2009
RG 1	RG 1 - Michael Crescent, Horley	Y	99.6	0	0	0
RG 2	RG 2 - 74 The Crescent, Horley	Y	94.9	0	0	0
RG 3	RG 3 - Poles Lane Pumping Station, Crawley	N	98.6	0	0	0
RG4[a]	RG4 – Reigate High Street	Y	52.4	n/a	n/a	8

[a] Data still provisional

Diffusion Tube Monitoring Data

2.6 Table 2.4a shows annual mean concentrations at diffusion tube sites in 2009, including data capture for each site. Table 2.4b shows annual mean concentrations for 2007-2009 for comparative purposes. Values over 40 µg/m^3 are shown in bold.

Table 2.4a Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Data Capture 2009 %	Annual Mean Concentrations 2009 (µg/m^3) Adjusted for bias
	Reigate			
RB8	Urban Background: Castle Walk, Reigate	N	91.7	23.3
RB9	Urban Background: St. Mary's Rd	N	100	20.7
RB 125	Lamp post 29, Opposite Reigate Hill Close, Reigate Hill	N	100	39.4
RB114	Sign Post, 87 West Street, Reigate	N	83.3	31.8
	Reigate AQMA			
RB115	Lamppost, 36 West Street, Reigate	Y	100	**42.1**
RB113	Lamppost opposite Newbury Road	Y	100	31.5
RB112	Lamppost, 21 West Street, Reigate	Y	91.7	37.1
RB116	Lamppost, 12 West Street, Reigate.	Y	91.7	**42.8**
RB111	Drainpipe, 1 West Street, Reigate	Y	83.3	35.4
RB109	Drainpipe, 27a Bell Street, Reigate	Y	100	37.3
RB117	Drainpipe, 8 London Road, Reigate	Y	100	**49.0**
RB118	Drainpipe, Burlington Place, Reigate	Y	100	**41.7**
RB47	Outside 78 High St, Reigate	Y	91.7	**42.4**
RB104	Drainpipe, High Street, Reigate	Y	91.7	**44.5**
RB105	Drainpipe, High Street, Reigate	Y	91.7	**54.9**
RB1	34-36 High Street, Reigate	Y	100	**40.5**
RB46	Signpost, 5 High St, Reigate	Y	100	**41.4**
RB45	Signpost outside 38 Church St, Reigate	Y	75	**41.8**
RB107	Drainpipe, 29 Church Street, Reigate	Y	100	34.3
RB44	Lamppost, 45 Church St, Reigate	Y	100	**40.5**
RB142/ RB143/ RB144	Reigate High Street collocated with real time analyser	Y	83.3	**45.0**
	Redhill			
RB17	Urban Background: Sylvan Way, Redhill	N	100	20.8
RB120	Lamp post Outside 21, Redstone Hill Redhill	N	100	36.5
RB121	Lamp Post 271, Opposite Ladbrook Grove, Redhill	N	100	**42.9**
RB122	Roundabout Sign 5158 near Carpark, Marketfield Way, Redhill	N	100	39.8
RB123	Lamp post 3, outside Age Concern Cromwell Road, Redhill	N	91.7	39.9
RB140	45 Ladbrook Grove, Redhill	N	100	29.4
RB141	105 Station Road, Redhill, opposite Donyngs	N	100	29.6
	Merstham			
RB18	Lamppost, 60 Brook Road, Merstham	N	100	27.7
RB19	Merstham Village Hall, Station Road	N	100	26.4
	Merstham AQMA			
RB20	Junction London Road & Station Road North	Y	91.7	36.6
RB110	Drain Pipe, London Road North, opp. RB20	Y	100	36.9
RB124	Lamppost, 22 High Street, Merstham	Y	100	**45.0**
	Banstead			

RB3	Nr Ambulance Station, Horseshoe, Banstead	N	100	21.5
RB23	Urban Bkgrd: Warren Mead School, Banstead	N	100	19.2
RB126	Lamp post 5, Opposite NatWest Banstead High Street.	N	91.7	33.5
RB138	All Saints Church, High St, Banstead.	N	83.3	27.9
RB139	Lamp post 18 173 High St, Banstead	N	91.7	32.6
	Drift Bridge			
RB21	Opp. Drift Bridge Hotel, Reigate Road, Banstead	N	91.7	**46.0**
RB22	Opposite 2 Grey Alders, Banstead	N	100	24.6
	Drift Bridge AQMA			
RB106	On one way sign, Crossways, Fir Tree Road	Y	100	36.7
	Horley			
RB13	Public Car Park, off Massetts Road, Horley	N	100	24.0
	Horley AQMA			
RB11	RB11: Riverside	Y	100	26.9
RB12	Horley Police Station, Massetts Road, Horley	Y	100	30.1
RB24,25,26	Urban Background Michael Crescent	Y	100	25.1
RB51	Wolverton Gardens	Y	100	27.0
RB52	Wolverton Gardens	Y	100	27.3
RB53	Cheyne Walk	Y	100	28.8
RB54	Crescent Way	Y	100	26.9
RB55	Crescent Way	Y	100	27.6
RB56	The Crescent	Y	100	29.7
RB57	The Crescent	Y	100	27.5
RB58	The Crescent	Y	100	31.2
RB59	The Crescent	Y	100	32.2
RB60	The Crescent	Y	100	34.6
RB61	The Crescent	Y	100	29.7
RB64	The Drive	Y	91.7	28.4
RB65	The Drive	Y	91.7	30.7
RB66	Fairfield Avenue	Y	100	27.0
RB67	Fairfield Avenue	Y	100	28.4
RB68	Fairfield Avenue	Y	100	27.9
RB69	Upfield	Y	100	27.8
RB70	Upfield	Y	100	29.1
RB72	Upfield	Y	100	26.6
RB73	Upfield	Y	100	26.3
RB74	Meadowcroft Close	Y	100	26.4
RB75	Roundabout, The Coronet	Y	100	24.1
RB76	Limes Avenue	Y	100	22.7
RB77	Staffords Place	Y	100	24.9
RB78,79,80	The Crescent	Y	100	30.7
RB98	16/17 Woodroyd Gardens	Y	100	28.7
RB128	Between 83 and 85 Victoria Road, Horley	Y	100	**42.1**
RB129	1, Russell's Crescent, Horley.	Y	100	35.9
RB130	Laurel Cottage, 6, Russell's Crescent, Horley.	Y	100	33.4
RB131	15, Russell's Crescent, Horley.	Y	91.7	27.1
RB132	32, Russell's Crescent, Horley.	Y	100	29.8
	Crawley			
RB99, 100, 101	Rural: Poles Lane Pumping Station, Crawley	N	100	18.5
	M23 North (Former AQMA)			
RB40	Shepherd's Hill, Merstham	N	100	24.9
RB41	Shepherd's Hill, Merstham	N	100	20.8
RB42	Kerbside: Shepherd's Hill, Merstham	N	100	34.8
	A23 Brighton Road (Former AQMA)			

RB81	Outside Flying Scud PH, Brighton Road, Redhill	N	100	32.8
	A23 Dean Lane AQMA			
RB82	Outside 1 Deans Lane Hooley	Y	100	36.0
	M23 South AQMA			
RB102	Field near Bridleway, Hathersham Farm, Horley	N	100	27.1
	A217 Rushworth Road AQMA			
RB95	Rushworth Road	Y	100	30.7
	A217 Blackhorse Lane			
RB50	Just off Brighton Road	N	100	33.9
	A217 Blackhorse Lane AQMA (North J8 M25)			
RB49	Kerbside: Brighton Road	Y	100	**53.2**
RB103	Building façade, Brighton Road	Y	91.7	26.5
	M25			
RB28	Sturts Lane, Walton on the Hill	N	100	32.4
RB29	Sturts Lane, Walton on the Hill	N	100	31.3
RB31	Reigate Hill	N	100	22.6
RB33	Margery Grove, Mogodor	N	100	26.3
RB34	Merrywood Grove, Mogodor	N	100	23.9
RB36	Gatton Bottom	N	100	25.8
RB37	Ashcombe Road, Merstham	N	100	26.8
RB38	Ashcombe Road, Merstham	N	91.7	28.5
RB39	Ashcombe Road, Merstham	N	100	31.5
RB43	Quality Street, Merstham	N	100	29.0
	M25 AQMA			
RB27	Sturts Lane, Walton on the Hill	Y	100	34.6
RB30	Chequers Lane, Walton on the Hill	Y	100	29.5
	Hooley			
RB136	45, Brighton Road, Hooley	N	100	**66.3**
RB137	23, Brighton Road, Hooley	N	83.3	**59.7**
Objective				**40**

2.7 Table 2.4b gives three years data at the diffusion tube sites for comparison with the objectives over a longer time period.

Table 2.4b Results of Nitrogen Dioxide Diffusion Tubes 2007-2009

Site ID	Location	Within AQMA?	Annual Mean Concentrations (µg/m^3) Adjusted for bias		
			2007[a]	2008[b]	2009[c]
	Reigate				
RB8	Urban Background: Castle Walk, Reigate	N	27.7	24.6	23.3
RB9	Urban Background: St. Mary's Rd	N	26.0	22.9	20.7
RB 125d	Lamp post 29, Opposite Reigate Hill Close, Reigate Hill	N	**54.9**	**43.9**	39.4
RB114	Sign Post, 87 West Street, Reigate	N	37.0	30.6	31.8
RB119	Drainpipe, Castlefield Road, Reigate	N	36.7	26.1	n/a
	Reigate AQMA				
RB115	Lamppost, 36 West Street, Reigate	Y	**43.2**	**45.4**	**42.1**

RB113	Lamppost opposite Newbury Road	Y	36.4	35.1	31.5
RB112	Lamppost, 21 West Street, Reigate	Y	**40.8**	**40.4**	37.1
RB116	Lamppost, 12 West Street, Reigate.	Y	**46.9**	**45.4**	**42.8**
RB111	Drainpipe, 1 West Street, Reigate	Y	40.0	**40.3**	35.4
RB109	Drainpipe, 27a Bell Street, Reigate	Y	**46.5**	38.8	37.3
RB117	Drainpipe, 8 London Road, Reigate	Y	**51.5**	**52.2**	**49.0**
RB118	Drainpipe, Burlington Place, Reigate	Y	38.4	**40.9**	**41.7**
RB47	Outside 78 High St, Reigate	Y	**54.5**	**50.3**	**42.4**
RB104	Drainpipe, High Street, Reigate	Y	**49.3**	**48.3**	**44.5**
RB105	Drainpipe, High Street, Reigate	Y	**54.2**	**55.3**	**54.9**
RB1	34-36 High Street, Reigate	Y	**44.2**	**40.1**	**40.5**
RB46	Signpost, 5 High St, Reigate	Y	**43.5**	**43.9**	**41.4**
RB45	Signpost outside 38 Church St, Reigate	Y	**44.4**	**41.0**	**41.8**
RB107	Drainpipe, 29 Church Street, Reigate	Y	38.7	34.9	34.3
RB44	Lamppost, 45 Church St, Reigate	Y	**46.8**	**43.6**	**40.5**
RB142/ RB143/ RB144	Reigate High Street collocated with real time analyser	Y	n/a	n/a	**45.0**
	Redhill				
RB17	Urban Background: Sylvan Way, Redhill	N	29.6	21.9	20.8
RB120d	Lamp post Outside 21, Redstone Hill Redhill	N	**51.1**	**41.9**	36.5
RB121d	Lamp Post 271, Opposite Ladbrook Grove, Redhill	N	**47.6**	**47.0**	**42.9**
RB122d	Roundabout Sign 5158 near Carpark, Marketfield Way, Redhill	N	38.7	**46.5**	39.8
RB123d	Lamp post 3, outside Age Concern Cromwell Road, Redhill	N	**48.6**	**43.4**	39.9
RB140	45 Ladbrook Grove, Redhill	N	n/a	n/a	29.4
RB141	105 Station Road, Redhill, opposite Donyngs	N	n/a	n/a	29.6
	Merstham				
RB18	Lamppost, 60 Brook Road, Merstham	N	32.7	30.5	27.7
RB19	Merstham Village Hall, Station Road	N	31.6	26.0	26.4
	Merstham AQMA				
RB20	Junction London Road & Station Road North	Y	**47.0**	**43.1**	36.6
RB110	Drain Pipe, London Road North, opp. RB20	Y	**41.8**	39.4	36.9
RB124d	Lamppost, 22 High Street, Merstham	Y	**55.9**	**48.1**	**45.0**
	Banstead				
RB3	Nr Ambulance Station, Horseshoe, Banstead	N	25.9	24.1	21.5
RB23	Urban Bkgrd: Warren Mead School, Banstead	N	22.8	21.4	19.2
RB126d	Lamp post 5, Opposite NatWest Banstead High Street.	N	**42.5**	38.7	33.5
RB138	All Saints Church, High St, Banstead.	N	n/a	n/a	27.9
RB139	Lamp post 18 173 High St, Banstead	N	n/a	n/a	32.6
	Drift Bridge				
RB21	Opp. Drift Bridge Hotel, Reigate Road, Banstead	N	**46.9**	**44.7**	**46.0**
RB22	Opposite 2 Grey Alders, Banstead	N	31.4	22.5	24.6
	Drift Bridge AQMA				

RB106	On one way sign, Crossways, Fir Tree Road	Y	39.2	**41.6**	36.7
	Horley				
RB13	Public Car Park, off Massetts Road, Horley	N	27.4	25.9	24.0
	Horley AQMA				
RB11	RB11: Riverside	Y	27.2	26.9	26.9
RB12	Horley Police Station, Massetts Road, Horley	Y	36.7	32.7	30.1
RB24,25,26	Urban Background Michael Crescent	Y	27.8	25.2	25.1
RB51	Wolverton Gardens	Y	27.2	29.6	27.0
RB52	Wolverton Gardens	Y	29.5	28.8	27.3
RB53	Cheyne Walk	Y	34.7	32.6	28.8
RB54	Crescent Way	Y	31.0	32.3	26.9
RB55	Crescent Way	Y	33.7	31.0	27.6
RB56	The Crescent	Y	30.7	30.9	29.7
RB57	The Crescent	Y	35.1	31.5	27.5
RB58	The Crescent	Y	35.9	31.9	31.2
RB59	The Crescent	Y	38.5	35.1	32.2
RB60	The Crescent	Y	38.7	36.3	34.6
RB61	The Crescent	Y	34.0	31.8	29.7
RB64	The Drive	Y	30.0	30.2	28.4
RB65	The Drive	Y	33.7	30.8	30.7
RB66	Fairfield Avenue	Y	30.0	28.6	27.0
RB67	Fairfield Avenue	Y	31.4	27.1	28.4
RB68	Fairfield Avenue	Y	31.3	29.4	27.9
RB69	Upfield	Y	30.2	29.2	27.8
RB70	Upfield	Y	31.3	29.2	29.1
RB72	Upfield	Y	28.1	28.2	26.6
RB73	Upfield	Y	27.8	29.8	26.3
RB74	Meadowcroft Close	Y	26.6	30.7	26.4
RB75	Roundabout, The Coronet	Y	34.6	26.2	24.1
RB76	Limes Avenue	Y	27.3	25.3	22.7
RB77	Staffords Place	Y	31.4	25.8	24.9
RB78,79,80	The Crescent	Y	36.6	33.3	30.7
RB98	16/17 Woodroyd Gardens	Y	34.4	32.6	28.7
RB128	Between 83 and 85 Victoria Road, Horley	Y	n/a	n/a	**42.1**
RB129	1, Russell's Crescent, Horley.	Y	n/a	n/a	35.9
RB130	Laurel Cottage, 6, Russell's Crescent, Horley.	Y	n/a	n/a	33.4
RB131	15, Russell's Crescent, Horley.	Y	n/a	n/a	27.1
RB132	32, Russell's Crescent, Horley.	Y	n/a	n/a	29.8
	Crawley				
RB99, 100, 101	Rural: Poles Lane Pumping Station, Crawley	N	20.5	20.0	18.5
	M23 North (Former AQMA)				
RB40	Shepherd's Hill, Merstham	N	28.1	24.1	24.9
RB41	Shepherd's Hill, Merstham	N	25.5	19.0	20.8
RB42	Kerbside: Shepherd's Hill, Merstham	N	38.5	36.2	34.8

	A23 Brighton Road (Former AQMA)				
RB81	Outside Flying Scud PH, Brighton Road, Redhill	N	**40.9**	35.2	32.8
	A23 Dean Lane AQMA				
RB82	Outside 1 Deans Lane Hooley	Y	**40.3**	38.7	36.0
	M23 South AQMA				
RB102	Field near Bridleway, Hathersham Farm, Horley	Y	28.4	26.0	27.1
	A217 Rushworth Road AQMA				
RB95	Rushworth Road	Y	36.5	33.5	30.7
	A217 Blackhorse Lane				
RB50	Just off Brighton Road	N	39.8	34.1	33.9
	A217 Blackhorse Lane AQMA (North J8 M25)				
RB49	Kerbside: Brighton Road	Y	**55.1**	**57.8**	**53.2**
RB103	Building façade, Brighton Road	Y	39.3	**41.1**	26.5
	M25				
RB28	Sturts Lane, Walton on the Hill	N	32.2	31.3	32.4
RB29	Sturts Lane, Walton on the Hill	N	36.2	32.3	31.3
RB31	Reigate Hill	N	30.7	24.1	22.6
RB33	Margery Grove, Mogodor	N	28.8	29.6	26.3
RB34	Merrywood Grove, Mogodor	N	29.9	26.7	23.9
RB36	Gatton Bottom	N	29.3	25.9	25.8
RB37	Ashcombe Road, Merstham	N	29.3	26.0	26.8
RB38	Ashcombe Road, Merstham	N	33.4	30.2	28.5
RB39	Ashcombe Road, Merstham	N	33.7	31.5	31.5
RB43	Quality Street, Merstham	N	38.4	24.1	29.0
	M25 AQMA				
RB27	Sturts Lane, Walton on the Hill	Y	37.3	38.3	34.6
RB30	Chequers Lane, Walton on the Hill	Y	35.7	32.3	29.5
	Hooley				
RB136	5, Brighton Road, Hooley	N	n/a	n/a	**66.3**
RB137	23, Brighton Road, Hooley	N	n/a	n/a	**59.7**
Objective			**40**	**40**	**40**

[a] Bias adjusted using a local factor of 1.145 in 2007

[b] Bias adjusted using a local factor of 1.02 in 2008

[c] Bias adjusted using a local factor of 1.014 in 2009 (other than sites RB128-RB132 which are Gradko tubes (50% TEA in acetone) and adjusted by 0.99 as reported in National Bias Adjustment Spreadsheet 03/10).

2.8 In 2009, there are four diffusion tube sites which are exceeding the annual mean objective, but not currently in AQMAs. The two in Hooley (RB136 and RB137) are also over, or near, 60 µg/m^3 suggesting potential issues with the hourly objective. These two sites were new in 2009 and **a Detailed Assessment will be required at this location.**

2.9 RB21 Drift Bridge Hotel and RB121 Ladbrook Grove, Redhill are also showing exceedences, but neither of these sites are representative of relevant exposure and hence no further action is necessary.

2.10 RB125 Reigate Hill has dropped marginally below the objective in 2009. This site was the subject of a recent Detailed Assessment and will be declared an AQMA in 2011.

Discussion of nitrogen dioxide monitoring data in relation to currently declared AQMAs

Dean Lane AQMA

2.11 The AQMA consists of a single property on the A23, Brighton Road. Concentrations within the Dean Lane AQMA seem to be decreasing. Currently the concentration at the diffusion tube is 36.0 µg/m^3 and the property is set back a further 9.2 m. Using the NO_2 fall off with distance calculator this gives a concentration of 31.5 µg/m^3 (assuming background of 16.4 µg/m^3, distance from building to kerb of 21.3 m and of monitoring location to kerb of 12.1 m). As this site has been well below the objective for a number of years **it is recommended that the Dean Lane AQMA is revoked**.

2.12 Figure 2.2 shows the annual mean nitrogen dioxide concentrations and Figure 2.3 shows the 3 year rolling averages at a number of sites on the M23, A23 and A217, including Dean Lane. Long term trends at Dean Lane are downwards. There is no clear trend in traffic data in the vicinity of Dean Lane (Figure 2.4).

2.13 Table 2.5 shows concentrations at the Dean Lane diffusion tube and corresponding concentrations at the property, calculated using correction tools in use at that time. Data since 2007 have been corrected using the distance with roads calculator.

Table 2.5. Monitoring and extrapolated concentrations within the Dean Lane AQMA

	2004	2005	2006	2007	2008	2009
Diffusion tube Value	40	37	40	40	37	36
Extrapolated concentration at property	35	33	35	35	33.5	31.5

2.14 It is clear from the above data that the concentration of nitrogen dioxide at the affected property has consistently met the annual mean air quality standard over the past six years and is currently meeting the standard by more than 20 %, which allows for a sufficient margin of error for diffusion tube and meteorological variations. The other properties along this stretch of the A23 in the immediate vicinity of the AQMA are typically more than 12m further back from the road than the Dean Lane property. In addition the Dean Lane property is in close proximity to Dean Lane itself,

which is used by traffic coming off the M23 as a U turn point. Therefore the Dean Lane property is the worst case receptor, as shown in the original dispersion modelling (Stage 3 assessment), and so no other properties are likely to exceed the air quality standards within the immediate vicinity of the AQMA.

Figure 2.2 Annual Mean Nitrogen Dioxide Concentrations - Current and Former AQMA sites on the M23, A23, and A217 (2002 to 2009).

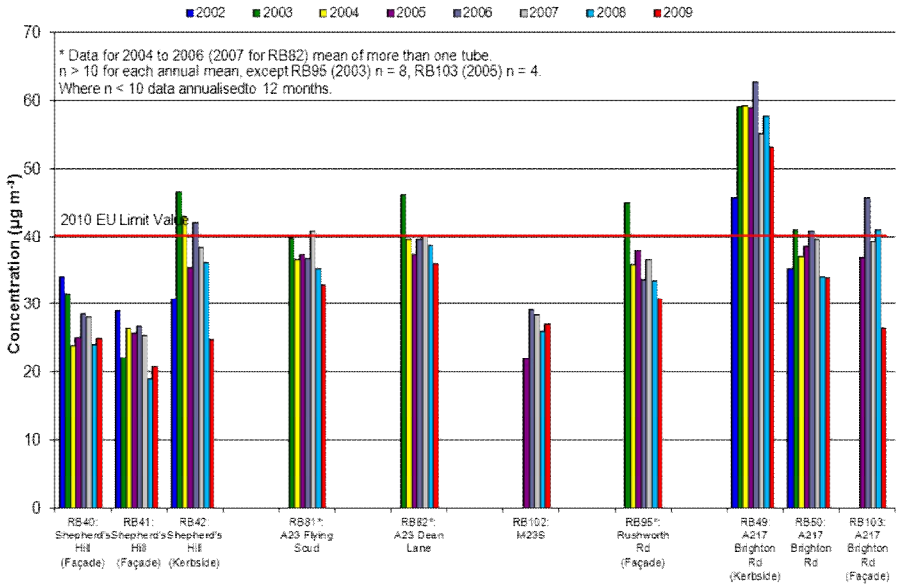


Figure 2.3. 3-Year Rolling Average Concentrations - Current and Former AQMA sites on the M23, A23, and A217 (2005 to 2009).

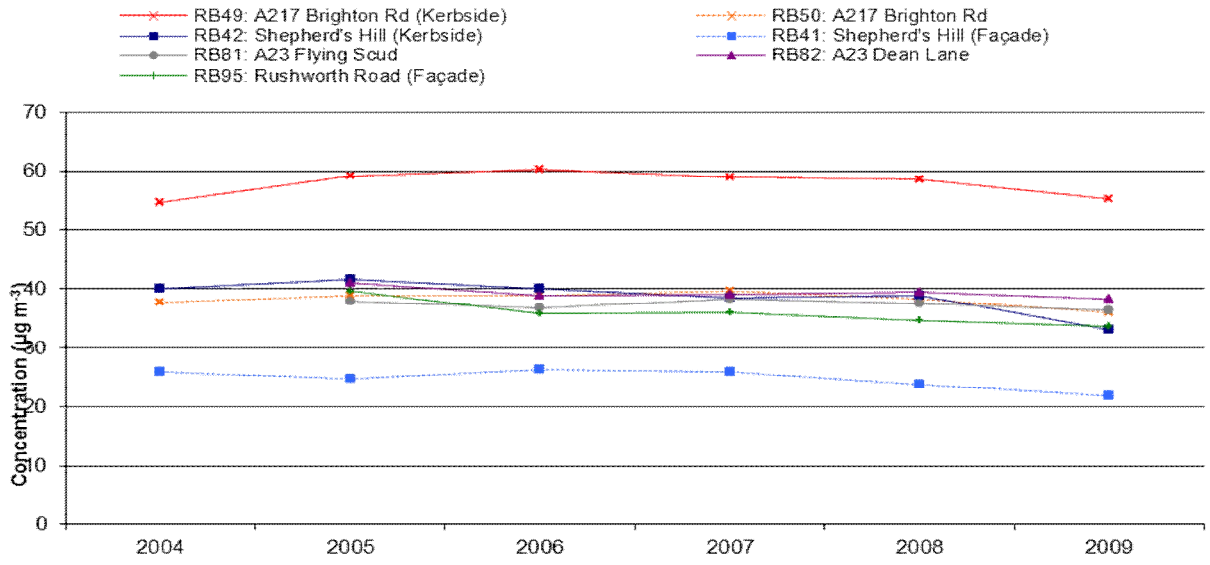
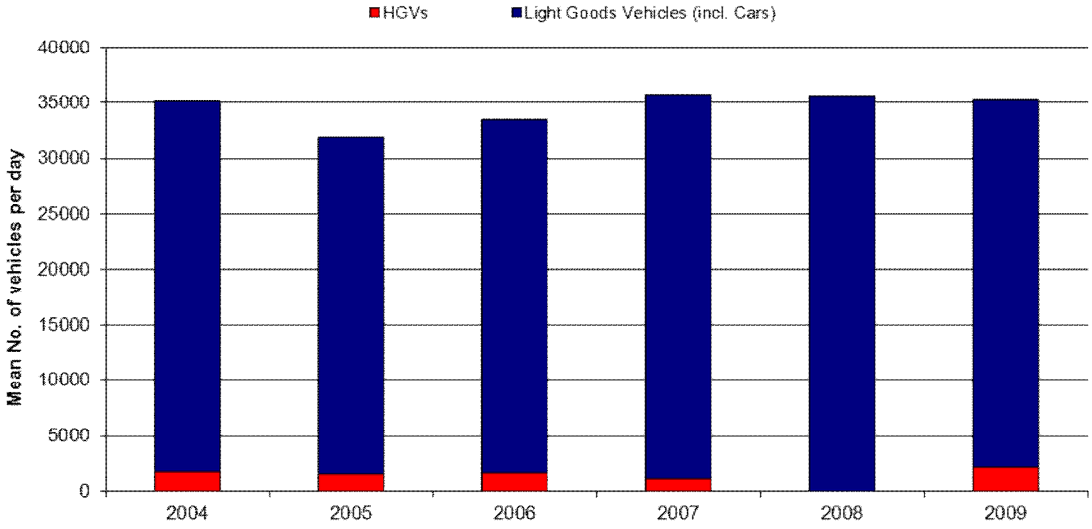


Figure 2.4 Annual Mean Daily Traffic Flows on the A23 near Dean Lane



M23 South AQMA

2.15 This AQMA consists of a single property to the west of the M23 between junctions 8 and 9. Due to difficulties in gaining access to the site for monitoring, a surrogate site was set up in a field 2km to the north of the AQMA at a comparable distance from the motorway (RB102) (Figure 2.2 and 2.3 for trend data). This site is significantly below the objective. Furthermore, monitoring undertaken by the Highways Agency at a site very close to the M23 suggests that even very close the carriageway, the air quality objective is being achieved by a significant margin. The 2008 Progress Report suggested that a decision on revocation of the AQMA awaits modelling results from Gatwick to look at the impact of additional airport development on this stretch of the M23 given an extra 4 million passengers per year at the airport. The predicted concentration in 2019 at the relevant receptor is 23 µg/m^3. It is therefore **recommended that the M23 South AQMA is revoked**.

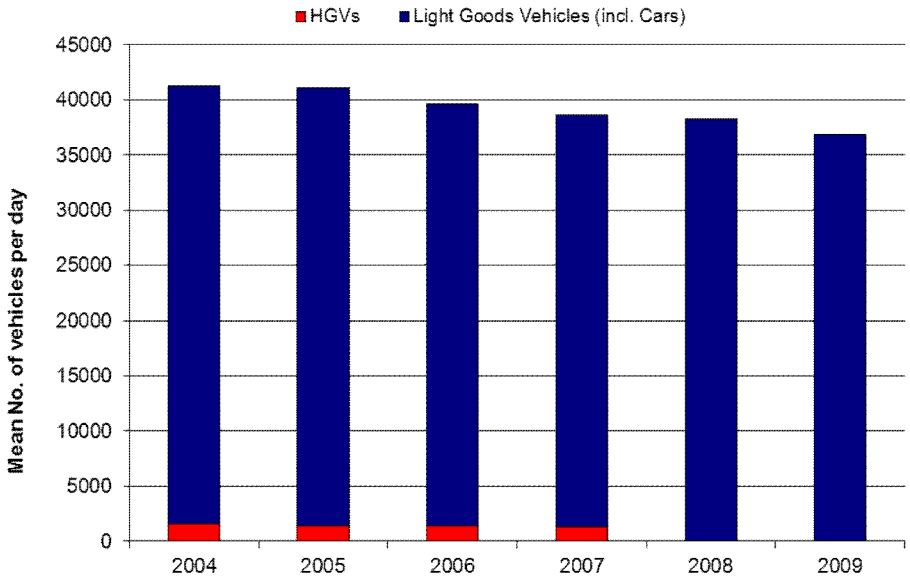
Rushworth Road AQMA

2.16 The Rushworth Road AQMA is also a single property and concentrations at this location have been below the objectives for a number of years (RB95). Concentrations have reduced further to 30.7 µg/m^3 in 2009 (see Figure 2.2 and 2.3 for trend data). Due to the concentration at this location, is it **recommended that the Rushworth Road AQMA is revoked**.

A217 Blackhorse Lane AQMA

2.17 The Blackhorse Lane AQMA is another single property on the A217 Brighton Road. RB103 which is situated on the property which has been declared an AQMA had a much reduced concentration in 2009, well below the objective. It is unclear why this occurred as the kerbside site (RB49), although demonstrating a marginally lower concentration than in previous years remains about the same concentration (Figures 2.2 and 2.3). Traffic flows appear to be reducing slightly at this site, as illustrated in Figure 2.5 (note no HGV counts in 2008 and 2009). As the concentration at the façade has only been below the objective in 2009, it is **too early to consider revoking the AQMA**.

Figure 2.5 Annual Mean Daily Traffic Flows on Blackhorse Lane



Reigate High Street AQMA

2.18 This High Street AQMA is relatively enclosed, with the High Street itself and the section of Bell Street essentially street canyons, which limits dispersion in the vicinity of receptors. There are a large number of diffusion tubes showing exceedences both at kerbside and building facades. This AQMA should therefore be retained. Concentrations within Reigate seem to be decreasing over the last 3 years or so (Figures 2.6 and 2.7). However, when looking at 3-year averages (Figure 2.8), the downward trend is not obvious. There is no obvious trend in traffic data within Reigate (Figure 2.9).

Figure 2.6 Annual Mean Nitrogen Dioxide Concentrations – Reigate High Street, Church Street, and Bell Street (2002 to 2009).

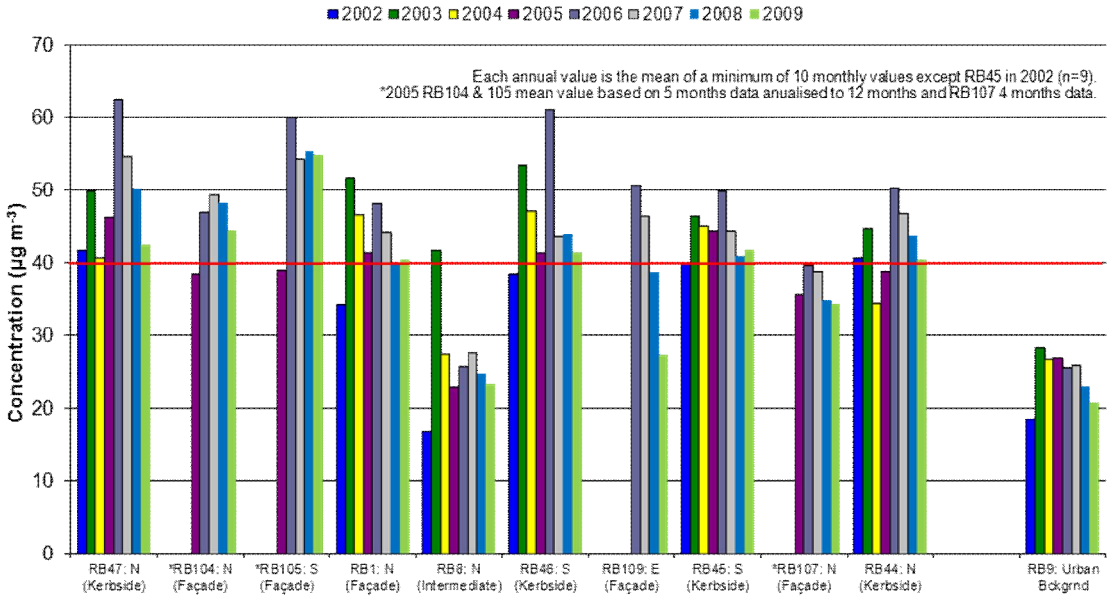


Figure 2.7 Annual Mean Nitrogen Dioxide Concentrations – West Street & London Road / Castlefield Road (2002 to 2009).

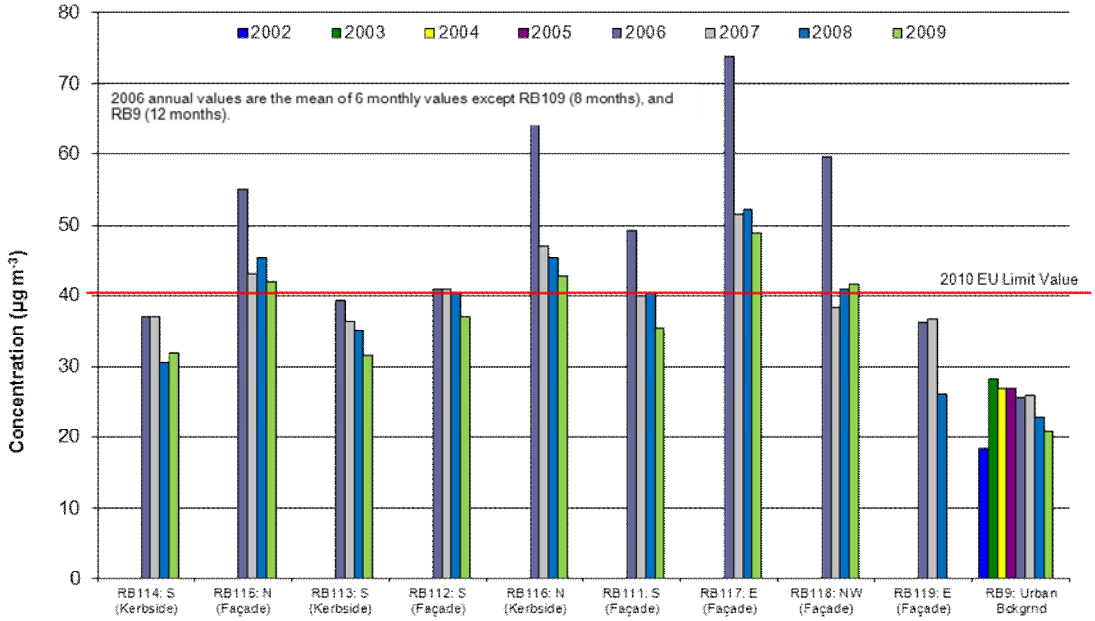


Figure 2.8 3-Year Rolling Average Concentrations in Reigate

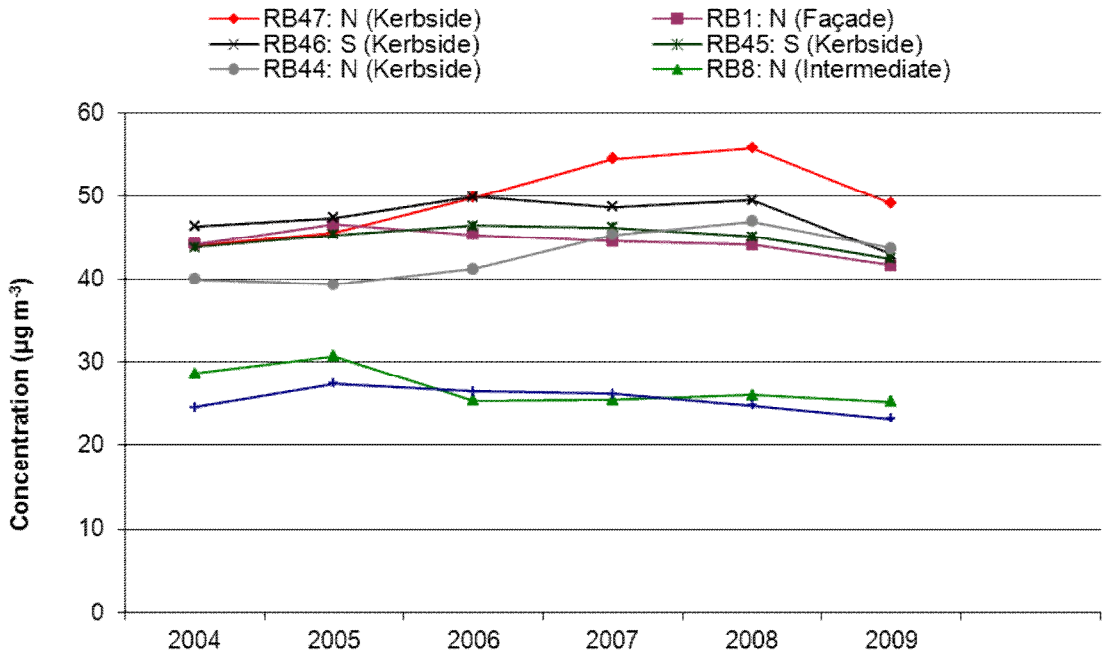
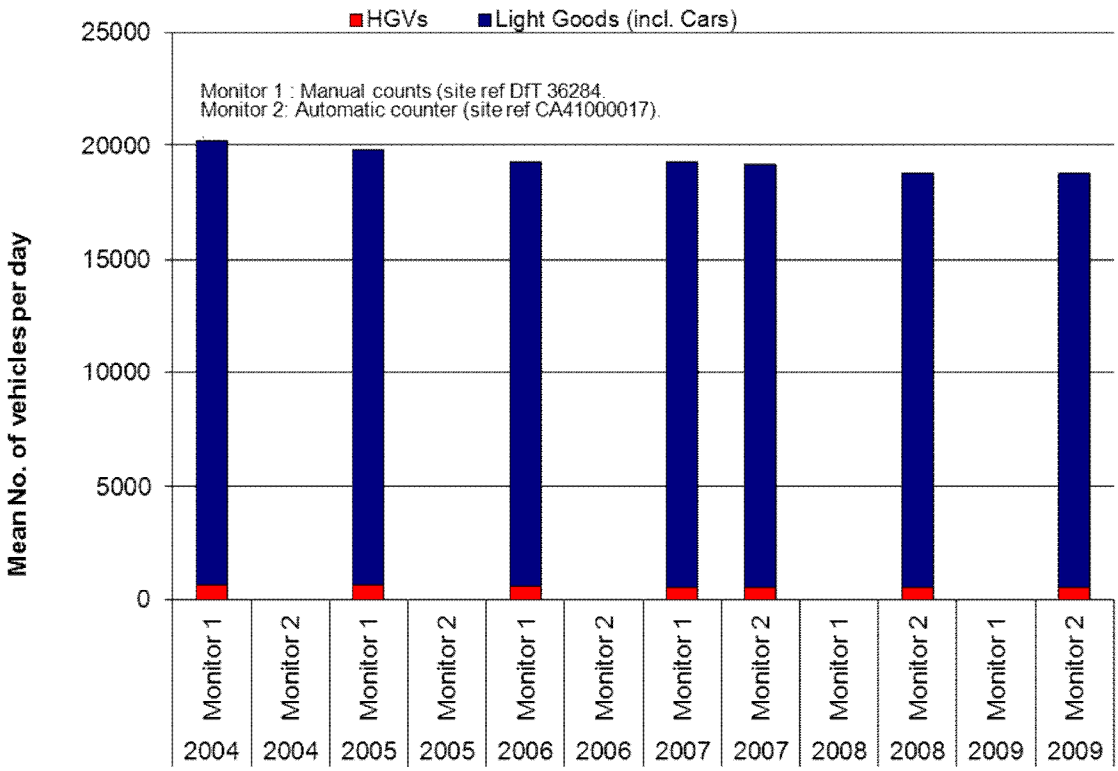


Figure 2.9 Annual Mean Daily Traffic Flows in Reigate



Drift Bridge AQMA

2.19 The Drift Bridge AQMA consists of two properties with concentrations (RB106) generally just above or below 40 µg/m^3. In 2009 the concentration was below 40 µg/m^3 at RB106 (36.7 µg/m^3) whereas in 2008 it was above 40 (41.6 µg/m^3) (Figure 2.10). This AQMA should therefore be retained. Trends at longer term monitoring sites (Figure 2.11) appear to be downward. At the three traffic monitoring sites (Figures 2.12-2.14), traffic flows appear to be downwards.

Figure 2.10 Annual Mean Nitrogen Dioxide Concentrations – Banstead Background Sites, and Drift Bridge AQMA (2002-2009).

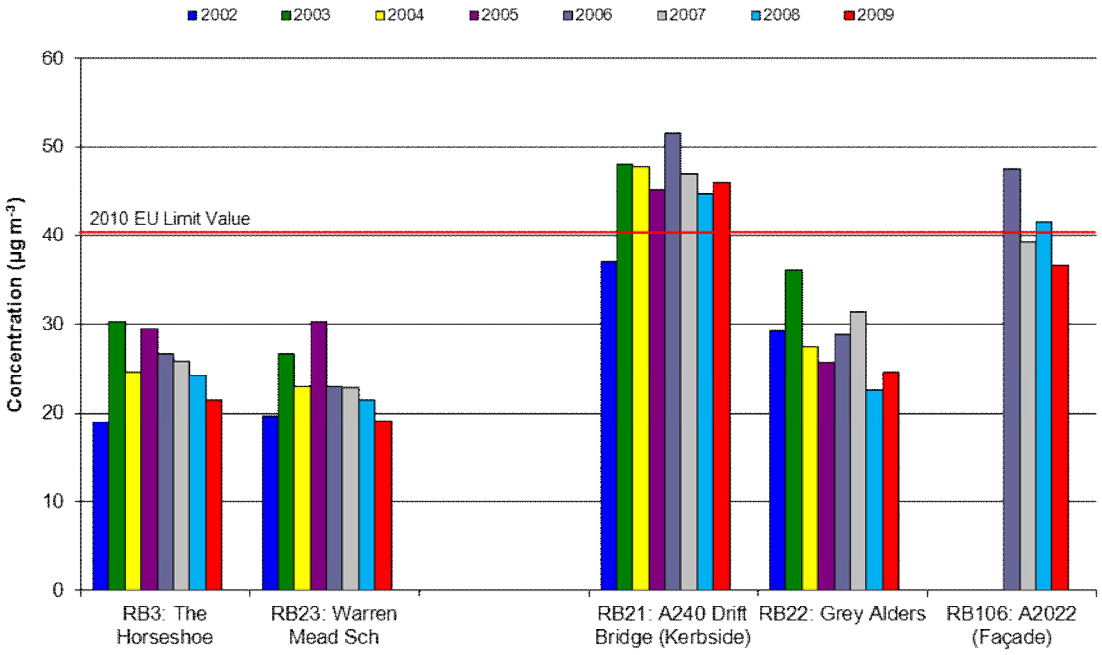


Figure 2.11 3-Year Rolling Average Concentrations – Banstead Background Sites, and Drift Bridge AQMA (2002-2009).

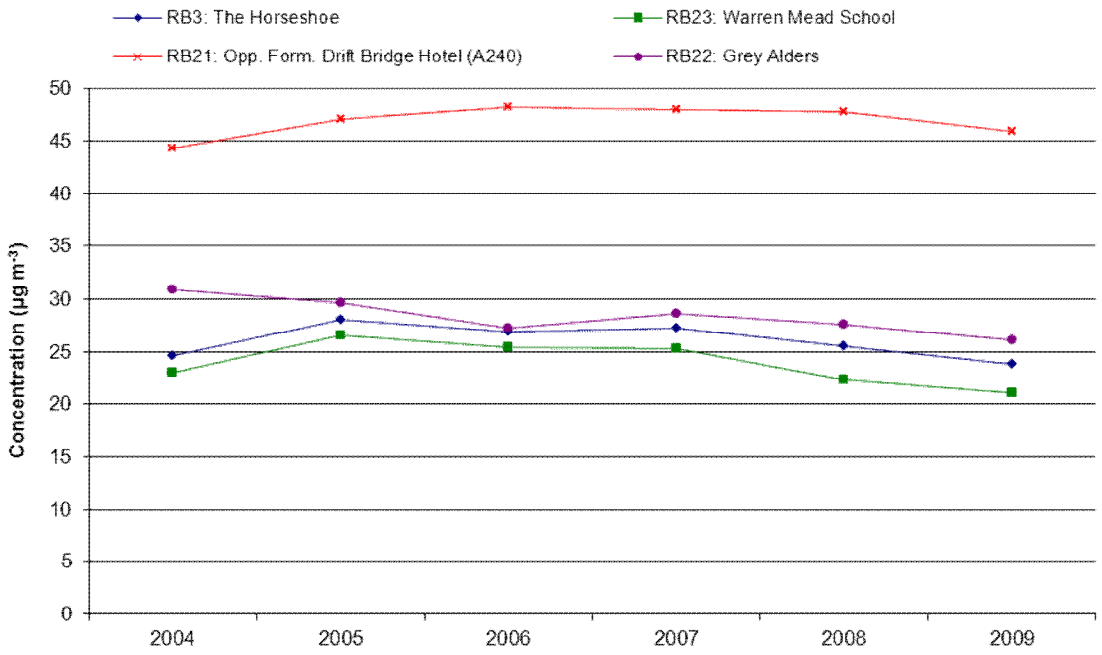


Figure 2.12 Annual Mean Daily Traffic Flows in Drift Bridge (A240 North of Junction with A2022 and B291 (DfT site 18438))

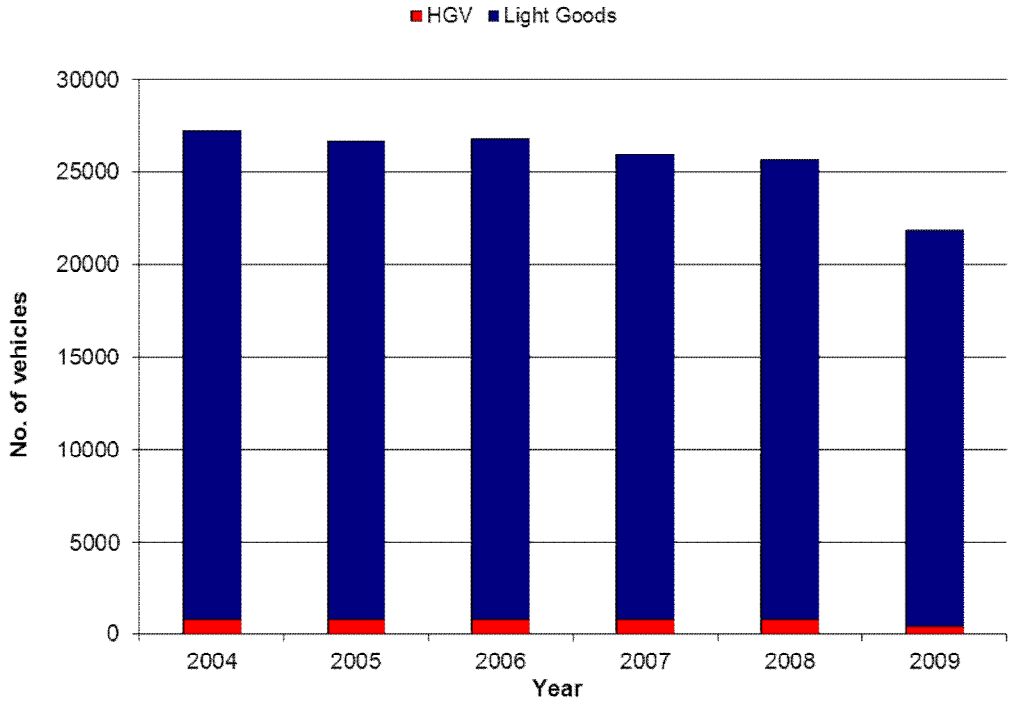


Figure 2.13 Annual Mean Daily Traffic Flows in Drift Bridge (A240 South of Junction with A2022 and B291 (DfT site 58141))

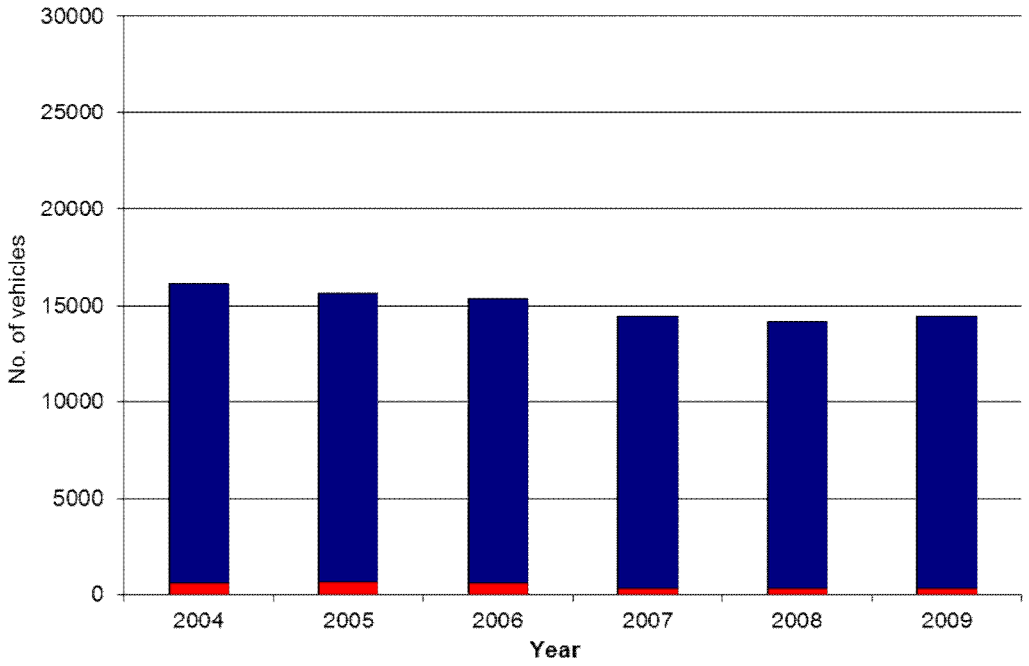
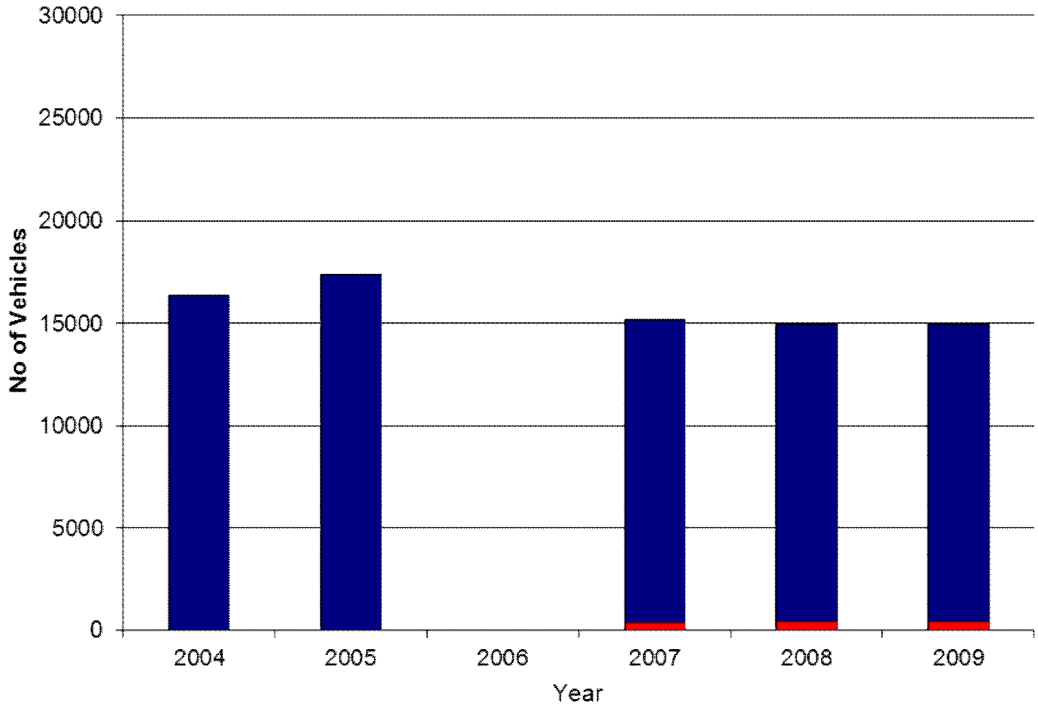


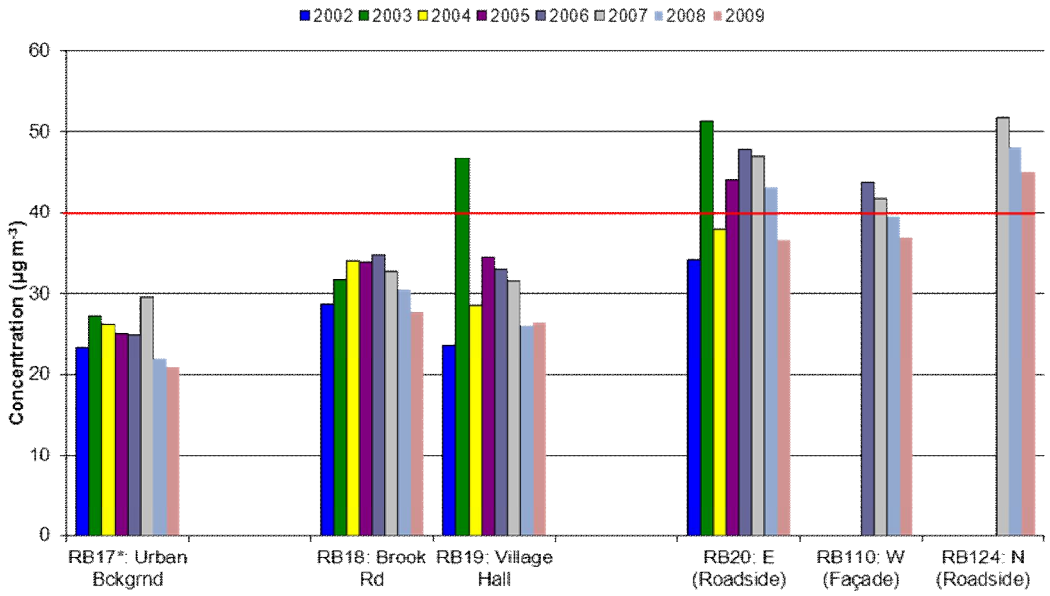
Figure 2.14 Annual Mean Daily Traffic Flows in Drift Bridge (A2022 Fir Tree Road near Nork Way (Surrey ATC 04150/41000003))



Merstham High Street

2.20 Concentrations within the Merstham AQMA in 2009 were below air quality objectives at the majority of locations. However, one site (RB124) was over the objective and trend data do not show significant reductions (Figure 2.15). Concentrations at this site, even when projected back to relevant exposure (3m back from the monitoring site), still exceeds the annual mean objective[3]. This AQMA should therefore be retained. There appear to be no clear trends at long term monitoring sites (Figure 2.16) or in traffic data (Figure 2.17).

Figure 2.15 Annual Average Concentrations – Merstham (2002-2009).



3 Using the Nitrogen Dioxide Fall off with Distance Calculator (http://laqm1.defra.gov.uk/review/tools/monitoring/fall-off.php) assuming background concentration of 28.3 µg/m^3, monitoring site 4.4m from the kerb, while the property was 7.,4m from the kerb.

Figure 2.16 3-Year Rolling Average Concentrations – Merstham (2002-2009).

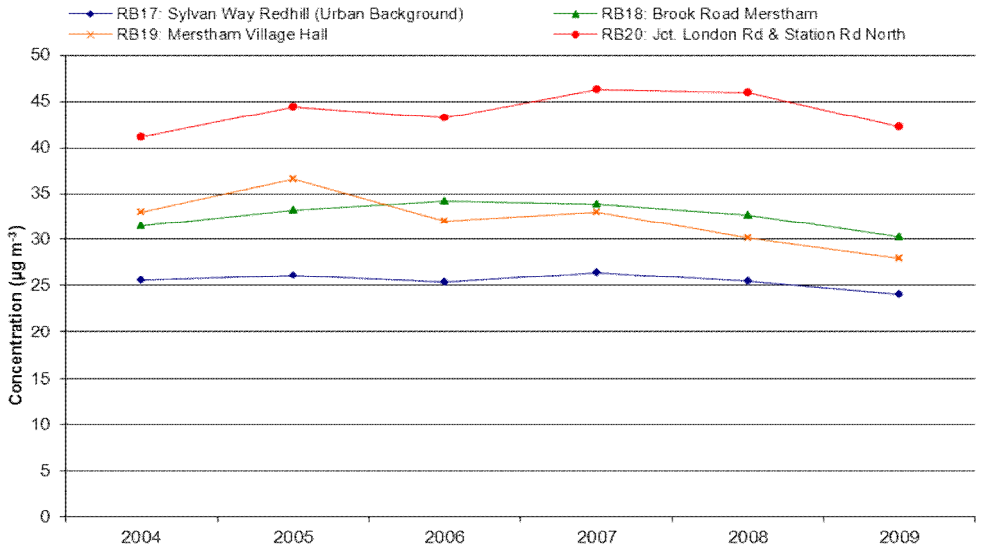
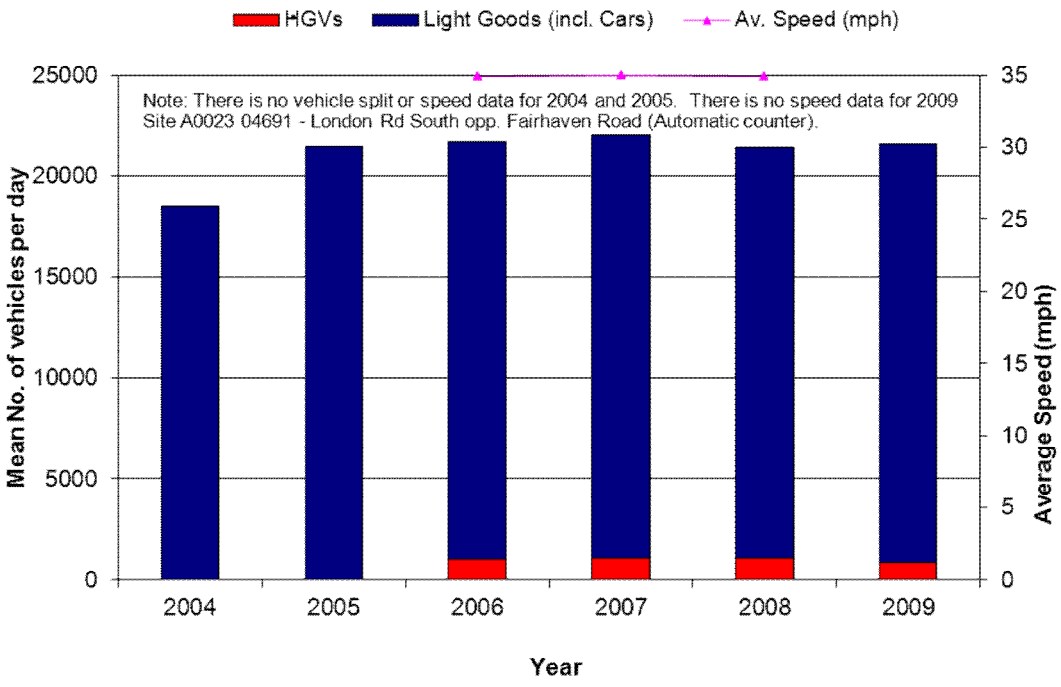


Figure 2.17 Annual Mean Daily Traffic Flows in Merstham (2004-2009).

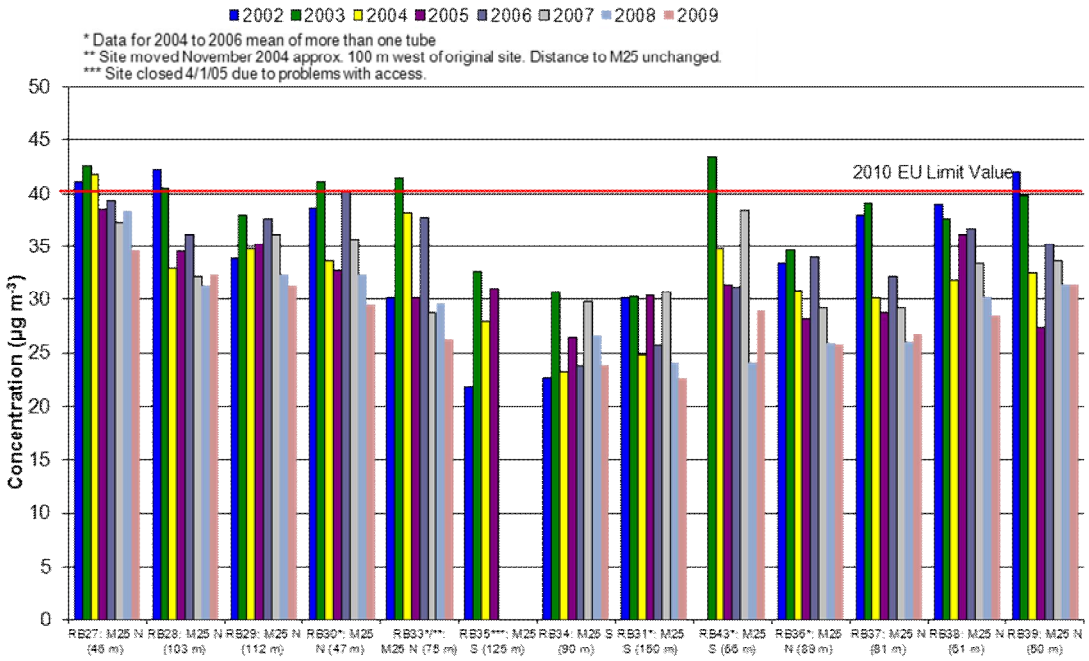


M25 AQMA

2.21 The M25 AQMA is located between junctions 7 and 9 of the M25 within the borough boundaries and consists of a 30m strip either side of the motorway. Monitoring takes place at 12 locations with all the tubes situated on property facades with the exception of RB33 (which is now on a post at an

equal distance from the motorway as the original property). All sites, for the last 3 years have shown no exceedences of the annual mean objective, although when monitoring data for RB39 are extrapolated to a receptor that is closer to the motorway there is a marginal exceedence[4]. Because of this, and the proposed widening of the motorway from J5 to J7, and plans for a controlled motorway covering the length of the AQMA, it is recommended that the M25 AQMA is retained. The monitoring data (Figures 2.18 and 2.19) suggest a downward trend in the vicinity of the M25, which is mirrored by traffic flows between junctions 7 and 8 (Figure 2.20). Traffic flows are increasing between junctions 8 and 9.

Figure 2.18 Annual Average Concentrations – M25 (2002-2009).



[4] Using the Nitrogen Dioxide Fall off with Distance Calculator (http://laqm1.defra.gov.uk/review/tools/monitoring/fall-off.php) assuming background concentration of 28.3 µg/m^3, monitoring site 38m from the carriageway and the property 13m from the carriageway.

Figure 2.19 3-Year Rolling Averages – M25 (2002-2009).

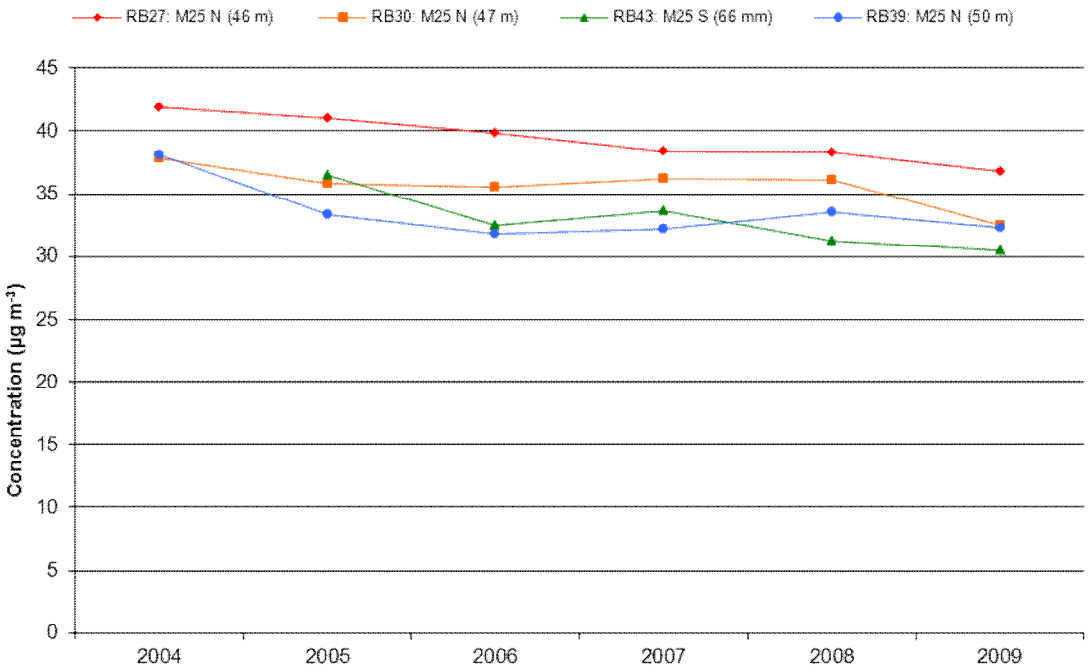
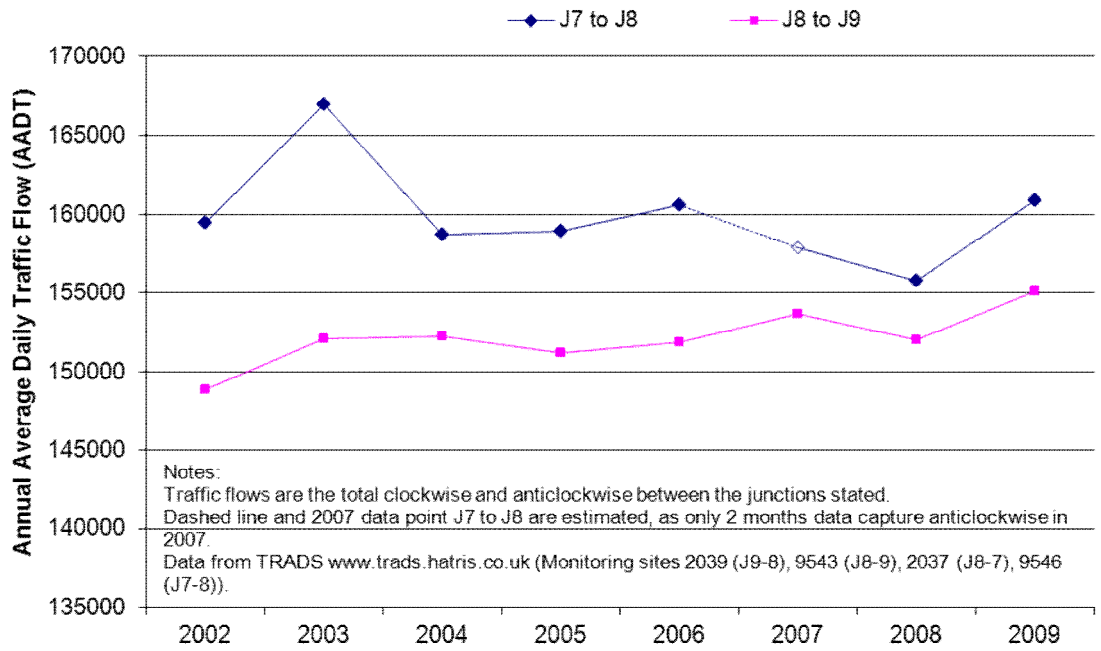


Figure 2.20 Annual Mean Daily Traffic Flows on M25 (2002-2009).



Horley AQMA

2.22 The Horley AQMA essentially covers the Horley Gardens Estate located to the NE of Gatwick Airport. Monitoring takes place at 24 diffusion tube locations as well as 2 real time sites (RG1 and RG2) (Figure 2.21). Monitoring is also undertaken by the Council at a further site (RG3), which is located to the southwest of the airport in Crawley. Of the diffusion tubes, only 1 is exceeding (RB128). This tube is at a site of relevant exposure. All of the real time sites are currently achieving the nitrogen dioxide air quality objectives and show evidence of a decrease over recent years (Figure 2.22). However, given passenger numbers have fallen steadily since 2007 from 35.2 million passengers per annum (mppa) to 32.4 mppa in 2009, the current AQMA should remain as there is still some uncertainty as to how a rebound in passenger traffic will affect nitrogen dioxide concentrations in the short to medium term along the south/southwestern side of the AQMA.

Figure 2.21 2009 Annual Mean concentrations in Horley, near to Gatwick Airport

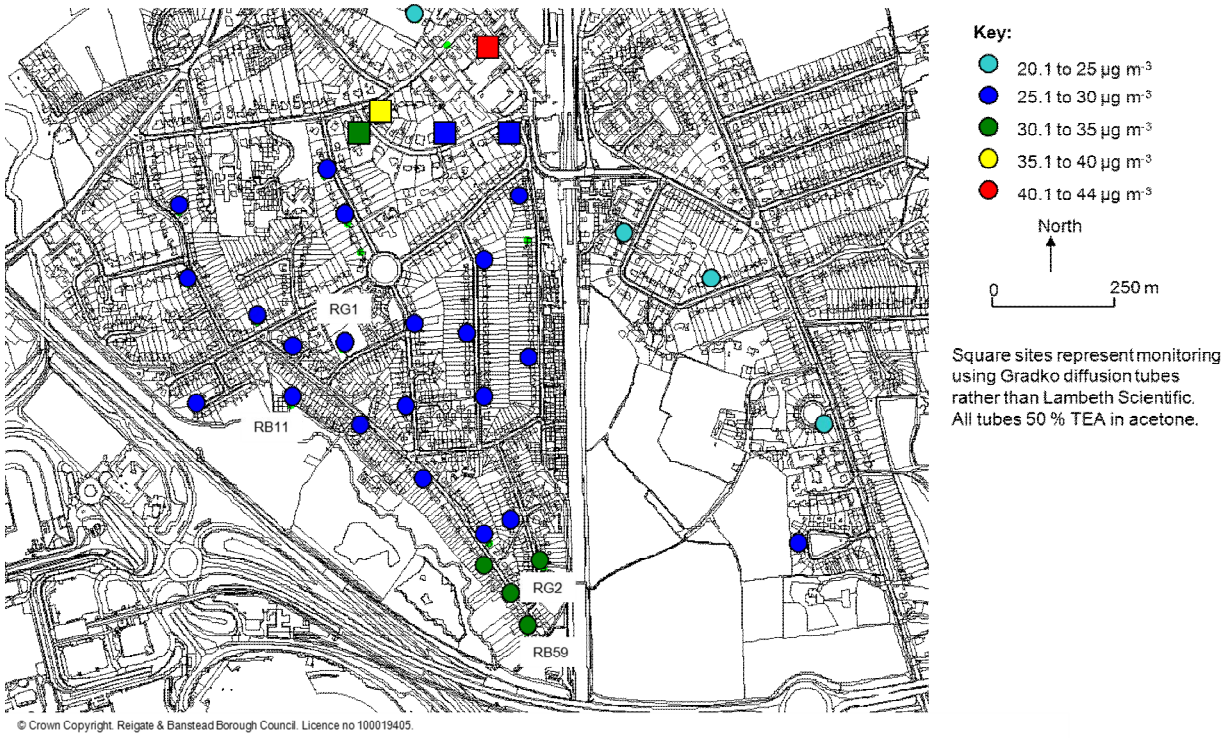
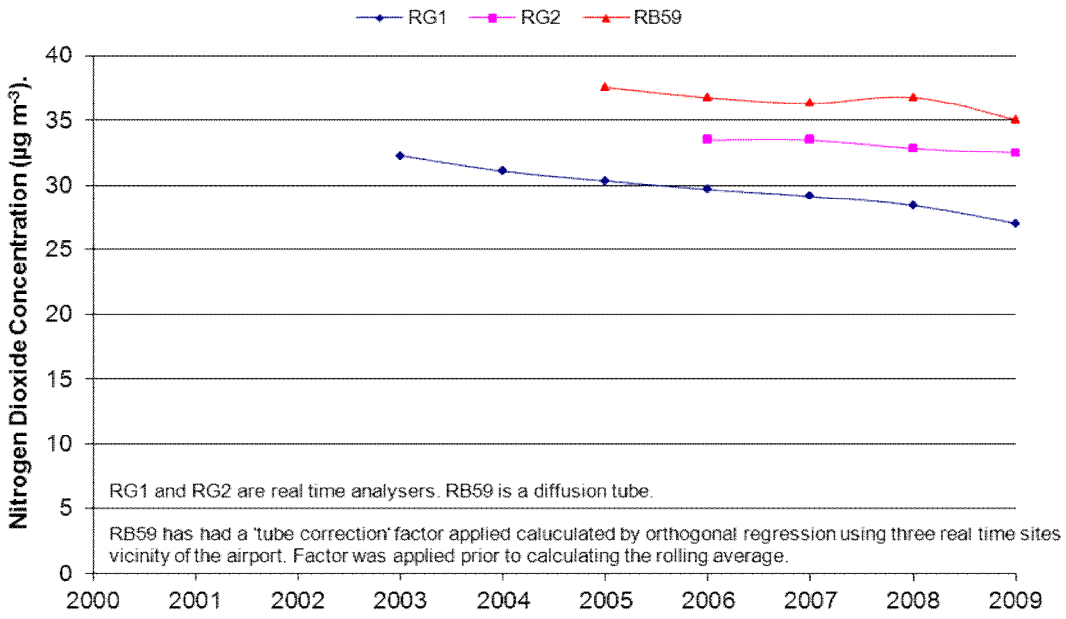


Figure 2.22 3-Year rolling averages in Horley, near to Gatwick Airport



PM_{10}

2.23 Reigate and Banstead Borough Council monitors PM_{10} concentrations at the RG1 – Michael Crecent, Horley automatic monitor. Concentrations for 2007 – 2009 are presented in Tables 2.6a and 2.6b below. Longer-term data are presented in Figure 2.23. Concentrations of PM_{10} appear to be decreasing over the long term.

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

Site Name	Location	In AQMA?	Data Capture for 2009 Calendar Year[b] (%)	Annual Mean Concentrations (µg/m^3)		
				2007	2008	2009[c]
RG 1	RG 1 - Michael Crescent, Horley	N	98.8%	23.3[a]	19.7[b]	18.8[b]

[a] TEOM data has been corrected using the default 1.3 correction factor to estimate gravimetric concentrations.

[b] Corrected using Volatile Correction Model (http://www.volatile-correction-model.info)

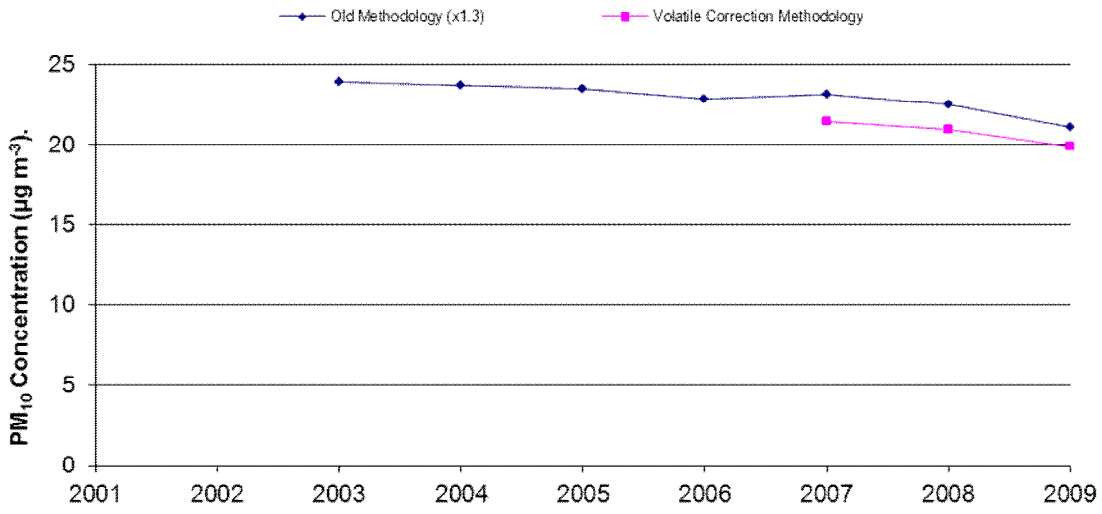
[c] Data downloaded from the London Air Quality Network (www.londonair.org.uk/london/asp/default.asp)

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

Site Name	Location	In AQMA?	Data Capture for 2009 Calendar Year[b] (%)	Number of Exceedences of Daily Mean (50 µg/m^3)		
				2007	2008	2009[c]
RG 1	RG 1 - Michael Crescent, Horley	N	98.8%	9[a]	5[b]	4[b]

[a] TEOM data has been corrected using the default 1.3 correction factor to estimate gravimetric concentrations.
[b] Corrected using Volatile Correction Model (http://www.volatile-correction-model.info)
[c] Data downloaded from the London Air Quality Network (www.londonair.org.uk/london/asp/default.asp)

Figure 2.23 Three Year Rolling Annual Average PM_{10} concentration at RG1, Michael Crescent, Horley



Benzene

2.24 Monitoring of Benzene concentrations takes place using BTEX tubes exposed monthly at three locations within the Borough. These tubes are located at roadside locations in Reigate High Street and London Road, Merstham, and Riverside, Horley. Annual mean concentrations are presented in Table 2.7. The measured annual mean benzene concentrations are well below the 2010 air quality objective at all monitored locations. All three sites appear to have a reduced concentration in 2009.

Table 2.7: Results of Benzene Monitoring: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2009 %	Annual Mean Concentrations (µg/m^3)		
				2007	2008	2009
RB1	High Street, Reigate	N	100	2.46	3.04	1.03
RB11	Riverside, Horley	N	100	2.46	2.33	0.71
RB20	London Road, Merstham	N	100	2.21	2.93	1.26
Objective				**5**	**5**	**5**

Other pollutants monitored

2.25 Reigate and Banstead Borough Council operates one ozone monitoring site. Although there is no requirement to assess ozone within the Review and Assessment process, these data are included for completeness. The results in Table 2.8b can be directly compared to the objective, and show it has been exceeded in all of the last 3 years.

Table 2.8a Results of Ozone Automatic Monitoring: Comparison with Annual Mean Objective

Location	Within AQMA?	Data Capture 2009 %	Annual Mean Concentrations (µg/m^3)		
			2007	2008	2009
RG 3 - Poles Lane Pumping Station, Crawley	N	98.4	44.8	51.1	49.7

Table 2.8b Results of Ozone Automatic Monitoring: Comparison with 8-hour Mean Objective

Location	Within AQMA?	Data Capture 2009 %	Number of Exceedences of 8 Hour Mean (100 µg/m^3)		
			2007	2008	2009
RG 3 - Poles Lane Pumping Station, Crawley	N	98.4	21	41	26
Objective			**10**	**10**	**10**

2.26 Reigate and Banstead Borough Council does not carry out monitoring of any other pollutants.

Summary of Compliance with AQS Objectives

2.27 For PM_{10} and benzene, all air quality objectives have been met at all monitoring locations. For ozone, there have been exceedences at the monitoring location in each of the last 3 years.

2.28 For nitrogen dioxide, at the majority of sites in the borough in 2009, concentrations were below relevant air quality objectives. However, there are sites within already declared AQMAs which are exceeding the annual mean objective. In addition, there are four diffusion tube sites which are exceeding the annual mean objective, but are not currently in AQMAs. The two in Hooley (RB136 and RB137) are also over, or near, 60 µg/m^3 suggesting potential issues with the hourly objective. These two sites were new in 2009 and **a Detailed Assessment will be required at this location.**

2.29 RB21 Drift Bridge Hotel and RB121 Ladbrook Grove, Redhill are also showing exceedences, but neither of these sites are representative of relevant exposure and hence no further action is necessary.

2.30 RB125 Reigate Hill has dropped marginally below the objective in 2009. This site was the subject of a recent Detailed Assessment and **a Reigate Hill AQMA will be declared in 2011**.

2.31 The Dean Lane AQMA has been well below the objective for a number of years and **it is therefore recommended that the Dean Lane AQMA is revoked**.

2.32 The M23 South AQMA has a surrogate site, which was set up in a field 2km to the north of the AQMA at a comparable distance from the motorway. This site is significantly below the objective. It is therefore **recommended that the M23 South AQMA is revoked**.

2.33 Nitrogen dioxide concentrations within the Rushworth Road AQMA have been below the objectives for a number of years. Due to the concentration at this location, is it **recommended that the Rushworth Road AQMA is revoked**.

2.34 The Blackhorse Lane AQMA had a much reduced concentration in 2009, well below the objective. It is unclear why this occurred as the kerbside site remains about the same concentration as previous years. As the concentration at the façade has only been below the objective in 2009, **it is too early to consider revoking the Blackhorse Lane AQMA**.

2.35 There are a large number of diffusion tubes within the Reigate High Street AQMA showing exceedences both at kerbside and building facades. **The Reigate High Street AQMA should therefore be retained**.

2.36 The Drift Bridge AQMA consists of two properties with concentrations generally just above or below the objective level. **The Drift Bridge AQMA should therefore be retained**.

2.37 Concentrations within the Merstham AQMA in 2009 were below air quality objectives at sites of relevant exposure. However, one site is over the objective and trend data do not show significant reductions. **The Mertsham AQMA should therefore be retained**.

2.38 The M25 AQMA is located between junctions 7 and 9 of the M25 within the borough boundaries and consists of a 30m strip either side of the motorway. All sites within the AQMA, for the last 3 years have shown no exceedences of the annual mean objective, although when monitoring data is extrapolated to a nearer receptor there is a marginal exceedence. Because of this, and the proposed widening of the motorway from J5 to J7, and plans for a controlled motorway covering the length of the AQMA, **it is recommended that the M25 AQMA is retained**.

2.39 Monitoring takes place at 24 diffusion tube locations within the Horley AQMA, which is situated NE of Gatwick Airport, as well as at 2 real time sites. Monitoring is also undertaken by the Council at a further site which is located to the SW of the airport in Crawley. Of the monitoring locations, only 1 diffusion tube is exceeding. This tube is at a site of relevant exposure. However, given passenger numbers have fallen steadily since 2007 from 35.2 mppa to 32.4 mppa in 2009, **the Horley AQMA should remain** as there is still come uncertainty as to how a 'rebound' in passenger traffic will affect nitrogen dioxide concentrations in the short to medium term along the south/ south-western site of the AQMA.

3 New Local Developments

Road Traffic Sources

3.1 Road traffic sources have been examined within Reigate and Banstead Borough Council. The following sources have been included in the evaluation.

- 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.

3.2 There are no new or newly identified road traffic sources since the last Updating and Screening Assessment.

Other Transport Sources

3.3 There are no new airport, port or railway sources within Reigate and Banstead Borough Council. However, there is an ongoing development at Gatwick Airport (Horley) for which a planning application has been submitted for the extension of the north terminal, which would allow up to 40 million passengers per annum (mppa) to use the airport by 2019. The air quality assessment which accompanied the application, indicated that nitrogen dioxide concentrations at the worst case receptor in the vicinity of the airport would be around 32 µg/m^3 by 2019 with the development in place, compared to 31 µg/m^3 without development when only 36 mmpa would use the airport. There were some concerns with the assessment undertaken, but nevertheless it indicated that the air quality objectives for nitrogen dioxide should be met by 2019.

3.4 Predicting pollutant concentrations in a future year will always be subject to greater uncertainty. These projections of what will happen to background pollutant concentrations, and to vehicle emissions are based on emission factors published by DfT, which have been incorporated into the Emissions Factor Toolkit after taking into account projections of the fleet mix in each year.

3.5 Recently however, a disparity between the road transport emission projections and measured annual mean concentrations of nitrogen oxides and nitrogen dioxide has been identified. This applies across the UK, although there is considerable inter-site variation. Whilst the emission projections suggest that both annual mean nitrogen oxides and nitrogen dioxide concentrations should have fallen over the past 6 to 8 years, at many monitoring sites levels have remained relatively stable, or have even shown a slight increase.

3.6 The precise reason for this disparity is not known, but is thought to be related to the actual on-road performance of diesel vehicles when compared to the calculations based on the Euro standards. It

may therefore be expected that nitrogen oxides and nitrogen dioxide concentrations will not fall as quickly in future years as the current projections indicate. However, at this stage, there is no robust evidence upon which to carry out any revised predictions.

3.7 The implications for this at Gatwick are that the absolute nitrogen dioxide concentrations predicted in 2019 may be higher than predicted. Reigate and Banstead Borough Council are committed to monitoring within the vicinity of the airport, in order to confirm whether reductions in nitrogen dioxide are occurring as predicted.

Industrial Sources

3.8 There have been no new or newly identified industrial sources in Reigate and Banstead Borough Council.

Commercial and Domestic Sources

3.9 There have been no new or newly identified domestic sources in Reigate and Banstead Borough Council. With regards to commercial developments, planning for the redevelopment of Redhill town centre continues and as a result of the air quality work undertaken in the initial planning stages, and a subsequent Detailed Assessment, the centre of Redhill will be declared an AQMA in early 2011. Tesco submitted plans for a new superstore in the town centre in 2008, along with an air quality assessment which showed limited impact from the store. To date, planning permission has not been granted.

Residential development

3.10 Development of the new housing estates in Horley has slowed as a result of the economic downturn. Work on the Horley NE sector (700 houses) is continuing, although work on the NW sector (1600 houses) has yet to begin.

New Developments with Fugitive or Uncontrolled Sources

3.11 There have been no new or newly identified uncontrolled of fugitive sources in Reigate and Banstead Borough Council. The sites considered include landfill sites, quarries, unmade haulage roads on industrial sites, waste transfer stations etc.

Reigate and Banstead Borough Council confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

4 Local / Regional Air Quality Strategy

4.1 The Local Transport Plan for Surrey is currently being updated for implementation in April 2011, which is the end of the current LTP reporting period. As part of this plan the draft Air Quality Strategy has been consulted on in the Autumn of 2010. At the time of writing, it is unknown what the outcomes of this consultation will be. The strategy aims '*To improve air quality in Air Quality Management Areas on the county road network such that Surrey's borough and districts are able to undeclare these areas as soon as possible, with regard to other strategies and funding constraints*.'

4.2 The document includes a twin-track strategy approach:

- A focus on AQMAs through incorporating appropriate physical measures in infrastructure schedules, enforcing existing regulations for parking, loading and utility works schedules, supporting travel choices that are better for air quality and considering air quality issues in borough and district-led planning processes and areas of responsibility;
- Countywide air quality improvements delivered through synergies with other Surrey Transport Plan strategies and other county council strategies when and where these tend to restrain traffic growth, reduce vehicle delay, reduce vehicle emissions and improve the provision of travel information to people on the air quality impacts of their travel choices.

4.3 Partnership working to deliver the aims of the strategy is proposed which will involve working with the boroughs and districts, the Highways Agency and with the wider Transport for Surrey Partnership.

5 Air Quality Planning Policies

5.1 The Borough Local Plan 2005 is formed from the First Alteration adopted on 7 April 2005, combined with the unaltered parts of the 1994 Borough Local Plan adopted on 21 July 1994. When the Planning & Compulsory Purchase Act 2004 came into force into September 2004, policies in the Local Plan were saved for three years from either the date of the Act or from the date of their adoption. As the Council's Local Plan comprises the 1994 Plan and the First Alteration, policies from the 1994 Plan were saved until September 2007 and policies from the First Alteration could be saved until April 2008.

5.2 The three year period was intended to allow local authorities to develop their new style planning policy documents, starting with the Core Strategy. However, in practice the new system has not progressed as quickly as it had been hoped, and the Borough Council applied to the Government to have most of the policies retained until they are replaced under the new Local Development Framework system.

6 Local Transport Plans and Strategies

6.1 The Local Transport Plan for Surrey is currently being updated for implementation in April 2011, which is the end of the current LTP reporting period. A series of consultation documents relating to the development of the new Surrey Transport Plan are being published on the County Council's website at www.surreycc.gov.uk/surreytransportplan. A vision and four objectives for the Surrey Transport Plan have been proposed.

6.2 The proposed vision and objectives are as follows:

6.3 Vision: Helping people meet their travel needs – reliably, safely and sustainably.

6.4 The objectives are:

- **Effective transport**: To meet the needs of residents, business and visitors in Surrey by maintaining and improving the transport network.
- **Reliable transport**: To improve the reliability of transport in Surrey.
- **Safe transport**: To improve the safety and security of the travelling public in Surrey.
- **Sustainable transport**: To provide a transport system that protects the environment, keeps people healthy and provides value for money

6.5 At the time of writing, especially with impending budget cuts, it is unclear how these objectives will be implemented through schemes, but air quality professionals will continue to work closely with transport professionals on all aspects of air quality and transport, particularly in relation to the Action Plans.

7 Climate Change Strategies

7.1 A Climate Change Strategy for Surrey has been developed by the Surrey Climate Change Partnership (SCCP) as a focal point for the County's future action on climate change. The strategy seeks to provide a framework to effectively address climate change across Surrey over the period to 2020. It will be delivered through the Partnership approach that has been successfully established between the members of the SCCP.

7.2 The structure of the Strategy is based on three core objectives:

Reducing Emissions - The Strategy highlights the need to understand, monitor and manage Surrey's carbon footprint, targeting major sources of emissions by:

- Improving home energy efficiency;
- Improving energy efficiency in the business, public and voluntary sectors;
- Managing and developing land and infrastructure through a low carbon approach;
- Minimising energy use and emissions from transport;

- Managing resources sustainably; and
- Supporting innovation and development of renewable energy.

Adapting to Climate Change - Planning for and responding to extreme weather events and longer term climatic trends will reduce the cost to the County's:

- Public Services;
- Industry & Commerce; and the
- Built and Natural Environment.

Raising Awareness - How effectively the County responds to climate change will be determined by the level of understanding of the various impacts, and what to do in order to address them. Hence a key aspect of the strategy is to inform, engage and involve all parts of the County. The Strategy specifically aims to:

- Raise awareness of climate change with public, community and partnership organisations and businesses; and
- Promote awareness and embed principles throughout Surrey's educational system.

7.3 Within Reigate and Banstead, many projects are underway to reduce carbon emissions across the Council's estate. For example, a project in Bancroft Road Car Park in Reigate to exchange old fluorescent lighting for energy efficient tubes, saved over 90 tonnes of CO_2 per year, equivalent to around 1.8% of the entire annual Council emissions.

7.4 The Council is also taking part in the Carbon Trust's Local Authority Carbon Management Programme to work up an ambitious programme of similar projects aiming to drive forward efficiencies, fulfil the aims set out in the Sustainable Energy Strategy and play a leading role in addressing the issues of climate change locally.

7.5 Many of these initiatives should also have positive impacts on the air quality objectives.

8 Implementation of Action Plans

8.1 The nine AQMAs have been declared at different times, and therefore the Action Plans are at different stages of development. As the recommendation is to revoke Dean Lane, M23 South and Rushworth Road AQMAs, these have not been included in this section of the report.

8.2 The draft Reigate High Street and Blackhorse Lane Action Plan (June 2008) is currently being redrafted in view of local spending cuts both by the Council and businesses. A number of the data gathering measures are already underway and are due for completion in the next 18 months. The revised Action Plan is due to be completed in late January 2011.

8.3 Drift Bridge and Merstham Air Quality Action Plans are to be drafted in the next 12 months.

8.4 A summary of the measures within the M25 action plan and an update on the current situation is shown in Table 8.1. The majority of the actions within the plan are now complete. As discussed in section 2 there are currently no exceedences of the nitrogen dioxide objectives within the M25 AQMA.

Table 8.1: Summary of Actions to Date for the M25 Air Quality Management Area.

Action	Responsible	Start Date	Original Completion Date	Actual Completion Date / or Progress	Outcome	Comments
Safety and lane discipline review of J7 M25.	HA	End 2003	April 2004	Information finally received 2nd Quarter 2005	Complete. Conclusion of review is that existing signage and road markings can be improved, with new signage J8 to 7 proposed, along with new road markings.	None.
Improve Signing / Road markings on anticlockwise approach to J7 M25.	HA	April 2004	April 2005 subject to confirmation	Complete Q3 2006.	Signs and markings installed.	Scheme primarily aimed at improving road safety. AQ benefits considered minor (if any) but this was all the Highways Agency was proposing. **'Ramp Metering' now installed (2010) at J8 anticlockwise. Aim is to improve traffic flow. AQ benefits (if present) for RB39 monitoring site.**
Continue with Diffusion Tube	RBBC (Pollution	June 2002	Dec. 2010	Tube study on going, extended to	Results to date in this report. NO_2 concentrations are falling but at a	Many A roads show no improvement in NO_2 concentrations, thus limited improvement on M25 is not unique to motorway.

Action	Responsible	Start Date	Original Completion Date	Actual Completion Date / or Progress	Outcome	Comments
Survey.	Team)		(minimum)	2015.	slower rate than expected.	Survey will now continue until at least 2015.
On going review of the Sheffield study into reduced speed limits on M'ways, and practical impact on air quality.	RBBC (Pollution Team)	2003	?	Proposed completion Feb 2005.	At a meeting on 13/4/05 (HA, 2005) it was said that the study was running a 'few months' late. Studies elsewhere e.g. Rotterdam (AQM, 2005) indicate that a fixed speed limit of 50 mph does give a significant reduction in NO_x in practice.	Discussions with Sheffield's AQ team in Q1 2007 (Daly, 2007) indicated they were unaware of HA study. To date (Sept 2010) have yet to see a report or commentary on study. However DfT report on the impact of controlled motorways indicates that on the M25 speed restrictions do lead to an improvement in air quality (DfT, 2004). **Controlled motorway now being proposed (2010) for J7 to J10 of the M25. Aim is to increase road capacity (hard shoulder running) / improve traffic flow. Possible AQ improvements from improved flow, though potential improvements to be off set by increase in traffic.**
Make central Government aware of the disproportionate emissions from articulated vehicles.	RBBC / HA	2003	on going	Letter sent to DfT 17/3/04. Response 8/4/04.	Response from DfT stated that unlikely that there would be any new measures to address HGV emissions before 2011. No further action taken on this to date.	Only way to achieve a significant reduction in NO_x / NO_2 on this section of the motorway, and on UK and EU roads in general. Also one of the most cost effective overall as tackles the problem at source. **However care needs to be taken as some evidence that 'in service' Euro V diesel HGV emissions of NOx/NO_2 are 2 – 3 times the mandated levels (AQB, 2010).**

HA: Highways Agency; RBBC: Reigate and Banstead Borough Council.

8.5 The action plan for the Horley Air Quality Management Area was divided into two sections, non-airport pollution and airport related pollution, as the Council has no control over the airside emissions from the airport. The action plan for the non-airport pollution sources was produced in 2006, and the aim of this plan was to minimise any increase in local road traffic emissions beyond 2010 due to two major new housing developments being built in Horley. The plan did not seek to achieve large reductions in non-airport sources of pollution, as large improvements in the existing local road transport emissions could relatively easily be negated by small increases in emissions from the airport.

8.6 The action plan for airport derived sources of pollution is also one of a series of commitments contained in a section 106 agreement between the airport and Crawley Borough Council, which will effectively enforce the publication and implementation of the airport's air quality action plan. A copy of the Air Quality Management Action Plan for Gatwick Airport is available at: http://www.gatwickairport.com/Documents/business_and_community/Misc/Air_Quality_Action_Plan_Final.pdf

8.7 The measures and actions to date in the Horley action plan for non-airport pollution are summarised in Table 8.2.

Table 8.2: Summary of Actions to date for the Non Airport Sources of Pollution within the Horley AQMA.

Measure	Cost[a]	Air Quality Improvement [b]	Person / organisation responsible	Indicator	Start Date	Completion Date	Actual Completion Date / or Progress	Outcome	Comments
Limit Road Transport Growth to 5.5 % by 2011 from 2004/5 levels. (Annex 9 LTP).	High (3)	c.0.1 µg m^{-3} (2) at RB59[c]	SCC (via LTP 6).	For current traffic flows see note 'd' at end of table.	April 2006	April 2011	On going	To date traffic flows are essentially flat in this area, or showing falls.	Traffic on the A217 has risen 2.2 % 2004 to 2009, and fallen 12 % on the M23 spur over the same period.
Fastway Route (Horley to Crawley via Gatwick).	High (3)	<0.1 µg m^{-3} (3)	SCC / RBBC/ HTC/ BAAG.	Reduction in peak hour traffic flow.	Jan 2006	April 2011	Initial phase of the works is complete and project on track.	On going	Final stage of the route will be completed once construction of new housing (NW sector) begins.
Fastway Interchange at Horley Station.	High (3)	<0.1 µg m^{-3} (3) at RB59	SCC / RBBC for information contact Emily Mottram Policy & Regeneration (RBBC).	Project Completion	April 2006	April 2011	Completed (as of Sept 2008)	Interchange complete	Impact on air quality of this individual project is negligible. However this is one part of a wider project that should help minimise any growth in NO_2 concentrations from the new housing developments in Horley.

Measure	Cost[a]	Air Quality Improvement [b]	Person / organisation responsible	Indicator	Start Date	Completion Date	Actual Completion Date / or Progress	Outcome	Comments
Bus Priority Lanes on A23 (p105 5.43 in LTP).	Medium (2)	<0.1 µg m^{-3} (3) at RB59	SCC / RBBC for information contact Peter Boarder Policy & Regeneration (RBBC).	Project Completion	Unknown	April 2015	Scheme still under consideration, but limited progress beyond this.	On going	Minimal benefit to air quality within Horley AQMA. Surrey CC (2010) are still 'keen' on the scheme.
Extension of Fastway to Redhill and Reigate. (LTP2 aspiration).	High (3)	<0.1 µg m^{-3} (3) at RB59	SCC / RBBC for information contact Peter Boarder Policy & Regeneration (RBBC).	Project Completion	Unknown	April 2015 (if implemented)	On going	On going	Original plan noted that project may not go ahead. To date there is no information on whether the project will / will not go ahead. However, impact of project on worst-case receptor is negligible.
Measure	**Cost[a]**	**Air Quality Improvement [b]**	**Person / organisation responsible**	**Indicator**	**Start Date**	**Completion Date**	**Actual Completion Date / or Progress**	**Outcome**	**Comments**
Maintain current taxi licensing regime.	Low (1)	<0.1 µg m^{-3} (3) at RB59	RBBC Licensing.	Standards relating to Taxis maintained	On going	On going	On going	On going	Current scheme means that entire taxi fleet is replaced every 9 years. Minimal impact on Horley AQMA.
Public Service		<0.1 µg m^{-3}	SCC / RBBC/	5 % reduction	March			The 5% reduction	Project had no bearing on

Measure	Cost[a]	Air Quality Improvement [b]	Person / organisation responsible	Indicator	Start Date	Completion Date	Actual Completion Date / or Progress	Outcome	Comments
Agreement to reduce Congestion on the A217 and A23 (Horley Road).	Low (1) (to RBBC)	(3) at RB59	ODPM. Contact Linden Mendes SCC.	in average vehicle delay by March 2008.	2005	March 2008	March 2008	target was met, but due to traffic signal changes alone, and not signal changes and greater car sharing combined as originally intended.	Horley AQMA. Intention was to note reasons for success / failure of project, and bear these in mind – if appropriate – for future reference if congestion becomes a problem within the Horley AQMA. The results suggest that there is still scope for improvements in traffic flows based on the timings of traffic signals.
Travel Plans (Work).	Low to medium (1 to 2)	<0.1 µg m^{-3} (3) at RB59	RBBC / Local employers Contact Tim Dukes (SCC).	4 to 5 plans to be completed per annum.	On going	On going	On going	On going	As most major employers in Horley had a travel plan in place impact on AQMA itself was limited. Preliminary work is now beginning on the feasibility of a Horley wide travel plan i.e. examining travel for the whole town rather than on an individual employer / school level. Work still on going 2010.
Travel Plans (Schools) (LTP indicator TP3).	Low to medium (1 to 2)	<0.1 µg m^{-3} (3) at RB59	SCC (Richard Peplow).	All Horley schools have, and have implemented, a travel plan.	On going	December 2010.	On going and currently on target.	Note impact from this scheme on concentrations within the AQMA is very limited.	Proposals to now look at travel planning for the whole town, rather than on the individual employer / school level. See above.

Measure	Cost[a]	Air Quality Improvement [b]	Person / organisation responsible	Indicator	Start Date	Completion Date	Actual Completion Date / or Progress	Outcome	Comments
Continued Promotion of Surrey Car Share.	Low (1) (to RBBC)	<0.1 µg m^{-3} (3) at RB59	Contact at RBBC – Raymond Dill Policy & Regeneration.	Steady Growth in number of participants. (1300 users at start of 2006).	On going	On going	On going. Currently (2010) 3424 active members.	On going.	Measurable improvements in air quality unlikely in the short term, minimal if any impact on air quality within the AQMA, but possible wider AQ benefits. Council also creating parking spaces for 'Streetcar' vehicles i.e. cars that can be hired by the hour.
Implementation of Council Travel Plan.	Low to medium (1 to 2)	<0.1 µg m^{-3} (3) at RB59	RBBC Raymond Dill Policy & Regeneration.	Implementation of plan.	Jan 2006	Implemented end 2008	Complete (Q3, 2009).	Work place parking charges introduced for all incl essential users. Pool cars introduced, and various other incentives to use public transport or to cycle.	Implementation allows Council to encourage other employers to implement their own plans, with possible benefits for Horley, especially with airport travel plan.
Incorporation of Sustainable energy policy into local development	Low (1) to RBBC, possibly Medium (2)	Variable, depending on scheme.	RBBC Policy & Regeneration	Incorporation of policy	Current	Jan 2007	Complete.	Document now included.	Benefit to Horley AQMA marginal in short term. However, may help reduce growth in background NO_2

Measure	Cost[a]	Air Quality Improvement [b]	Person / organisation responsible	Indicator	Start Date	Completion Date	Actual Completion Date / or Progress	Outcome	Comments
framework document.	to High (3) to developers.		Raymond Dill.						concentrations from new developments in area, which would be of benefit.
Horley Design Guide: - Low NO_x boilers.	Low (1)	<0.1 µg m^{-3} (3) at RB59	RBBC Leon Hibbs	Measure adopted by developers.	June 2005	Jan 2007	Initial stage complete Jan 2007.	Measure is now in the design guide, though building work yet to begin.	Aim is to minimise growth in background. Although the measure is in the design guide the next stage is to see if adopted by developers.
- Minimum of 10 % of energy from renewable sources.	Medium (2)	<0.1 µg m^{-3} (3) at RB59, but potential increase for local 'hot spots' depending on source.	RBBC Policy & Regeneration Raymond Dill.	Scheme up and running.	On going	Jan 2007 for local development framework policy	Initial stage complete Jan 2007.	Measure now in design guide.	As with low NO_x boilers the next stage is to see if measure taken up by developers and the system used. Risk of localised NO_x 'hot spots' if for example biomass burner.
- Home Zone.	Medium (2)	<0.1 µg m^{-3} (3) at RB59	RBBC Planning	New developments completed as home zones.	On going	Jan 2007	Jan 2007.	Policy in design guide.	Impact on air quality potentially low. However, may encourage walking over short distances and avoid car use.
Monitoring.	Low (1) to Medium (2) depending on time	N/A	RBBC Leon Hibbs	Data capture > 90 %.	On going	On going	On going.	Data capture consistently in excess of 90 %, new equipment purchased and	Sites are important for examining trends in measured pollutant concentrations, compliance monitoring, and

Measure	Cost[a]	Air Quality Improvement [b]	Person / organisation responsible	Indicator	Start Date	Completion Date	Actual Completion Date / or Progress	Outcome	Comments
	scale							installed in 2010.	also model validation.
Local Forums / Policy: - AQ Working Group with BAAG.	Low (1) to RBBC	1 µg m^{-3} (1) at RB59	RBBC Pollution Team	No specific measure, but will include Gatwick AQ plan implemented, on going predictive modelling work.	On going	On going	Meetings are on going. Airport action plan produced Jan 2009.	On going	Modelling for a range of scenarios to 2019 now complete. Have also modelled 2015 scenario with varying weather conditions. Progress on the airport's action plan is subject to quarterly monitoring.
- New section 106 agreement and sustainable development strategy.	Low (1) to RBBC	1 µg m^{-3} (1) at RB59	RBBC Planning and Environ. Health. Others: GAJA, GOG, GATCOM.	Agreement and Implementation of new agreement and strategy.	On going	Mid 2007	Complete (Dec 2008).	Completed	Only if the measures in the agreement are completed, and the outcome of any studies in the agreement acted upon, will any improvement in air quality occur.

Measure	Cost[a]	Air Quality Improvement [b]	Person / organisation responsible	Indicator	Start Date	Completion Date	Actual Completion Date / or Progress	Outcome	Comments
National / EU measures: - Tighter vehicle emissions standards.	Low (1) to RBBC, but very high (3+) to industry.	Up to 1 µg m^{-3} (1) at RB59	UK Government via EU.	Higher standards in place.	?	?	No progress to date, as per M25.	-	Direct NO_2 emissions are unlikely to be a problem within the Horley AQMA, given the distance from the road network.
- Tighter aircraft engine emissions standards.	Low (1) to RBBC, but very high (3+) to industry.	Aim is to reduce the rate of growth of aircraft emissions.	UK Government via EU.	Higher standards in place.	?	?	Discussed informally with DfT representative on 16/10/07, especially the need initially for better and publicly available data on APU emissions.	-	APU emissions are also a source of concern, and the lack of manufacturers' data on emissions makes assessing the scale of the impact difficult. Thus in the first instance emissions testing of APUs needs to be introduced.

Notes:
Greyed rows are completed actions.
a (1) Low £<100K, (2) Medium £100K to £1 million, (3) High £1 million to £10 million.
b (1) improvement of 1 µg m-3, (2) 0.1 to 1 µg m-3, (3) <0.1 µg m-3.
c as used mid line forecast in original TEMPRO model equivalent to a 10 % increase in traffic 2005 to 2010.

d The current traffic flows as measured on roads in the area are as follows:

	Site ID	AADT 2004	AM weekday peak flow 2004	PM Weekday peak flow 2004
A217 (Mill Lane / Nursery Lane)	A0217 (04063A)	18,061	2036 (8 to 9am)	1703 (17 to 18:00)
A23 (just before Massetts Rd / Woodroyd Av.)	A0023 (04082C)	29,392	2217 (8 to 9am)	2493 (17 to 18:00)
M23 Gatwick Spur* (contact Margaret King at: area4@interroutejv.co.uk)	6009 & 6010 (TRADS 2 Ref) (529427, 141683) and 529498, 141694)	65,964 (2% HGV)	1702 (9 to 10am) to M23 3172 (9 to 10am) to Gatwick	2691 (18 to 19:00) 1665 (14 to 15:00)

*Note these are the revised figures (2008) for 2004. The original 2004 figures are shown below.

2009 Figures (Note Gatwick Spur 2008 figures as no data for 2009:					
A217 (Mill Lane / Nursery Lane)	A0217 (04063A)	18,461e	1616e (8 to 9am)		1595e (17 to 18:00)
		Up 2.2 % on 2004.	Down 21% on 2004.	Down 6.4% on 2004.	
A23 (just before Massetts Rd / Woodroyd Av.)	A0023 (04082C)	Site discontinued in 2005 and replacement site not installed as planned.			
M23 Gatwick Spur	6009 & 6010 (TRADS 2 Ref)	58,055	1500 (8 to 9am)	to M23	2074 (18 to 19:00)
(529427, 141683) and	(2% HGV)	2884 (8 to 9am)	to Gatwick	1487 (13 to 14:00)	1438 (18 to 19:00)
		Down 12 % on 2004.			

e Based on 4 months data in 2009. Values scaled to 12 months using 2007 data.

RB59 is the worst case receptor within the Horley Air Quality Management Area (AQMA).

BAAG:	British Airports Authority – Gatwick.	GAJA:	Gatwick Airport Joint Local Authorities.
GATCOM:	Gatwick Consultative Committee.	GOG:	Gatwick Officers Group.
HTC:	Horley Town Council.	ODPM:	Office of the Deputy Prime Minister.
RBBC:	Reigate and Banstead Borough Council.	SCC:	Surrey County Council.

9 Conclusions and Proposed Actions

Conclusions from New Monitoring Data

9.1 For PM_{10} and benzene, all air quality objectives have been met at all monitoring locations. For ozone, there have been exceedences at the monitoring location in each of the last 3 years.

9.2 For nitrogen dioxide, concentrations were below relevant air quality objectives at the majority of sites in the borough in 2009. However, there are sites within already declared AQMAs which are exceeding the annual mean objective. In addition, there are four diffusion tube sites which are exceeding the annual mean objective, but are not currently in AQMAs. The two in Hooley (RB136 and RB137) are also over, or near, 60 µg/m^3 suggesting potential issues with the hourly mean objective. These two sites were new in 2009 and **a Detailed Assessment will be required at this location.**

9.3 RB21 Drift Bridge Hotel and RB121 Ladbrook Grove, Redhill are also showing exceedences, but neither of these sites are representative of relevant exposure and hence no further action is necessary.

9.4 RB125 Reigate Hill has dropped marginally below the objective in 2009. This site was the subject of a recent Detailed Assessment and will be declared an AQMA in 2011.

9.5 The Dean Lane AQMA has been well below the objective for a number of years and **it is therefore recommended that the Dean Lane AQMA is revoked**.

9.6 The M23 South AQMA has a surrogate site set up in a field 2km to the north of the AQMA at a comparable distance from the motorway. This site is significantly below the objective. It is therefore **recommended that the M23 South AQMA is revoked**.

9.7 Within the Rushworth Road AQMA concentrations have been below the objectives for a number of years. Due to the concentration at this location, is it **recommended that the Rushworth Road AQMA is revoked**.

9.8 The Blackhorse Lane AQMA had a much reduced concentration in 2009, well below the objective. It is unclear why this occurred as the kerbside site remains about the same concentration as previous years. As the concentration at the façade has only been below the objective in 2009, it is too early to consider revoking the AQMA.

9.9 There are a large number of diffusion tubes within the Reigate High Street AQMA showing exceedences both at kerbside and building facades. This AQMA should therefore be retained.

9.10 The Drift Bridge AQMA consists of two properties with concentrations generally just above or below the objective level. This AQMA should therefore be retained.

9.11 Concentrations within the Merstham AQMA in 2009 were below air quality objectives at the majority of sites. However, one site is over the objective and trend data do not show significant reductions. This AQMA should therefore be retained.

9.12 The M25 AQMA is located between junctions 7 and 9 of the M25 within the borough boundaries and consists of a 30m strip either side of the motorway. All sites within the AQMA, for the last 3 years have shown no exceedences of the annual mean objective, although when monitoring data is extrapolated to a nearer receptor there is a marginal exceedence. Because of this, and the proposed widening of the motorway from J5 to J7, and plans for a controlled motorway covering the length of the AQMA, it is recommended that the M25 AQMA is retained.

9.13 Monitoring takes place at 24 diffusion tube locations within the Horley AQMA which is situated NE of Gatwick Airport, as well as at 2 real time sites. Monitoring is also undertaken by the Council at a further site which is located to the SW of the airport in Crawley. Of the monitoring locations, only 1 diffusion tube is exceeding. This tube is at a site of relevant exposure. However, given passenger numbers have fallen steadily since 2007 from 35.2 mppa to 32.4 mppa in 2009, the current AQMA will remain as there is still come uncertainty as to how a 'rebound' in passenger traffic will affect nitrogen dioxide concentrations in the short to medium term along the south/ south-western site of the AQMA.

Conclusions relating to New Local Developments

9.14 No new developments have been identified which will need to be considered in the next Updating and Screening Assessment or be considered within a Detailed Assessment.

Other Conclusions

9.15 Implementation of measures to improve air quality is progressing, both through formally adopted Air Quality Action Plans for the M25 and Horley AQMAs, and through the progression of Action Plans for the other AQMAs within Reigate and Banstead. In addition, the Local Transport Plan (LTP) is due to be updated before April 2011 and partnership working between transport planners and air quality professionals has identified the need for an Air Quality Strategy as part of that document. It is hoped that as the LTP and Air Quality Strategy are taken forward, there will be consequent reductions in pollutant emissions.

Proposed Actions

9.16 A Detailed Assessment will be required at Hooley (in the vicinity of diffusion tubes RB136 and RB137) to be completed by April 2011.

9.17 A Progress Report will be required in April 2011.

9.18 Following the Detailed Assessment in Reigate Hill and Redhill, AQMAs will be declared at both locations.

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11 Glossary

AQMA	Air Quality Management Area
AQS	Air Quality Strategy
ADMS Roads	Atmospheric Dispersion Modelling System for Roads.
DfT	Department for Transport
Exceedence	A period of time where the concentration of a pollutant is greater than the appropriate air quality objective.
HA	Highways Agency
HGV	Heavy Goods Vehicle
LTP	Local Transport Plan
NOx	Nitrogen oxides (taken as NO + NO_2)
NO	Nitric Oxide
NO_2	Nitrogen dioxide.
O_3	Ozone
Objectives	A nationally defined set of health-based concentrations for nine pollutants, seven of which are incorporated in Regulations, setting out the extent to which the standards should be achieved by a defined date, taking into account costs, benefits, feasibility and practicality. There are also vegetation-based objectives for sulphur dioxide and nitrogen oxides.
PM_{10}	Particulate Matter less than 10 µm in aerodynamic diameter
RBBC	Reigate and Banstead Borough Council
SCCP	Surrey Climate Change Partnership
Standards	A nationally defined set of concentrations for nine pollutants below which health effects do not occur or are minimal.
TEOM	Tapered Element Oscillating Microbalance
µg/m^3	Microgrammes per cubic metre.

Appendix A: Maps of monitoring sites

Figure A1.1 Diffusion tube monitoring sites in Reigate and Banstead. © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

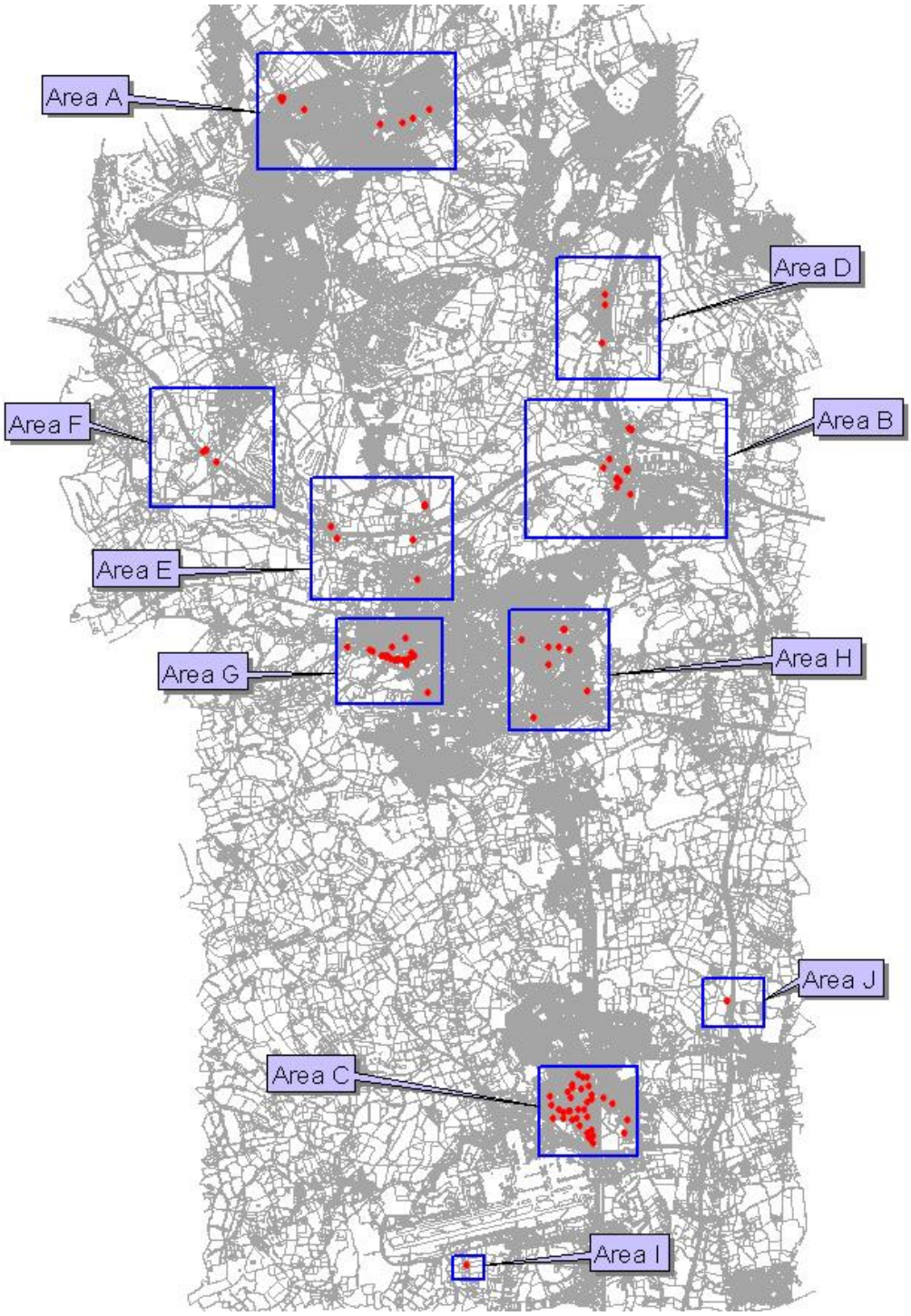


Figure A1.2 Diffusion tube monitoring sites in Banstead and Drift Bridge (Area A). © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

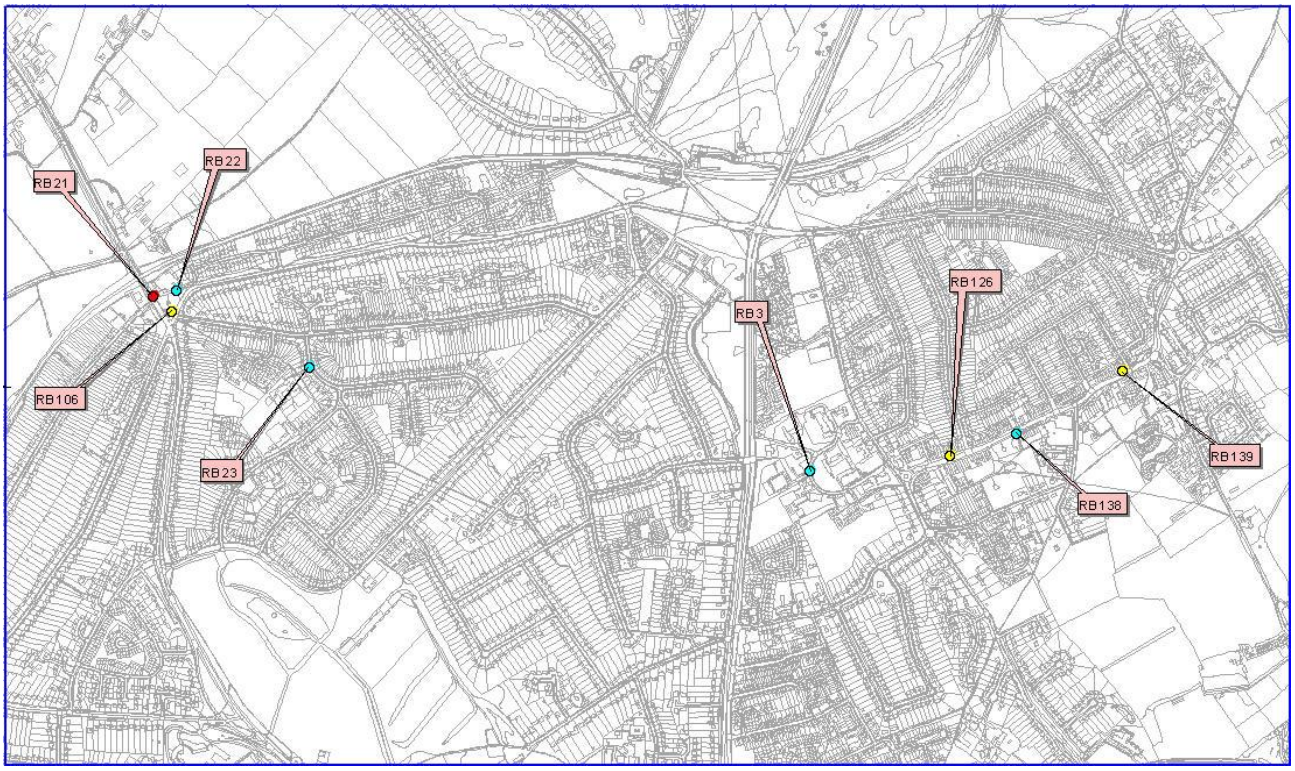


Figure A1.3 Diffusion tube monitoring sites near M23/ M25 East (Area B) © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

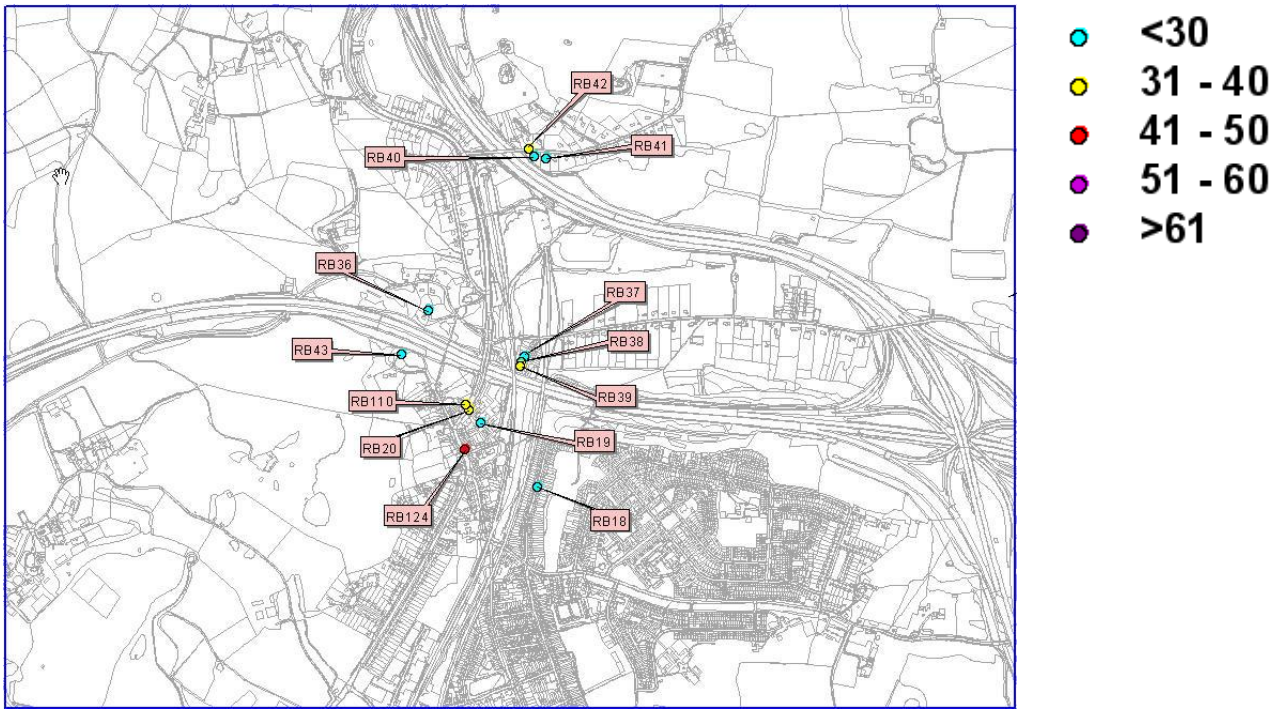
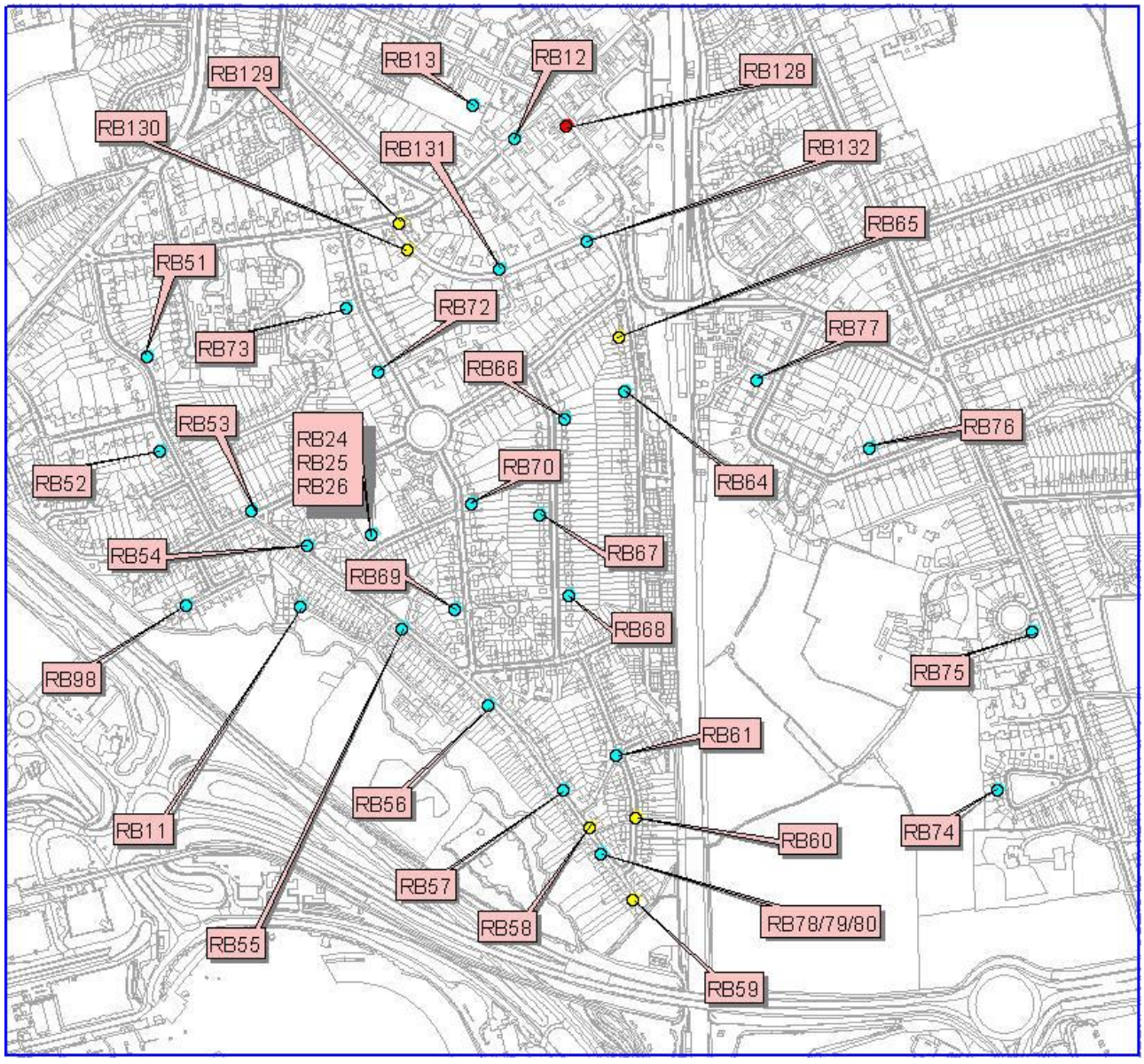


Figure A1.4 Diffusion tube monitoring sites within Horley AQMA (Area C). © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405



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- 41 - 50
- 51 - 60
- >61

Figure A1.5 Diffusion tube monitoring sites in Hooley (Area D). © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

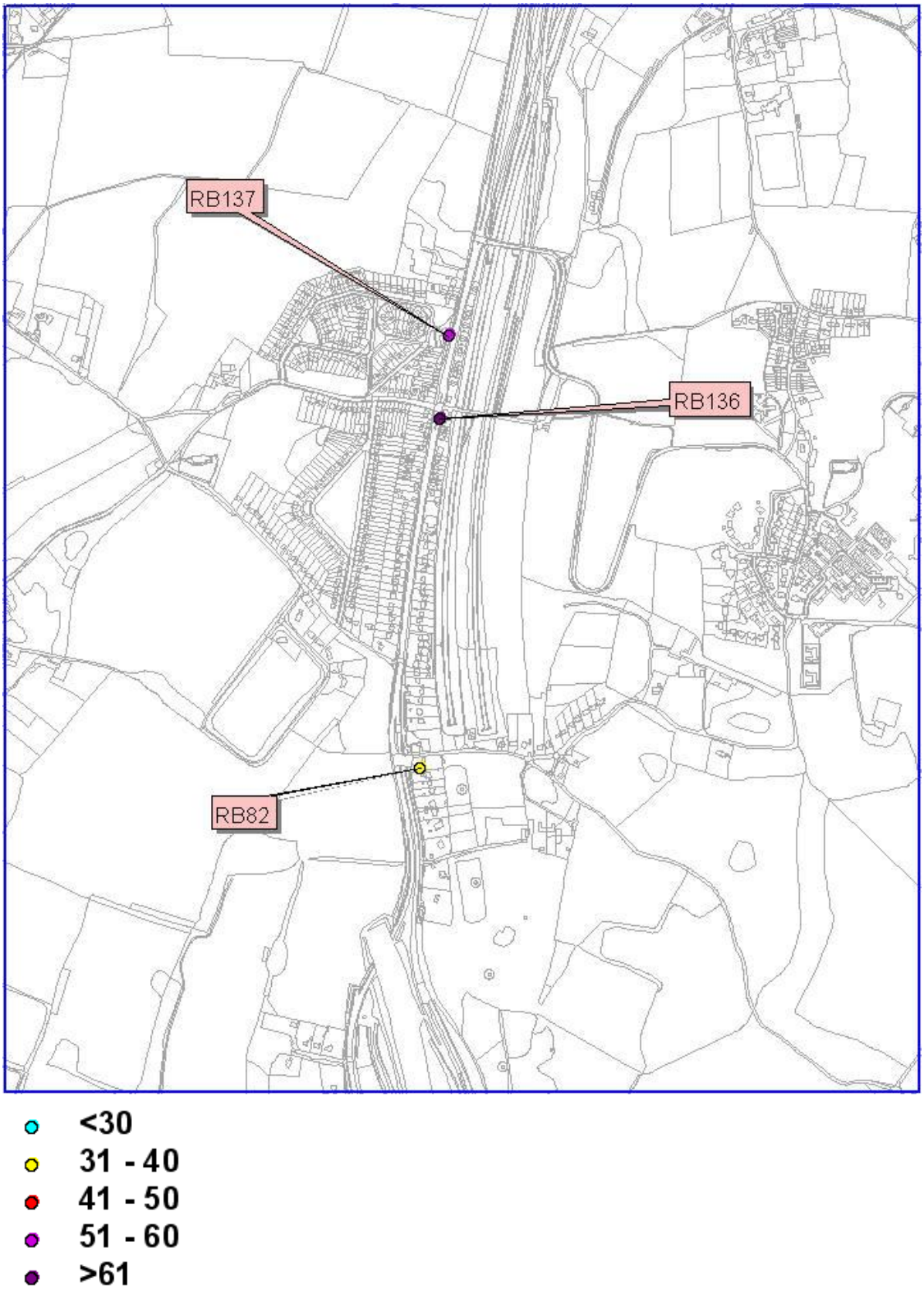

Figure A1.6 Diffusion tube monitoring sites near the M25 (Area E). © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

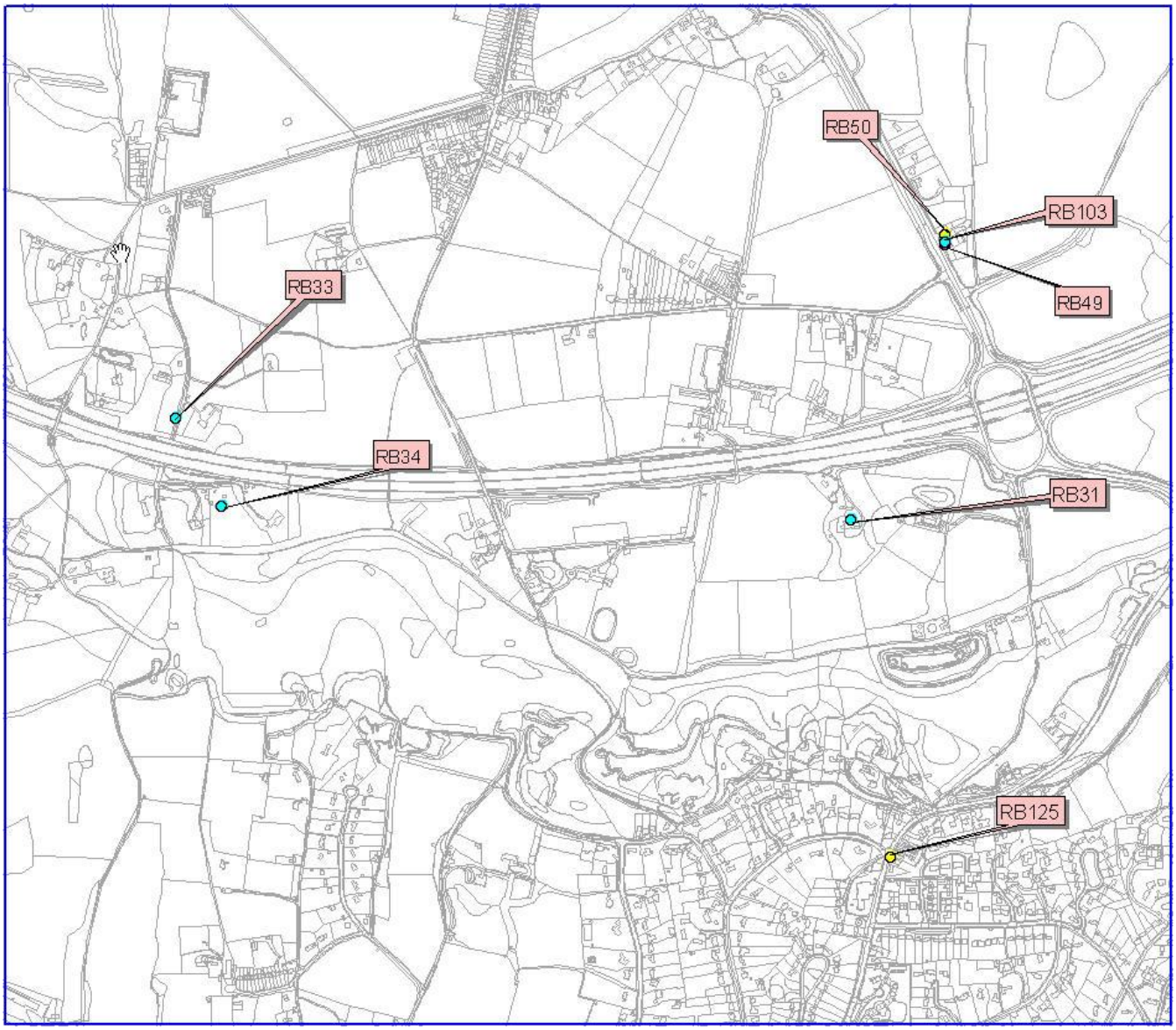

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Figure A1.7 Diffusion tube monitoring sites near the M25 West (Area F). © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

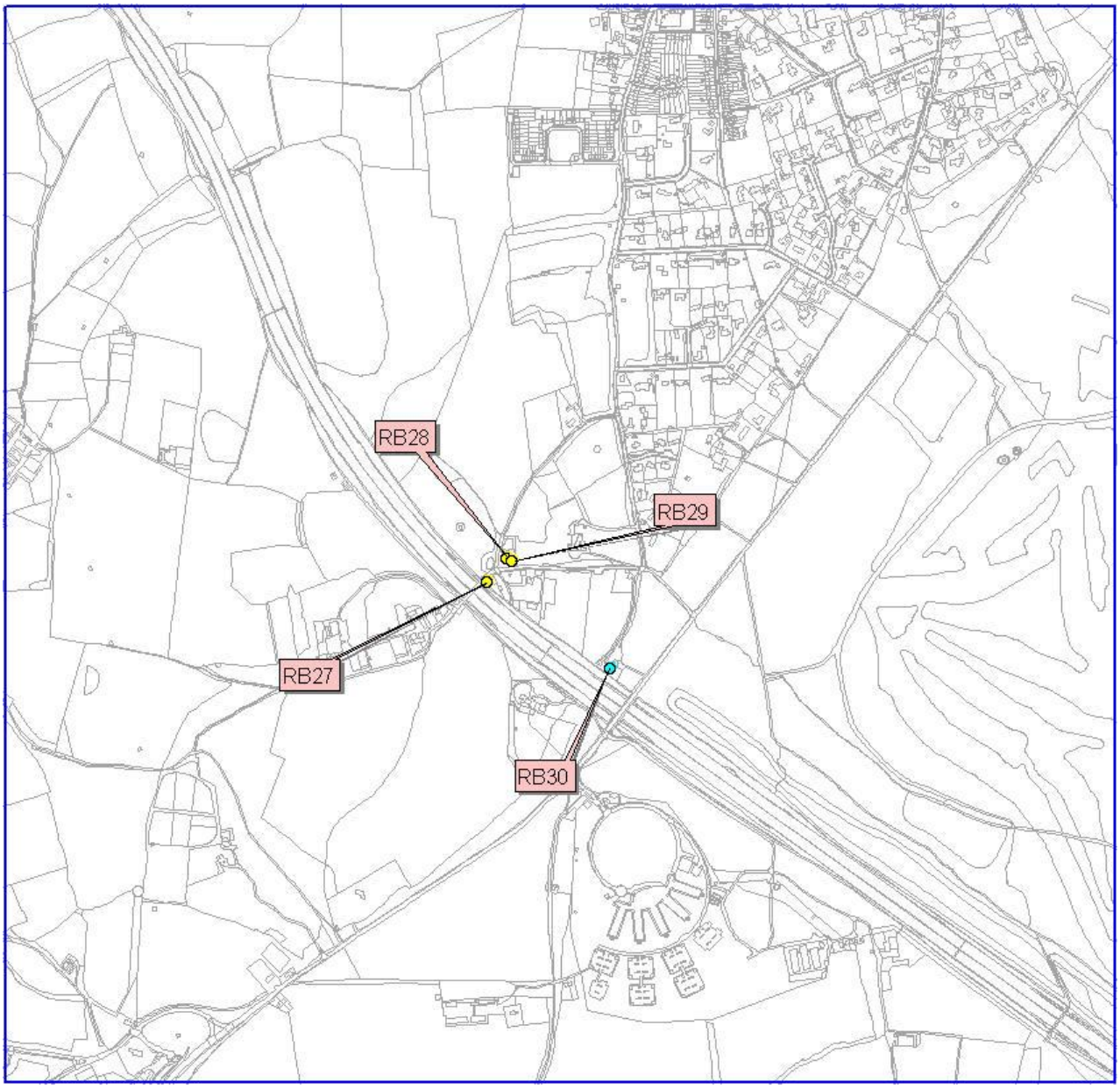

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Figure A1.8 Diffusion tube monitoring sites in Reigate (Area G). © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

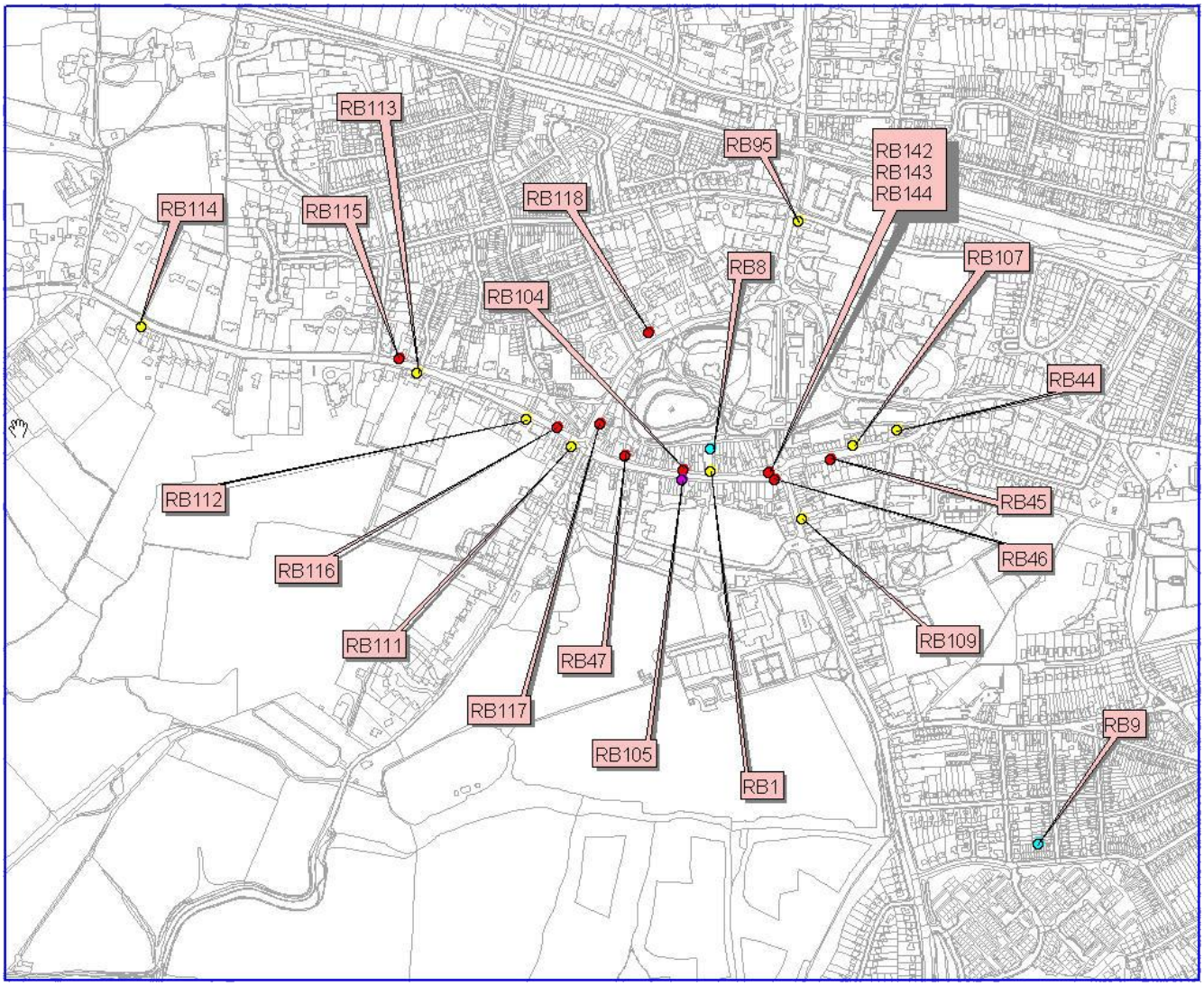

Figure A1.9 Diffusion tube monitoring sites in Redhill (Area H). © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

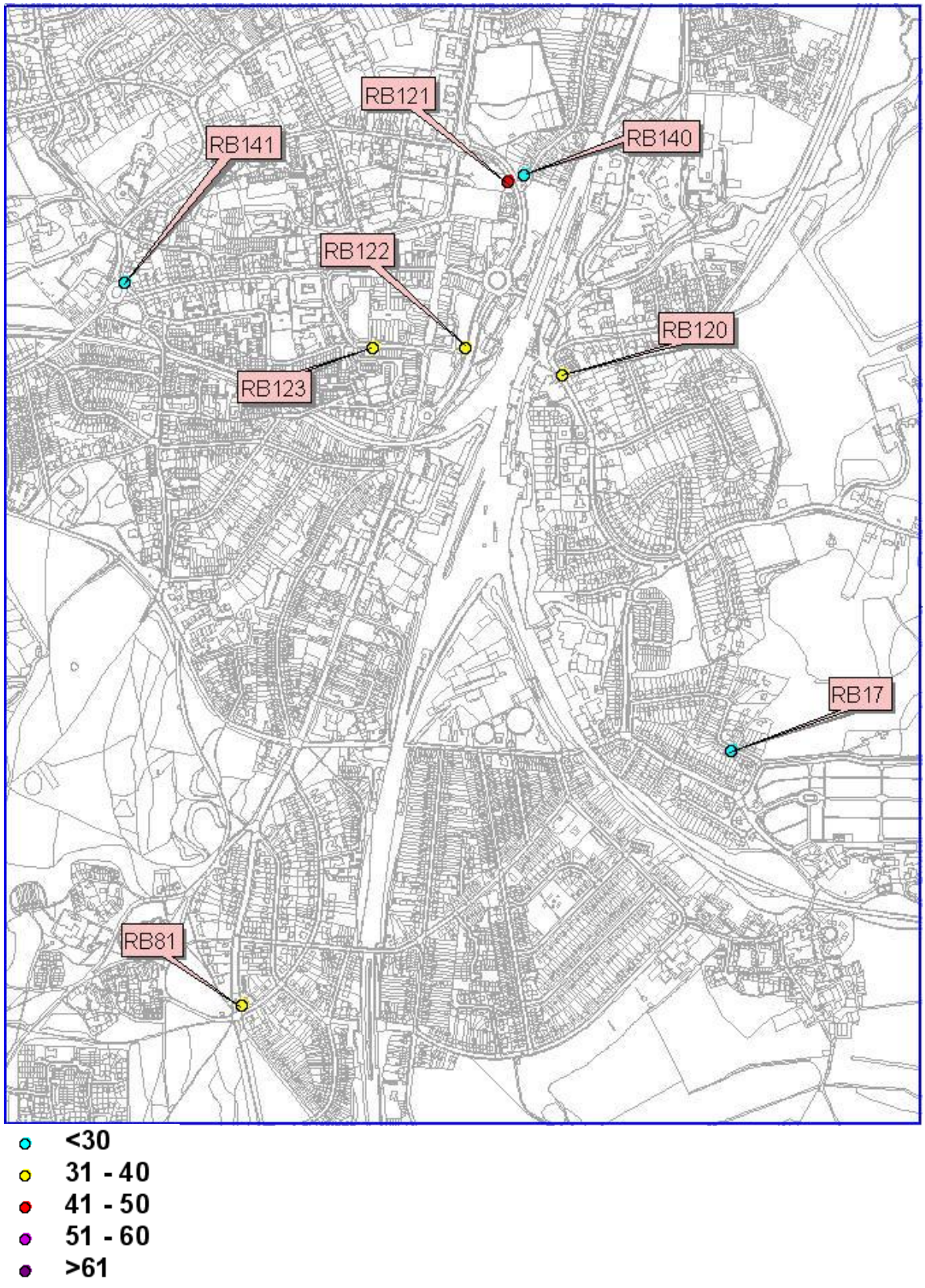

Figure A1.10 Diffusion tube monitoring site in Crawley (Area I). © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

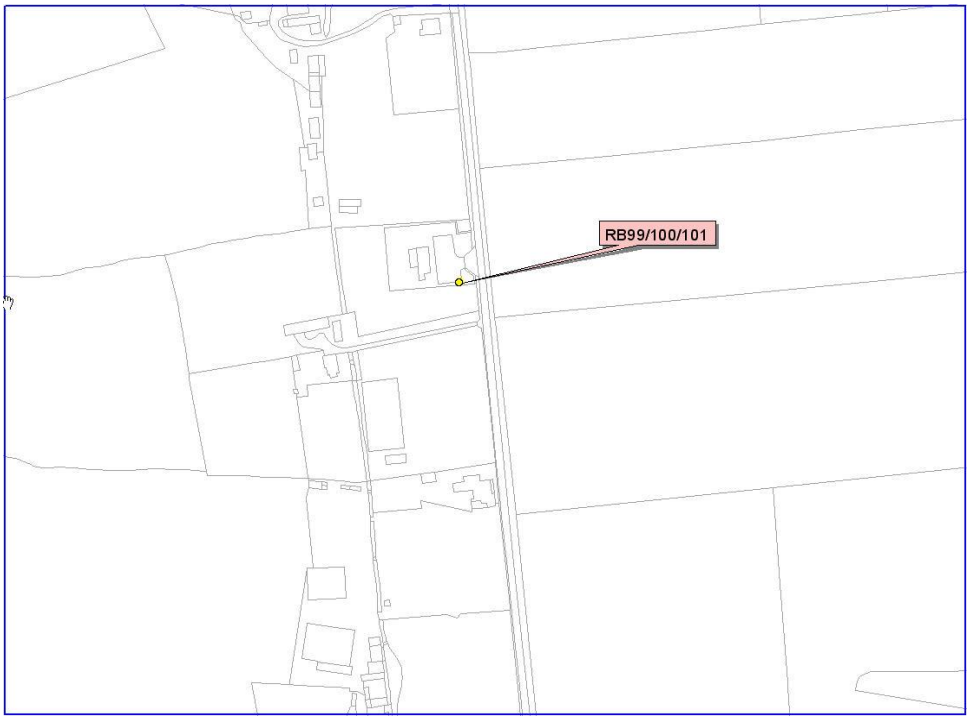

Figure A1.11 Diffusion tube monitoring sites in M23 South AQMA (Area J). © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

Appendix B: QA:QC of Data

Diffusion Tube Bias Adjustment Factors

11.1 Reigate and Banstead Borough Council mainly use diffusion tubes prepared and analysed by Lambeth Scientific Services (50% TEA in acetone). The national bias adjustment factor for Lambeth is 1.02 (spreadsheet 09/10) compared to the local factor for Reigate and Banstead of 1.014. There are also some tubes (RB128-132) which are analysed by Gradko (50% TEA in acetone). The national bias adjustment factor for Gradko 50% TEA in acetone is 0.99 (spreadsheet 03/10). This factor has been used to adjust all of the Gradko diffusion tubes.

Factor from Local Co-location Studies

Site Type	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m^3)	Automatic Monitor Mean Conc. (Cm) (µg/m^3)	Bias Adjustment Factor (A) (Cm/Dm)
O	12	25	25	**1.01**
O	12	18	18	**0.98**
O	11	29	30	**1.05**
Average Factor				**1.014**

Discussion of Choice of Factor to Use

11.2 The local and national factors for Lambeth Scientific Services tubes are very similar. The local factor has been used in order to keep consistent with previous reports.

PM Monitoring Adjustment

11.3 The Michael Crescent PM_{10} data have been adjusted using the Volatile Correction Model (www.volatile-correction-model.info).

QA/QC of automatic monitoring

11.4 The automatic monitors are calibrated automatically over night and manually calibrated every 14 days. Data are ratified and verified by ERG. QA/QC is carried out by NPL. The NOx analyser at RG1 is also part of the Automatic Urban and Rural Network (AURN) and therefore has QA/QC associated with the AURN.

QA/QC of diffusion tube monitoring

11.5 Results from the WASP scheme[5] show acceptable performance for Lambeth Scientific Services, and the laboratory precision is good overall (precision spreadsheet 09/10). Lambeth Scientific Services have also confirmed that they follow the procedures set out in the Harmonisation Practical Guidance

[5] The Workplace Analysis Scheme for Proficiency (WASP) is an independent analytical performance testing scheme, operated by the Health and Safety Laboratory (HSL).