Progress Report (2011) on Air Quality within the Borough of Reigate and Banstead.

June 2011

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

Document Control

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Executive Summary

Part IV of the Environment Act 1995 requires local authorities to periodically Review and Assess 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 concentrations 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, principally associated with emissions from road traffic. At the majority of monitoring sites in the Borough in 2010, concentrations of nitrogen dioxide were below the relevant air quality objectives. However, there are monitoring sites within existing AQMAs where the annual mean objective was exceeded. In addition, annual mean concentrations recorded at a number of sites outside of the existing AQMAs, also exceeded the objective. At two sites in Hooley (RB136 and RB137) annual mean concentrations were above, or approached 60 µg/m^3, suggesting potential issues with the hourly mean objective. A Detailed Assessment has already been undertaken at this location, and an AQMA is to be declared covering both the annual and hourly mean objectives.

All of the monitoring sites in Redhill where exceedences of the annual mean objective were recorded (RB120, RB121, RB122, RB123 and RB145) will be covered by a new AQMA, to be declared in 2011. Concentrations at RB21 (Drift Bridge Hotel) and RB126 (Banstead High Street) exceeded the annual mean objective, but neither are representative of relevant public exposure and no further action is considered necessary. Site RB125 (Reigate Hill) was the subject of a recent Detailed Assessment and a new AQMA will be declared in 2011.

Site RB82 is within the existing Dean Lane AQMA, but is not representative of public exposure. When concentrations are estimated at the façade of the closest property within the AQMA, the concentration is well below the objective. The conclusion in the 2010 Progress Report to revoke this AQMA is supported.

A Detailed Assessment will not be required in 2012.

Recommendations relating to the AQMAs in the 2010 Progress Report have not yet been formally actioned and still stand. Data presented in this Progress Report support these previous conclusions. As such, it is recommended that:

The Dean Lane AQMA is revoked;

The M23 South AQMA is revoked; and

The Rushworth AQMA is revoked

All other AQMAs should be retained and in addition, further AQMAs should be declared in Hooley, Redhill and at Reigate Hill, following the outcome of the recent Detailed Assessments.

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.

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) has been updated in 2011 and partnership working between transport planners and air quality professionals has resulted in an Air Quality Strategy accompanying that document. It is hoped that as the LTP and Air Quality Strategy are taken forward, there will be consequent reductions in pollutant emissions across the Reigate and Banstead area.

Contents

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

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 existing air quality issues within the Borough, relating to both road traffic and Gatwick Airport.

Purpose of Progress Report

1.2 Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessments. 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 micrograms per cubic metre $\mu g/m^3$ (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 Reviews 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 subsequently declared close to busy roads, and close 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 in 2003 indicated a risk of exceeding the annual mean nitrogen dioxide and daily mean 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}. The DA also investigated air quality within the existing and previously revoked AQMAs. The outcome was that the previously revoked AQMA at the junction of the A23 and Dean Lane should be re-declared, 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 re-declared 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 directly to a Further Assessment. The 2006 Updating and Screening Assessment 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 that 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 existing AQMAs where measured concentrations of nitrogen dioxide were above the objective. The 2009 USA concluded that a Detailed Assessment should be carried out for nitrogen dioxide in Redhill Town Centre, and also at Reigate Hill.

1.11 The 2010 Detailed Assessment concluded that the Council should declare AQMAs for both Reigate Hill and Redhill; AQMAs will be declared in due course. Further Assessments have been undertaken for both areas, which show that the AQMAs are still required.

1.12 The 2010 Progress Report concluded that a Detailed Assessment should be undertaken for Hooley, which concluded that an AQMA is required for this location. In addition, the Progress Report concluded that three of the currently declared AQMAs (Dean Lane, M23 South and Rushworth Road) should be revoked.

1.13 Figures 1.1 to 1.9 show the currently declared AQMAs in Reigate and Banstead, which range from individual properties to larger residential areas. Dean Lane (Figure 1.2), Rushworth Road (Figure 1.3) and the M23 (Figure 1.8) are currently in the process of being revoked. Reigate Hill and Redhill are currently in the process of being declared.

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

Figure 1.2. Dean Lane AQMA

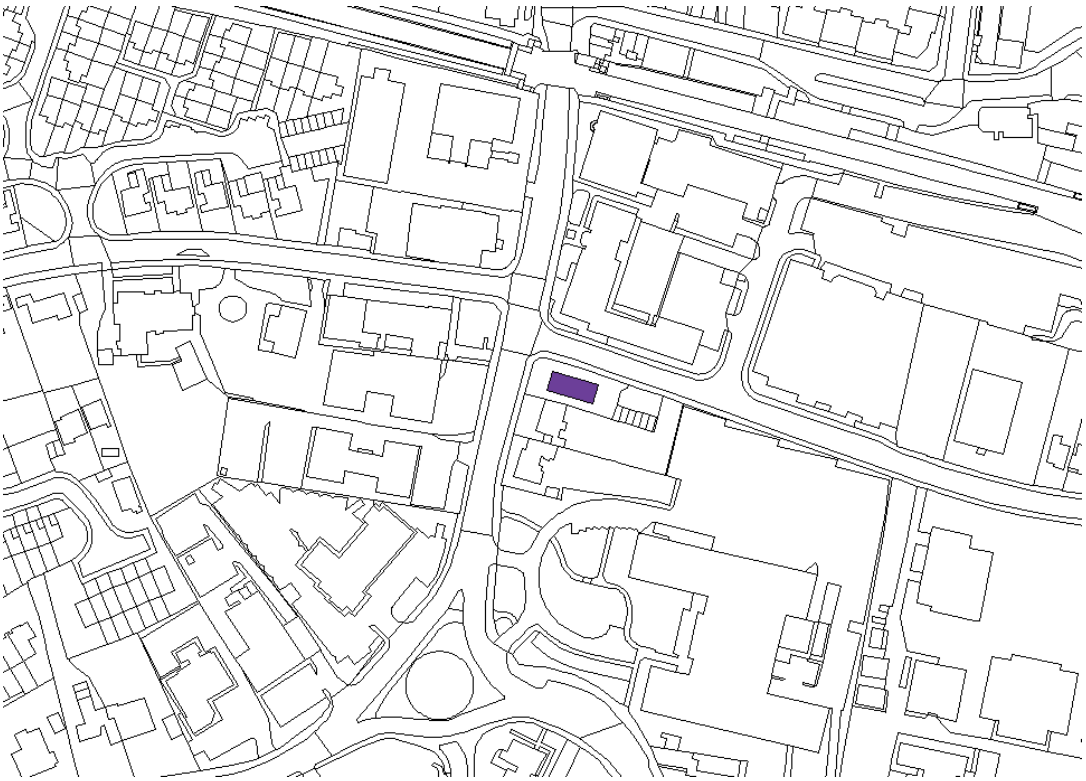


Figure 1.3. Rushworth Road AQMA

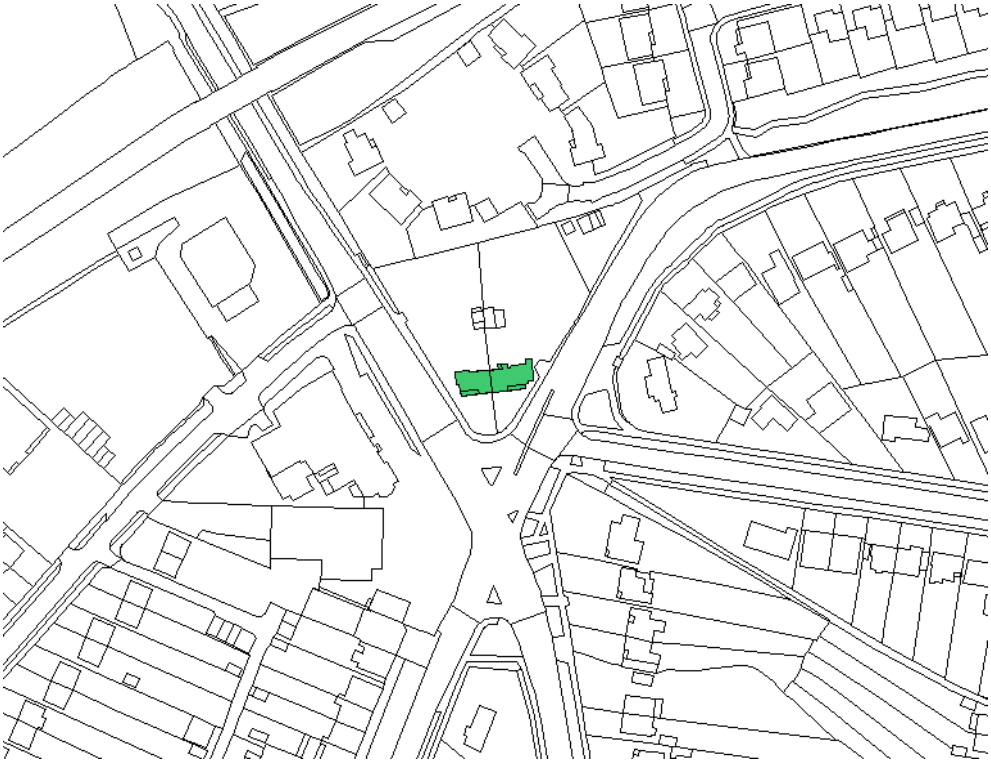


Figure 1.4. Drift Bridge AQMA © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

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

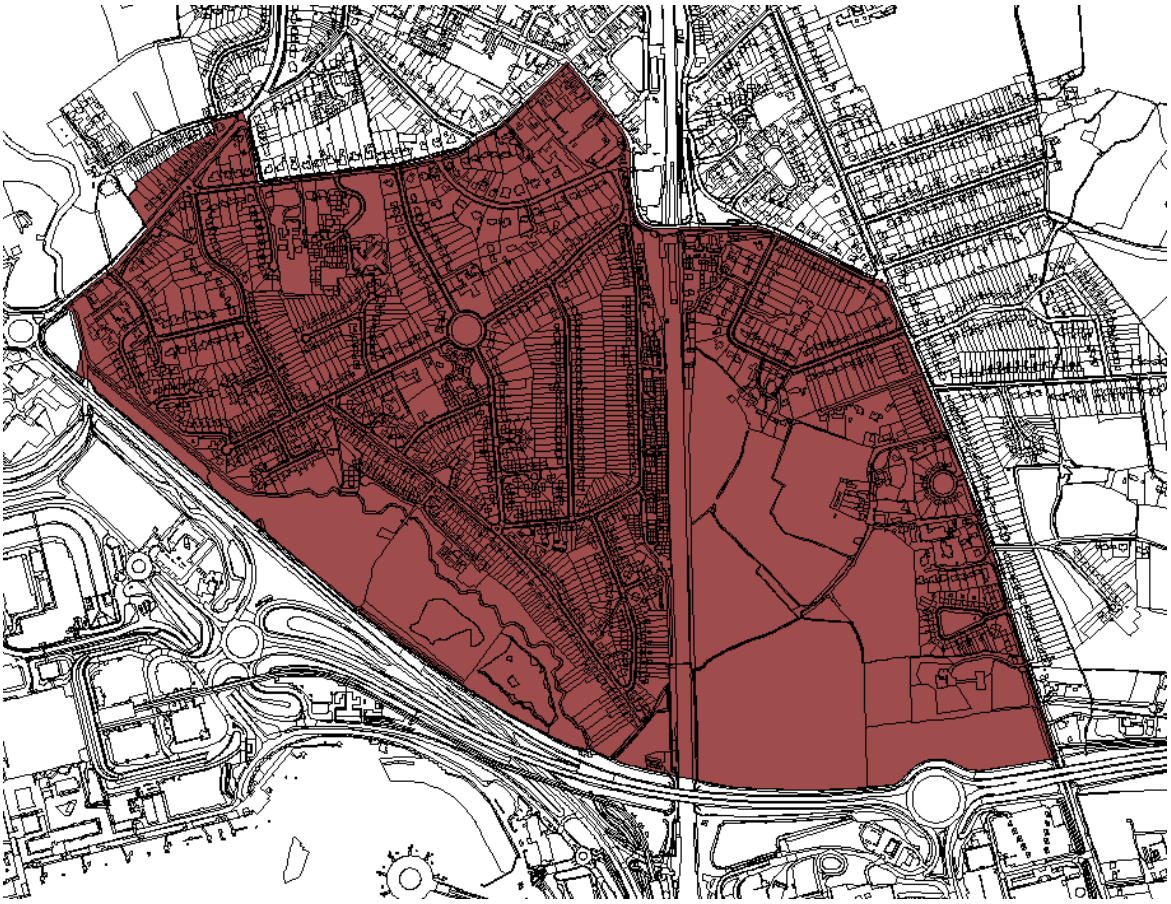


Figure 1.6. Horley AQMA © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

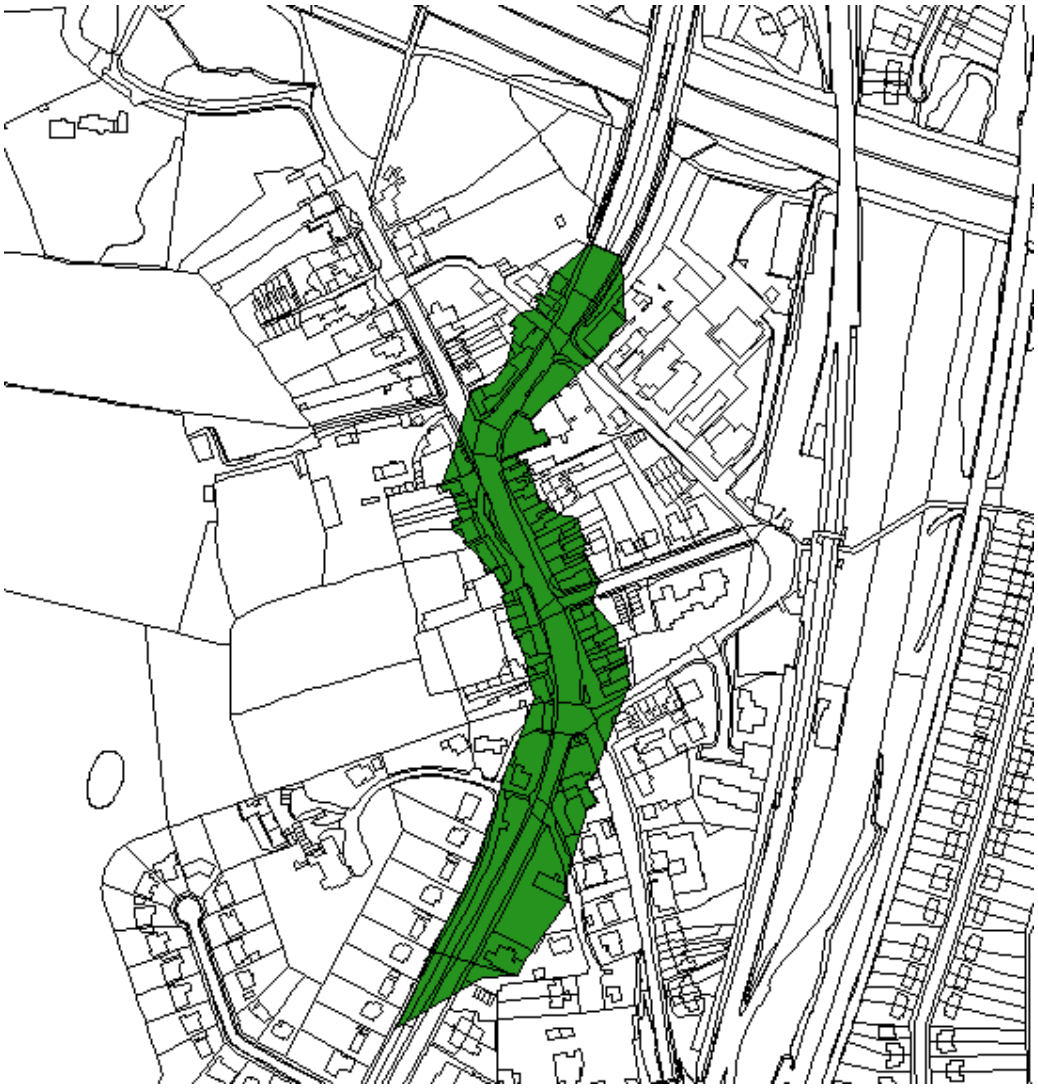


Figure 1.7. Mersham AQMA © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

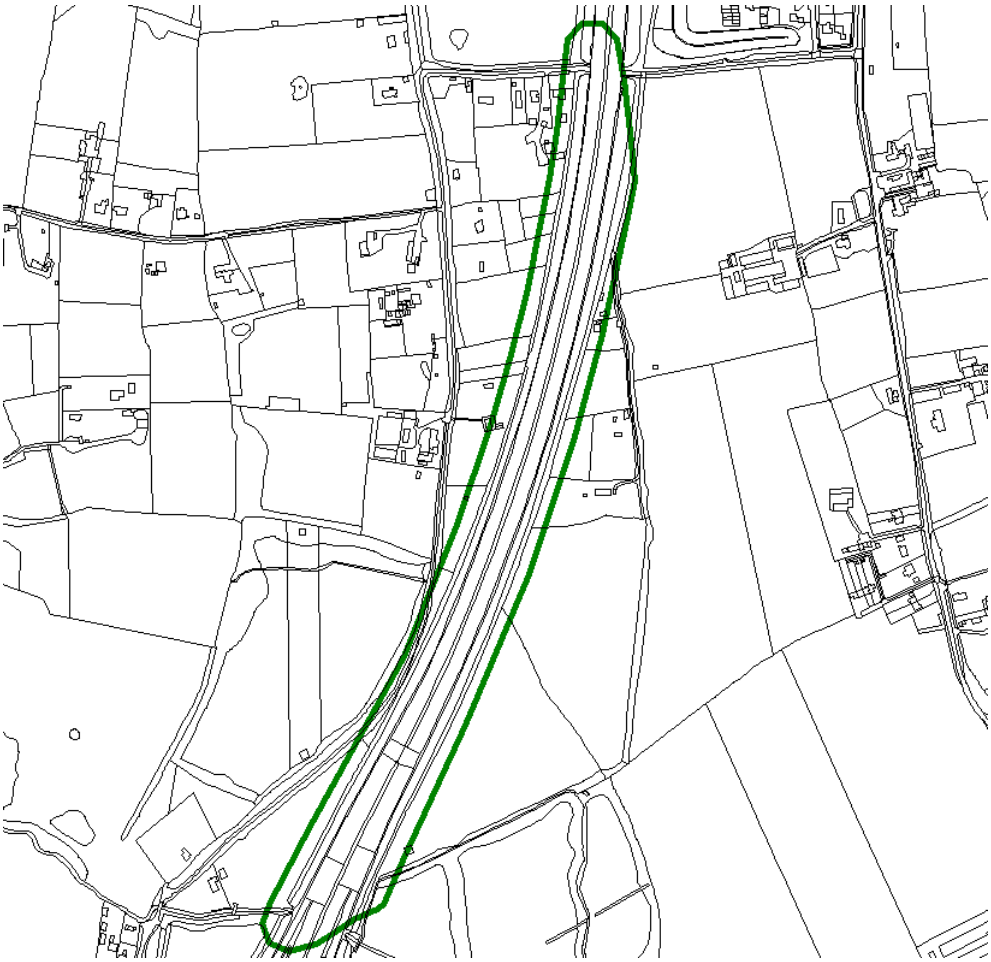


Figure 1.8. M23 AQMA © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

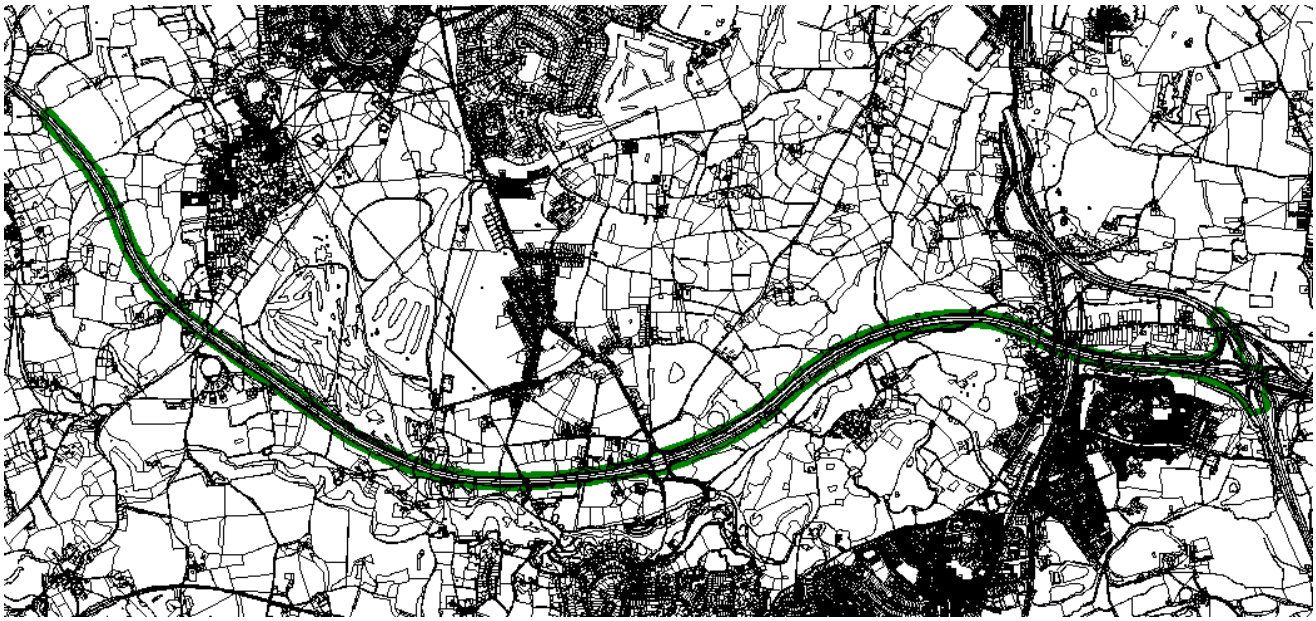


Figure 1.9. M25 AQMA © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

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) – see Table 2.1. 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).

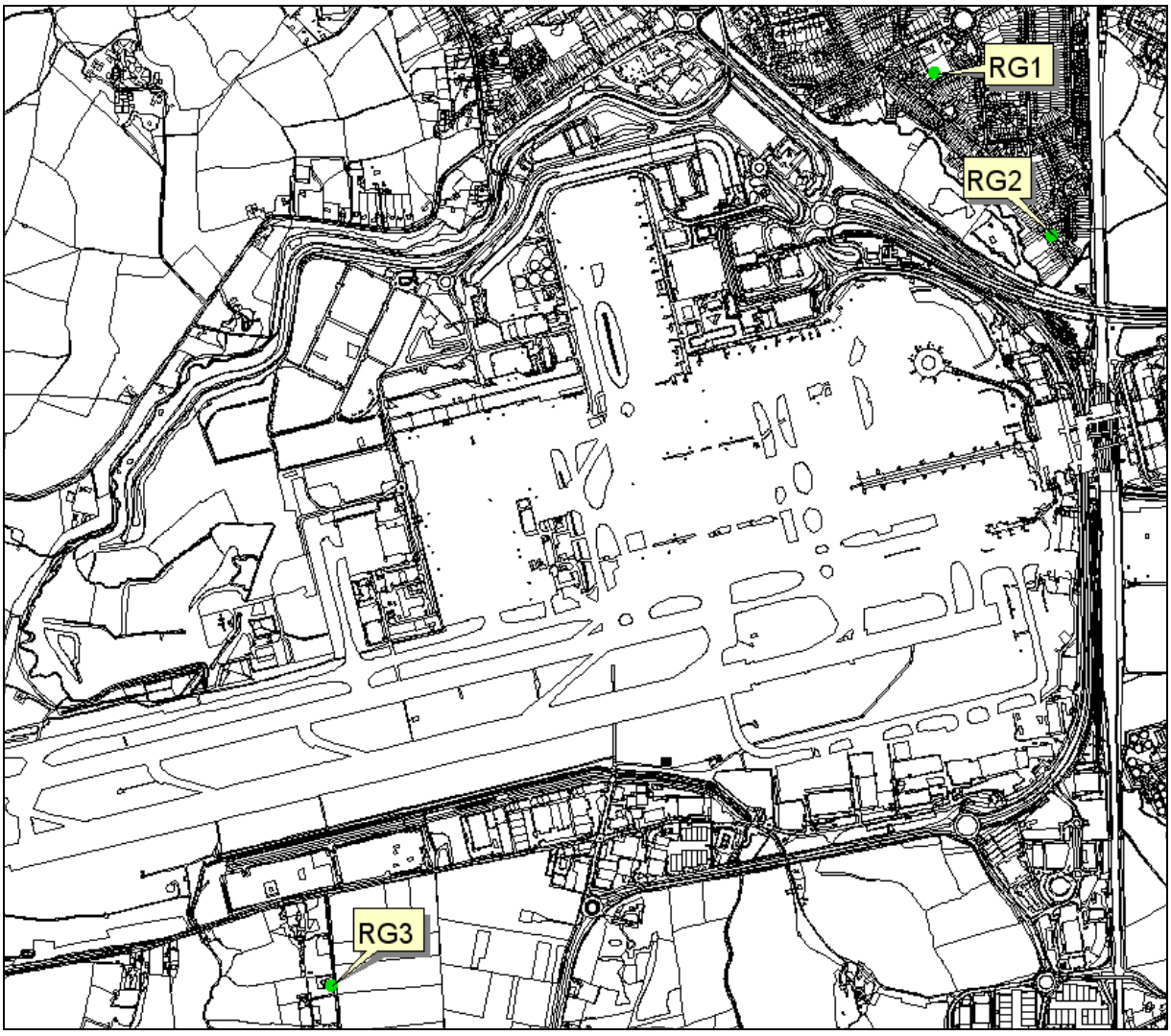


Figure 2.1. Automatic Monitor Locations © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

2.2 The automatic monitoring stations are manually calibrated every 14 days. Data are ratified and verified by King's ERG. Independent 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	Rural	526420 139638	NOx O_3	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 96 sites, details of which are provided in Table 2.2. Monitoring is carried out predominantly for nitrogen dioxide, but a small number of sites also measure benzene. Detailed maps of diffusion tube locations are included in Appendix A. Reigate and Banstead Borough Council uses nitrogen dioxide 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, although the laboratory precision was poor in 2010 (precision spreadsheet 04/11). The Council operates three co-location studies at the automatic sites. The 2010 local bias correction factor for Lambeth is 1.05. All 2010 data have been adjusted using this factor.

[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).

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
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	NO_2	N	Y	76.5	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]
		153940					
RB29	Roadside (M25)	521921 153937	NO_2	N	Y	80.1	N
RB30	Roadside (M25)	522112 153728	NO_2	Y	Y	31.1	Y
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	525705	NO_2	N	Y	19.1	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]
	A217)	152967					
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
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	528220	NO_2	Y	Y	20.5	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]
	(Horley AQ)	142583					
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
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	NO_2	Y	Y	5.0	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]
		153438.94					
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
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[b]	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[c]	Roadside	528502.1 142952.1	NO_2	Y	Y	2.3	N
RB129[c]	Roadside	528250.4 142806.2	NO_2	Y	Y	2	N
RB130[c]	Roadside	528263.2	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]
		142765.6					
RB131[c]	Roadside	528401.6 142736.5	NO_2	Y	Y	2	N
RB132[c]	Roadside	528533.4 142779.3	NO_2	Y	Y	2	N
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.
[b] site closed at the end o f 2008
[c] Site closed end of June 2010

Comparison of Monitoring Results with Air Quality Objectives

2.4 The following section presents all 2010 monitoring data in Reigate and Banstead, and where relevant, trends in monitoring 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 at four locations. Concentrations for 2008 – 2010 are presented in Tables 2.3a and 2.3b below. All sites other than Reigate High Street are below the objective in all years. Reigate high Street has low data capture in both 2009 and 2010, therefore some caution should be applied to the data presented.

Table 2.3a: Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with Annual Mean Objective (exceedences shown in bold)

Site Name	Location	In AQMA ?	Data Capture for 2010 Calendar Year (%)	Annual Mean Concentrations (µg/m^3)		
				2008	2009	2010
RG 1	RG 1 - Michael Crescent, Horley	Y	91.4	26.9	25.3	28.9
RG 2	RG 2 - 74 The Crescent, Horley	Y	92.4	32.5	31.3	31.2
RG 3	RG 3 - Poles Lane Pumping Station, Crawley	N	97.5	18.9	18.2	20.5
RG4	RG4 – Reigate High Street	Y	79.6	n/a	**58.6**[b]	**59.9**

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

[b] Data based on 6 month average

Table 2.3b: Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective (exceedences shown in bold, 99.8th percentile in brackets)

Site Name	Location	In AQMA ?	Data Capture for 2010 Calendar Year (%)	Number of Exceedences of Hourly Mean (200 µg/m^3)		
				2008	2009	2010
RG 1	RG 1 - Michael Crescent, Horley	Y	91.4	0	0	0
RG 2	RG 2 - 74 The Crescent, Horley	Y	92.4	0	0	0
RG 3	RG 3 - Poles Lane Pumping Station, Crawley	N	97.5	0	0	0
RG4	RG4 – Reigate High Street	Y	79.6	n/a	11 (200.0)	**37 (223.6)**

Diffusion Tube Monitoring Data

2.6 Table 2.4a shows annual mean concentrations at diffusion tube sites in 2010, including the data capture for each site. 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 2010 %	Annual Mean Concentrations 2010 (µg/m^3) Adjusted for bias
	Reigate			
RB8	Urban Background: Castle Walk, Reigate	N	100	26.9
RB9	Urban Background: St. Mary's Rd	N	100	24.2
RB 125	Lamp post 29, Opposite Reigate Hill Close, Reigate Hill	N	100	**42.9**
RB114	Sign Post, 87 West Street, Reigate	N	91.7	38.5
	Reigate AQMA			
RB115	Lamppost, 36 West Street, Reigate	Y	100	**46.2**
RB113	Lamppost opposite Newbury Road	Y	100	37.5
RB112	Lamppost, 21 West Street, Reigate	Y	100	**40.7**
RB116	Lamppost, 12 West Street, Reigate.	Y	100	**48.8**
RB111	Drainpipe, 1 West Street, Reigate	Y	83.3	**43.3**
RB109	Drainpipe, 27a Bell Street, Reigate	Y	100	**44.2**
RB117	Drainpipe, 8 London Road, Reigate	Y	83.3	**54.0**
RB118	Drainpipe, Burlington Place, Reigate	Y	100	**43.1**
RB47	Outside 78 High St, Reigate	Y	75	**56.8**
RB104	Drainpipe, High Street, Reigate	Y	91.7	**53.4**
RB105	Drainpipe, High Street, Reigate	Y	91.7	**51.6**
RB1	34-36 High Street, Reigate	Y	100	**45.3**
RB46	Signpost, 5 High St, Reigate	Y	100	**44.8**
RB45	Signpost outside 38 Church St, Reigate	Y	83.3	**42.4**
RB107	Drainpipe, 29 Church Street, Reigate	Y	100	38.0
RB44	Lamppost, 45 Church St, Reigate	Y	91.7	**43.6**
RB142/ RB143/ RB144	Reigate High Street collocated with real time analyser	Y	100	**61.7**
	Redhill			
RB17	Urban Background: Sylvan Way, Redhill	N	100	23.5
RB120	Lamp post Outside 21, Redstone Hill Redhill	N	100	**40.7**
RB121	Lamp Post 271, Opposite Ladbrook Grove, Redhill	N	100	**45.3**
RB122	Roundabout Sign 5158 near Carpark, Marketfield Way, Redhill	N	91.7	**44.7**
RB123	Lamp post 3, outside Age Concern Cromwell Road, Redhill	N	100	**47.7**
RB140	45 Ladbrook Grove, Redhill	N	91.7	30.9
RB141	105 Station Road, Redhill, opposite Donyngs	N	100	35.1
RB145	Lampost outside Brewers, 33 Brighton Road, Redhill	N	91.7	**46.5**
	Merstham			
RB18	Lamppost, 60 Brook Road, Merstham	N	83.3	30.8
RB19	Merstham Village Hall, Station Road	N	100	29.4
	Merstham AQMA			
RB20	Junction London Road & Station Road North	Y	100	**45.2**
RB110	Drain Pipe, London Road North, opp. RB20	Y	91.7	**42.3**
RB124	Lamppost, 22 High Street, Merstham	Y	100	**51.2**
	Banstead			

RB3	Nr Ambulance Station, Horseshoe, Banstead	N	100	24.7
RB23	Urban Bkgrd: Warren Mead School, Banstead	N	83.3	23.1
RB126	Lamp post 5, Opposite NatWest Banstead High Street.	N	100	**41.2**
RB138	All Saints Church, High St, Banstead.	N	100	28.2
RB139	Lamp post 18 173 High St, Banstead	N	100	37.1
	Drift Bridge			
RB21	Opp. Drift Bridge Hotel, Reigate Road, Banstead	N	58.3	**59.4**
RB22	Opposite 2 Grey Alders, Banstead	N	83.3	24.7
	Drift Bridge AQMA			
RB106	On one way sign, Crossways, Fir Tree Road	Y	100	**41.0**
	Horley			
RB13	Public Car Park, off Massetts Road, Horley	N	100	28.3
	Horley AQMA			
RB11	RB11: Riverside	Y	100	27.0
RB12	Horley Police Station, Massetts Road, Horley	Y	100	32.6
RB24,25,26	Urban Background Michael Crescent	Y	100	26.3
RB51	Wolverton Gardens	Y	100	29.0
RB52	Wolverton Gardens	Y	100	30.2
RB53	Cheyne Walk	Y	100	34.7
RB54	Crescent Way	Y	100	29.6
RB55	Crescent Way	Y	100	31.5
RB56	The Crescent	Y	100	30.7
RB57	The Crescent	Y	100	29.8
RB58	The Crescent	Y	100	31.7
RB59	The Crescent	Y	100	32.4
RPS	Duplicate of RB59	Y	92	29.1
RB60	The Crescent	Y	100	32.4
RB61	The Crescent	Y	100	26.7
RB64	The Drive	Y	91.7	30.2
RB65	The Drive	Y	91.7	32.4
RB66	Fairfield Avenue	Y	100	29.0
RB67	Fairfield Avenue	Y	100	29.7
RB68	Fairfield Avenue	Y	100	29.6
RB69	Upfield	Y	100	29.3
RB70	Upfield	Y	100	27.7
RB72	Upfield	Y	100	28.6
RB73	Upfield	Y	100	28.7
RB74	Meadowcroft Close	Y	100	28.5
RB75	Roundabout, The Coronet	Y	100	26.9
RB76	Limes Avenue	Y	100	25.3
RB77	Staffords Place	Y	100	26.6
RB78,79,80	The Crescent	Y	100	31.5
RB98	16/17 Woodroyd Gardens	Y	100	32.8
RB128	Between 83 and 85 Victoria Road, Horley	Y	n/a	n/a
RB129	1, Russell's Crescent, Horley.	Y	n/a	n/a
RB130	Laurel Cottage, 6, Russell's Crescent, Horley.	Y	n/a	n/a
RB131	15, Russell's Crescent, Horley.	Y	n/a	n/a
RB132	32, Russell's Crescent, Horley.	Y	n/a	n/a
	Crawley			
RB99, 100, 101	Rural: Poles Lane Pumping Station, Crawley	N	100	22.5
	M23 North (Former AQMA)			
RB40	Shepherd's Hill, Merstham	N	100	27.2
RB41	Shepherd's Hill, Merstham	N	100	24.9
RB42	Kerbside: Shepherd's Hill, Merstham	N	100	35.8

	A23 Brighton Road (Former AQMA)			
RB81	Outside Flying Scud PH, Brighton Road, Redhill	N	100	38.7
	A23 Dean Lane AQMA			
RB82	Outside 1 Deans Lane Hooley	Y	100	**40.2**
	M23 South AQMA			
RB102	Field near Bridleway, Hathersham Farm, Horley	N	91.7	33.5
RPS	Duplicate of RB102	N	83	27.3
	A217 Rushworth Road AQMA			
RB95	Rushworth Road	Y	100	35.3
	A217 Blackhorse Lane			
RB50	Just off Brighton Road	N	100	37.5
	A217 Blackhorse Lane AQMA (North J8 M25)			
RB49	Kerbside: Brighton Road	Y	100	**64.4**
RB103	Building façade, Brighton Road	Y	n/a	n/a
	M25			
RB28	Sturts Lane, Walton on the Hill	N	100	33.2
RB29	Sturts Lane, Walton on the Hill	N	100	31.2
RB31	Reigate Hill	N	91.7	26.5
RB33	Margery Grove, Mogodor	N	91.7	27.0
RB34	Merrywood Grove, Mogodor	N	100	27.5
RB36	Gatton Bottom	N	100	28.1
RB37	Ashcombe Road, Merstham	N	100	31.9
RB38	Ashcombe Road, Merstham	N	100	31.2
RB39	Ashcombe Road, Merstham	N	100	36.2
RPS	17 Ashcombe Road, Merstham	N	92	29.5
RB43	Quality Street, Merstham	N	100	37.9
	M25 AQMA			
RB27	Sturts Lane, Walton on the Hill	Y	100	35.3
RB30	Chequers Lane, Walton on the Hill	Y	100	31.1
	Hooley			
RB136	45, Brighton Road, Hooley	N	100	**64.8**
RB137	23, Brighton Road, Hooley	N	100	**63.1**
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 2008-2010

Site ID	Location	Within AQMA?	Annual Mean Concentrations (μg/m^3) Adjusted for bias		
			2008[a]	2009[b]	2010[c]
	Reigate				
RB8	Urban Background: Castle Walk, Reigate	N	24.6	23.3	26.9
RB9	Urban Background: St. Mary's Rd	N	22.9	20.7	24.2
RB 125	Lamp post 29, Opposite Reigate Hill Close, Reigate Hill	N	**43.9**	39.4	**42.9**
RB114	Sign Post, 87 West Street, Reigate	N	30.6	31.8	38.5
RB119	Drainpipe, Castlefield Road, Reigate	N	26.1	n/a	n/a

	Reigate AQMA				
RB115	Lamppost, 36 West Street, Reigate	Y	**45.4**	**42.1**	**46.2**
RB113	Lamppost opposite Newbury Road	Y	35.1	31.5	37.5
RB112	Lamppost, 21 West Street, Reigate	Y	**40.4**	37.1	**40.7**
RB116	Lamppost, 12 West Street, Reigate.	Y	**45.4**	**42.8**	**48.8**
RB111	Drainpipe, 1 West Street, Reigate	Y	**40.3**	35.4	**43.3**
RB109	Drainpipe, 27a Bell Street, Reigate	Y	38.8	37.3	**44.2**
RB117	Drainpipe, 8 London Road, Reigate	Y	**52.2**	**49.0**	**54.0**
RB118	Drainpipe, Burlington Place, Reigate	Y	**40.9**	**41.7**	**43.1**
RB47	Outside 78 High St, Reigate	Y	**50.3**	**42.4**	**56.8**
RB104	Drainpipe, High Street, Reigate	Y	**48.3**	**44.5**	**53.4**
RB105	Drainpipe, High Street, Reigate	Y	**55.3**	**54.9**	**51.6**
RB1	34-36 High Street, Reigate	Y	**40.1**	**40.5**	**45.3**
RB46	Signpost, 5 High St, Reigate	Y	**43.9**	**41.4**	**44.8**
RB45	Signpost outside 38 Church St, Reigate	Y	**41.0**	**41.8**	**42.4**
RB107	Drainpipe, 29 Church Street, Reigate	Y	34.9	34.3	38.0
RB44	Lamppost, 45 Church St, Reigate	Y	**43.6**	**40.5**	**43.6**
RB142/ RB143/ RB144	Reigate High Street collocated with real time analyser	Y	n/a	**45.0**	**61.7**
	Redhill				
RB17	Urban Background: Sylvan Way, Redhill	N	21.9	20.8	23.5
RB120	Lamp post Outside 21, Redstone Hill Redhill	N	**41.9**	36.5	**40.7**
RB121	Lamp Post 271, Opposite Ladbrook Grove, Redhill	N	**47.0**	**42.9**	**45.3**
RB122	Roundabout Sign 5158 near Carpark, Marketfield Way, Redhill	N	**46.5**	39.8	**44.7**
RB123	Lamp post 3, outside Age Concern Cromwell Road, Redhill	N	**43.4**	39.9	**47.7**
RB140	45 Ladbrook Grove, Redhill	N	n/a	29.4	30.9
RB141	105 Station Road, Redhill, opposite Donyngs	N	n/a	29.6	35.1
RB145	Lampost outside Brewers, 33 Brighton Road, Redhill	N	n/a	n/a	**46.5**
	Merstham				
RB18	Lamppost, 60 Brook Road, Merstham	N	30.5	27.7	30.8
RB19	Merstham Village Hall, Station Road	N	26.0	26.4	29.4
	Merstham AQMA				
RB20	Junction London Road & Station Road North	Y	**43.1**	36.6	**45.2**
RB110	Drain Pipe, London Road North, opp. RB20	Y	39.4	36.9	**42.3**
RB124	Lamppost, 22 High Street, Merstham	Y	**48.1**	**45.0**	**51.2**
	Banstead				
RB3	Nr Ambulance Station, Horseshoe, Banstead	N	24.1	21.5	24.7
RB23	Urban Bkgrd: Warren Mead School, Banstead	N	21.4	19.2	23.1
RB126	Lamp post 5, Opposite NatWest Banstead High Street.	N	38.7	33.5	**41.2**
RB138	All Saints Church, High St, Banstead.	N	n/a	27.9	28.2
RB139	Lamp post 18 173 High St, Banstead	N	n/a	32.6	37.1

	Drift Bridge				
RB21	Opp. Drift Bridge Hotel, Reigate Road, Banstead	N	**44.7**	**46.0**	**59.4**
RB22	Opposite 2 Grey Alders, Banstead	N	22.5	24.6	24.7
	Drift Bridge AQMA				
RB106	On one way sign, Crossways, Fir Tree Road	Y	**41.6**	36.7	**41.0**
	Horley				
RB13	Public Car Park, off Massetts Road, Horley	N	25.9	24.0	28.3
	Horley AQMA				
RB11	RB11: Riverside	Y	26.9	26.9	27.0
RB12	Horley Police Station, Massetts Road, Horley	Y	32.7	30.1	32.6
RB24,25,26	Urban Background Michael Crescent	Y	25.2	25.1	26.3
RB51	Wolverton Gardens	Y	29.6	27.0	29.0
RB52	Wolverton Gardens	Y	28.8	27.3	30.2
RB53	Cheyne Walk	Y	32.6	28.8	34.7
RB54	Crescent Way	Y	32.3	26.9	29.6
RB55	Crescent Way	Y	31.0	27.6	31.5
RB56	The Crescent	Y	30.9	29.7	30.7
RB57	The Crescent	Y	31.5	27.5	29.8
RB58	The Crescent	Y	31.9	31.2	31.7
RB59	The Crescent	Y	35.1	32.2	32.4
RPS	Duplicate of RB59	Y	n/a	n/a	29.1
RB60	The Crescent	Y	36.3	34.6	32.4
RB61	The Crescent	Y	31.8	29.7	26.7
RB64	The Drive	Y	30.2	28.4	30.2
RB65	The Drive	Y	30.8	30.7	32.4
RB66	Fairfield Avenue	Y	28.6	27.0	29.0
RB67	Fairfield Avenue	Y	27.1	28.4	29.7
RB68	Fairfield Avenue	Y	29.4	27.9	29.6
RB69	Upfield	Y	29.2	27.8	29.3
RB70	Upfield	Y	29.2	29.1	27.7
RB72	Upfield	Y	28.2	26.6	28.6
RB73	Upfield	Y	29.8	26.3	28.7
RB74	Meadowcroft Close	Y	30.7	26.4	28.5
RB75	Roundabout, The Coronet	Y	26.2	24.1	26.9
RB76	Limes Avenue	Y	25.3	22.7	25.3
RB77	Staffords Place	Y	25.8	24.9	26.6
RB78,79,80	The Crescent	Y	33.3	30.7	31.5
RB98	16/17 Woodroyd Gardens	Y	32.6	28.7	32.8
RB128	Between 83 and 85 Victoria Road, Horley	Y	n/a	**42.1**	n/a
RB129	1, Russell's Crescent, Horley.	Y	n/a	35.9	n/a
RB130	Laurel Cottage, 6, Russell's Crescent, Horley.	Y	n/a	33.4	n/a
RB131	15, Russell's Crescent, Horley.	Y	n/a	27.1	n/a
RB132	32, Russell's Crescent, Horley.	Y	n/a	29.8	n/a
	Crawley				

RB99, 100, 101	Rural: Poles Lane Pumping Station, Crawley	N	20.0	18.5	22.5
	M23 North (Former AQMA)				
RB40	Shepherd's Hill, Merstham	N	24.1	24.9	27.2
RB41	Shepherd's Hill, Merstham	N	19.0	20.8	24.9
RB42	Kerbside: Shepherd's Hill, Merstham	N	36.2	34.8	35.8
	A23 Brighton Road (Former AQMA)				
RB81	Outside Flying Scud PH, Brighton Road, Redhill	N	35.2	32.8	38.7
	A23 Dean Lane AQMA				
RB82	Outside 1 Deans Lane Hooley	Y	38.7	36.0	**40.2**
	M23 South AQMA				
RB102	Field near Bridleway, Hathersham Farm, Horley	Y	26.0	27.1	33.5
RPS	Duplicate of RB102	Y	n/a	n/a	27.3
	A217 Rushworth Road AQMA				
RB95	Rushworth Road	Y	33.5	30.7	35.3
	A217 Blackhorse Lane				
RB50	Just off Brighton Road	N	34.1	33.9	37.5
	A217 Blackhorse Lane AQMA (North J8 M25)				
RB49	Kerbside: Brighton Road	Y	**57.8**	**53.2**	**64.4**
RB103	Building façade, Brighton Road	Y	**41.1**	26.5	n/a
	M25				
RB28	Sturts Lane, Walton on the Hill	N	31.3	32.4	33.2
RB29	Sturts Lane, Walton on the Hill	N	32.3	31.3	31.2
RB31	Reigate Hill	N	24.1	22.6	26.5
RB33	Margery Grove, Mogodor	N	29.6	26.3	27.0
RB34	Merrywood Grove, Mogodor	N	26.7	23.9	27.5
RB36	Gatton Bottom	N	25.9	25.8	28.1
RB37	Ashcombe Road, Merstham	N	26.0	26.8	31.9
RB38	Ashcombe Road, Merstham	N	30.2	28.5	31.2
RB39	Ashcombe Road, Merstham	N	31.5	31.5	36.2
RPS	17 Ashcombe Road, Merstham	N	n/a	n/a	29.5
RB43	Quality Street, Merstham	N	24.1	29.0	37.9
	M25 AQMA				
RB27	Sturts Lane, Walton on the Hill	Y	38.3	34.6	35.3
RB30	Chequers Lane, Walton on the Hill	Y	32.3	29.5	31.1
	Hooley				
RB136	5, Brighton Road, Hooley	N	n/a	**66.3**	**64.8**
RB137	23, Brighton Road, Hooley	N	n/a	**59.7**	**63.1**
Objective			**40**	**40**	**40**

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

[b] 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).

[c] Bias adjusted using a local factor of 1.05 in 2010 (other than RPS sites which are Gradko tubes (20% TEA In water) and adjusted by 0.92 as reported in National Bias Adjustment Spreadsheet 04/11)

2.8 In 2010, a number of diffusion tube sites outside of existing AQMAs exceeded the annual mean objective. Two sites in Hooley (RB136 and RB137) were also over, or near, 60 µg/m^3 suggesting potential issues with the hourly mean objective. A Detailed Assessment has already been undertaken at this location, and an AQMA is to be declared covering both the annual and hourly mean objectives.

2.9 All the sites in Redhill which exceeded the objective in 2010 (RB120, RB121, RB122, RB123 and RB145) will be covered by an AQMA to be declared in 2011.

2.10 RB21 (Drift Bridge Hotel) and RB126 (Banstead High Street) are also showing exceedences, but neither of these sites are representative of relevant exposure and hence no further action is necessary.

2.11 RB125 (Reigate Hill) was the subject of a recent Detailed Assessment and will be declared an AQMA in 2011.

2.12 RB82 is within the currently declared Dean Lane AQMA, but is not representative of exposure, and is discussed below.

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

Dean Lane AQMA

2.13 The AQMA consists of a single property on the A23, Brighton Road. In 2010 the annual mean concentration at site RB82 was marginally over the objective (40.2 µg/m^3). However, the property is set back a further 9.2 m from the road. Using the NO_2 "fall off with distance calculator" this gives a concentration of 34.5 µg/m^3 (assuming background of 15.1 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 was recommended in the 2010 Progress Report that the Dean Lane AQMA be revoked. This recommendation still stands.

2.14 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. There are no clear long term trends at Dean Lane. There is no clear trend in traffic data in the vicinity of Dean Lane (Figure 2.4).

Figure 2.2 Annual Mean Nitrogen Dioxide Concentrations - Current and Former AQMA sites on the M23, A23, and A217 (2002 to 2010).

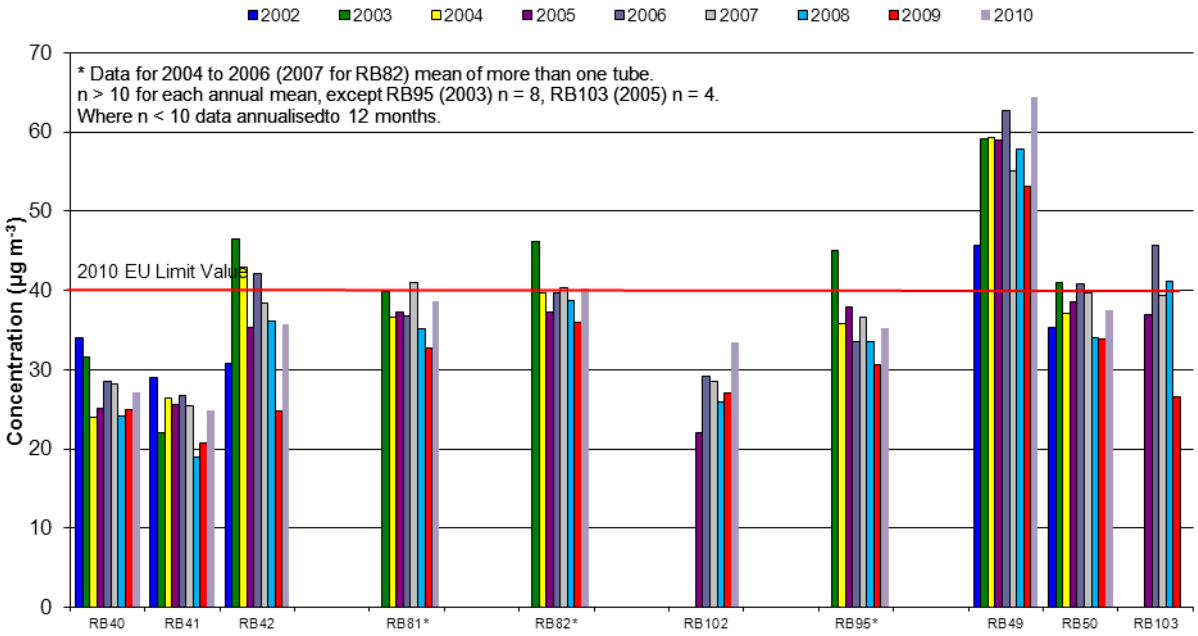


Figure 2.3. 3-Year Rolling Average Concentrations - Current and Former AQMA sites on the M23, A23, and A217 (2005 to 2010).

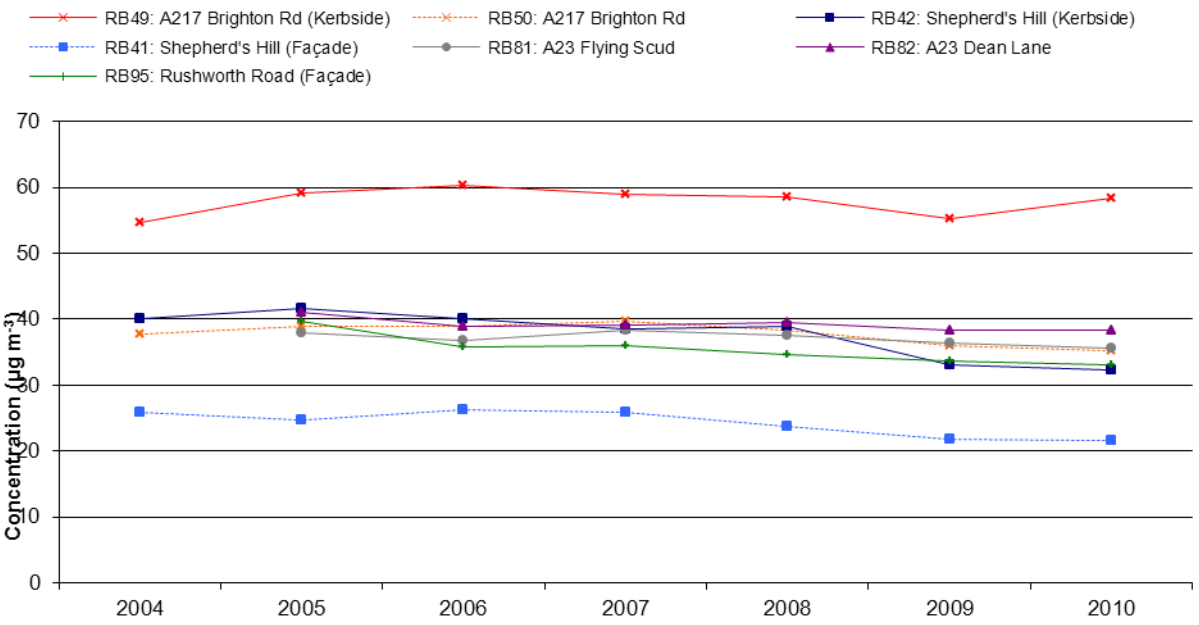
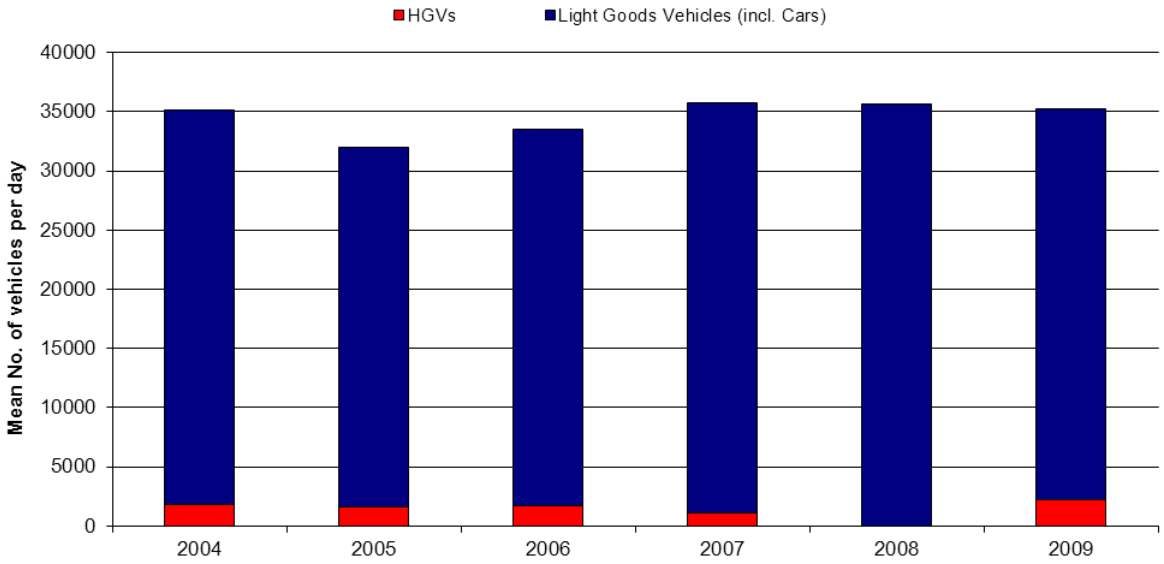


Figure 2.4 Annual Mean Daily Traffic Flows on the A23 near Dean Lane



NB DfT data: 2010 data not available until July 2011

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 for trend data). Concentrations at this site are well below the annual mean objective. It was recommended in the 2010 Progress Report that the M23 South AQMA be revoked, and this process is underway. This recommendation still stands.

Rushworth Road AQMA

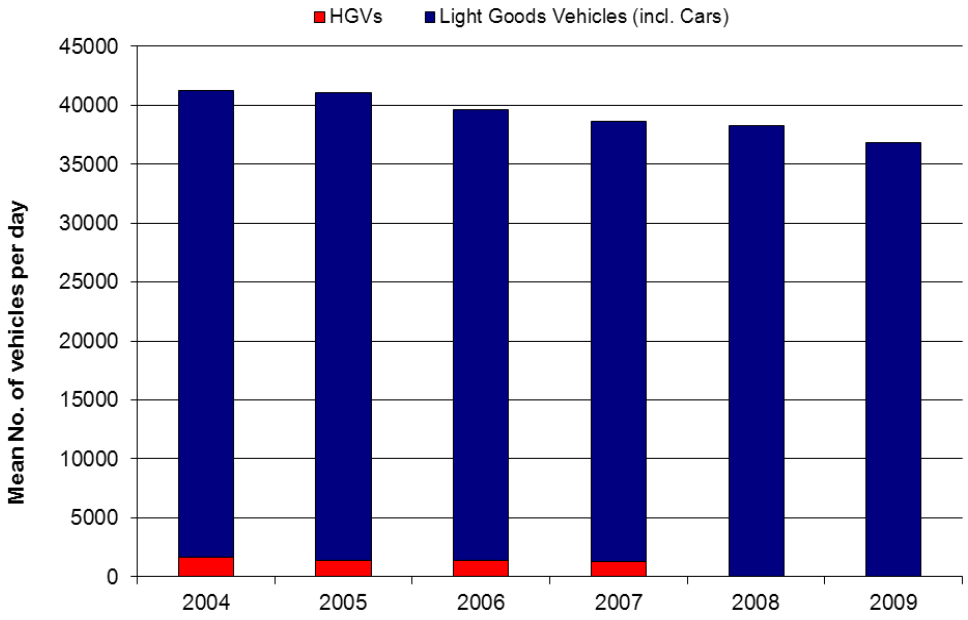
2.16 The Rushworth Road AQMA is also a single property and concentrations at this location have been below the annual mean objective for a number of years (RB95). It was recommended in the 2010 Progress Report that the Rushworth Road AQMA be revoked and this process is underway. This recommendation still stands.

A217 Blackhorse Lane AQMA

2.17 The Blackhorse Lane AQMA is another single property on the A217 Brighton Road. The 2009 annual mean concentration of nitrogen dioxide at Site RB103, which is situated on the property, was well below the objective. However, due to building work, there are no results for 2010. The corresponding kerbside site (RB49) recoded a higher concentration in 2010 (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 there was no monitoring at the façade of the property in 2010 and concentrations have 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



NB DfT data: 2010 data not available until July 2011

Reigate High Street AQMA

2.18 The High Street AQMA is relatively enclosed, with the High Street itself and the section of Bell Street forming street canyons, which limits dispersion. There are a large number of diffusion tube sites recording exceedences both at the kerbside and at building facades. This AQMA should therefore be retained. There are no clear trends with regards to concentrations (Figures 2.6, 2.7 and 2.8). There is also 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 2010).

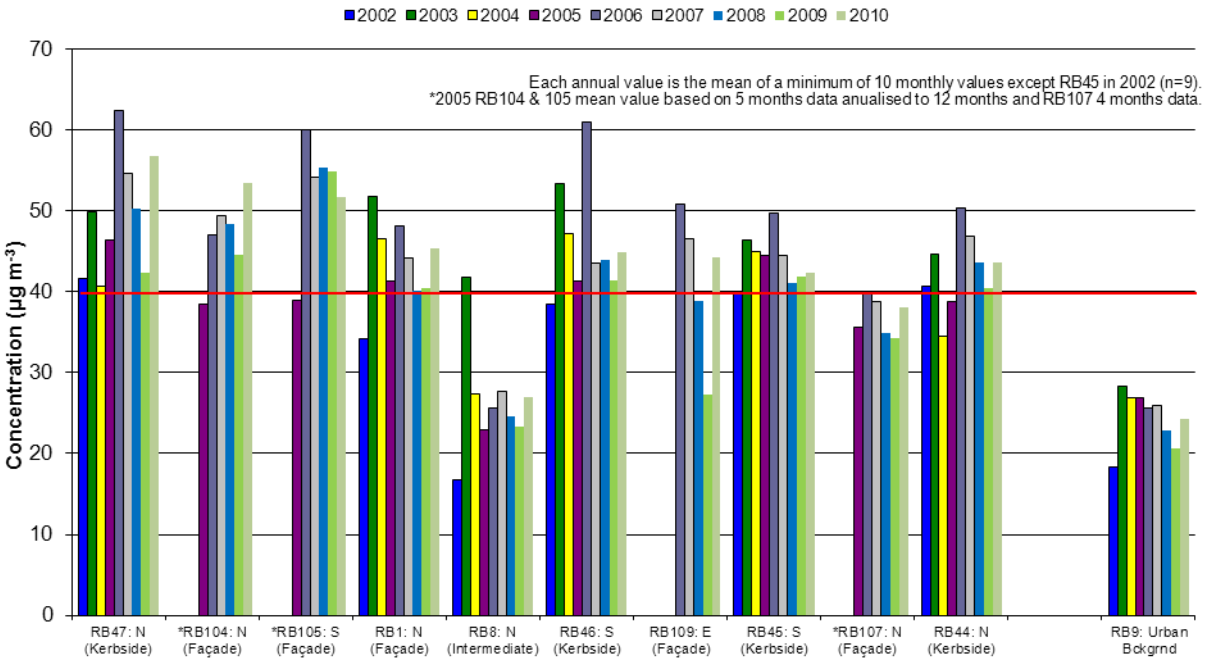


Figure 2.7 Annual Mean Nitrogen Dioxide Concentrations – West Street & London Road / Castlefield Road (2002 to 2010).

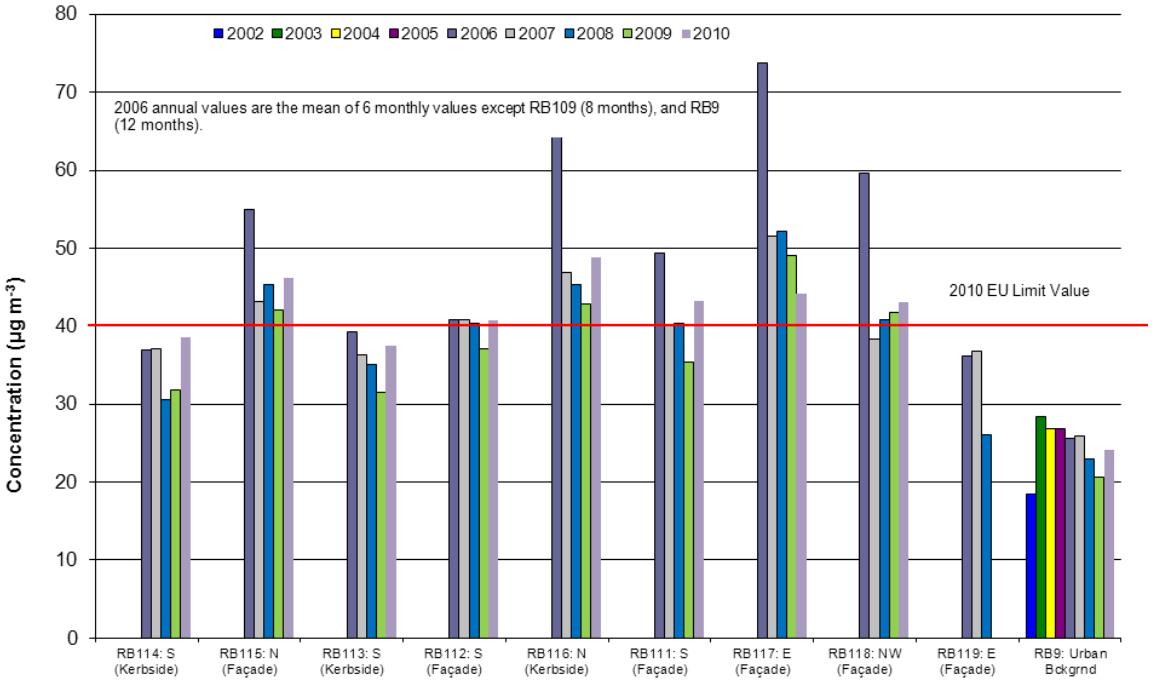
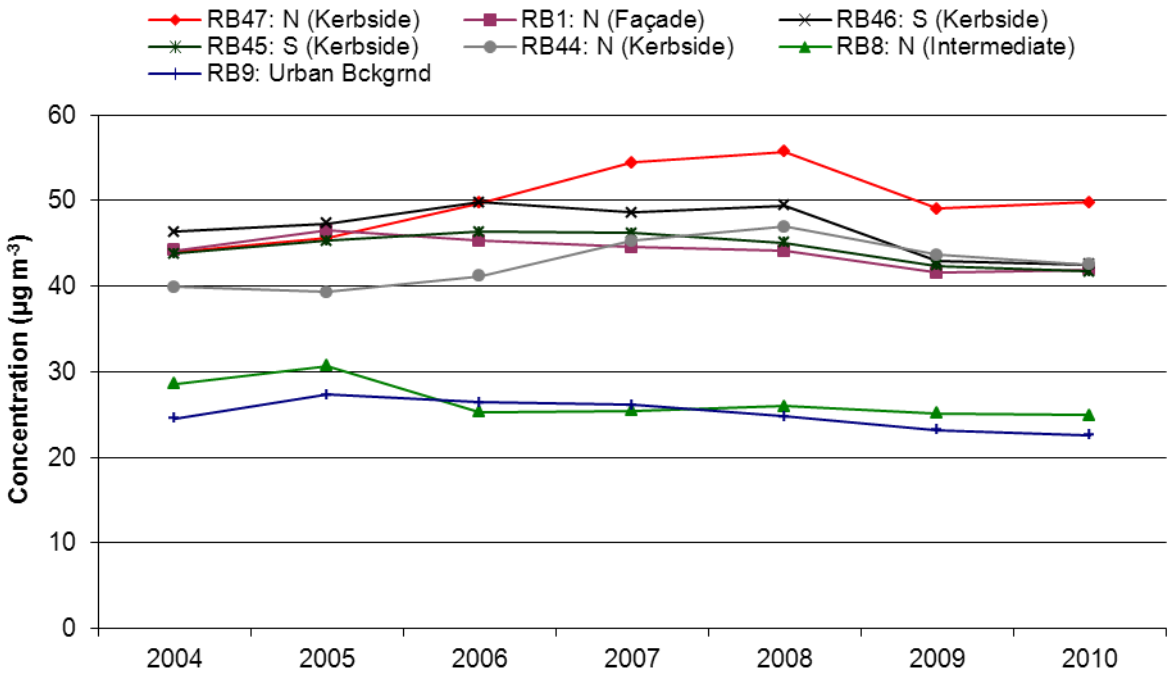
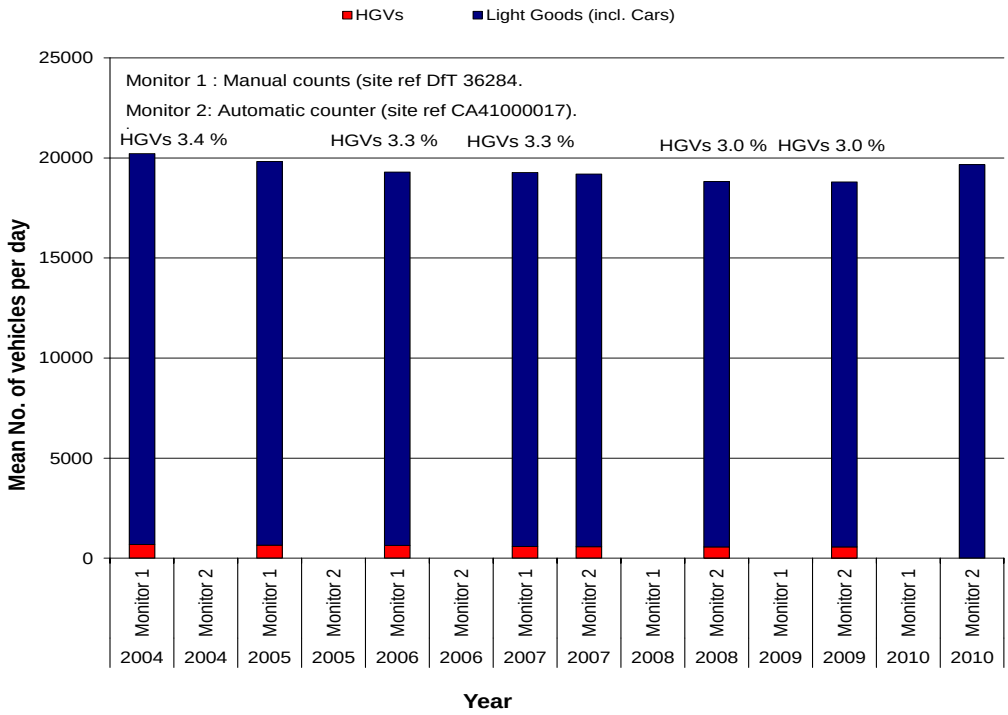


Figure 2.8 3-Year Rolling Average Concentrations in Reigate



***F*igure 2.9 Annual Mean Daily Traffic Flows in Reigate**



Drift Bridge AQMA

2.19 The Drift Bridge AQMA consists of two properties with annual mean nitrogen dioxide concentrations (RB106) just above or below 40 µg/m^3. In 2010 the recorded concentration was 41.0 µg/m^3) at RB106, whereas in 2009 it 36.7 µg/m^3 (Figure 2.10). This AQMA should therefore be retained. The kerbside site (RB21) showed a sharp increase in the measured concentration in 2010. At the three traffic-monitoring sites (Figures 2.12-2.14), traffic flows appear to be declining.

Figure 2.10 Annual Mean Nitrogen Dioxide Concentrations – Banstead Background Sites, and Drift Bridge AQMA (2002-2010).

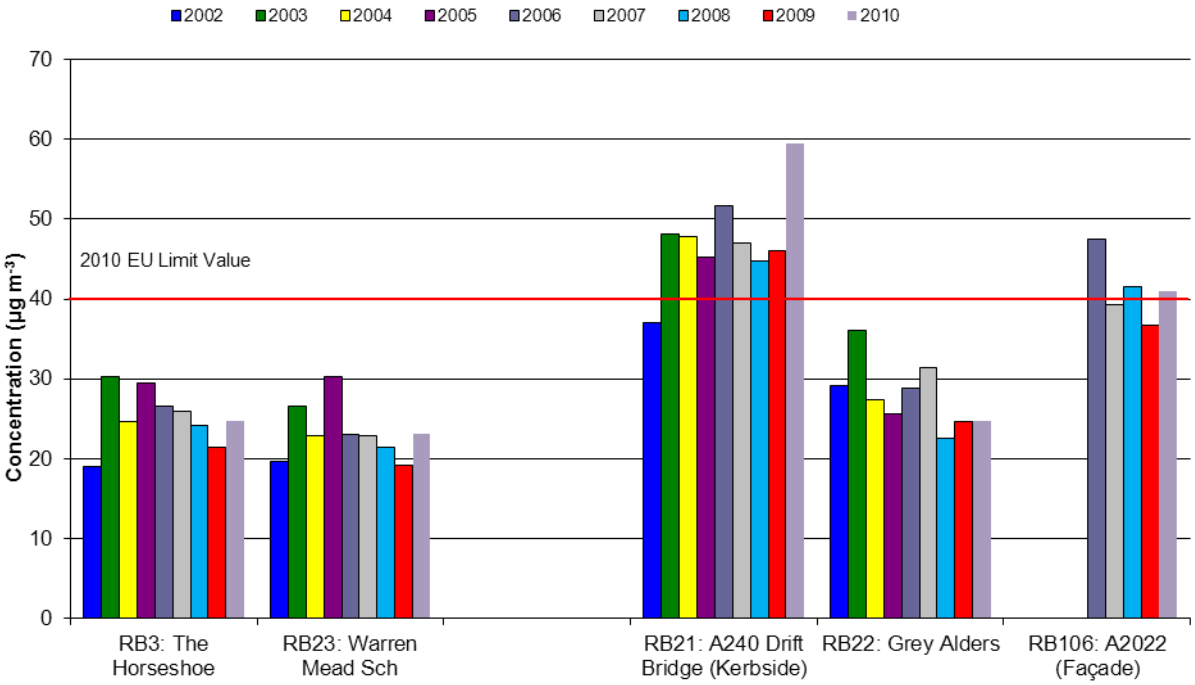


Figure 2.11 3-Year Rolling Average Concentrations – Banstead Background Sites, and Drift Bridge AQMA (2002-2010).

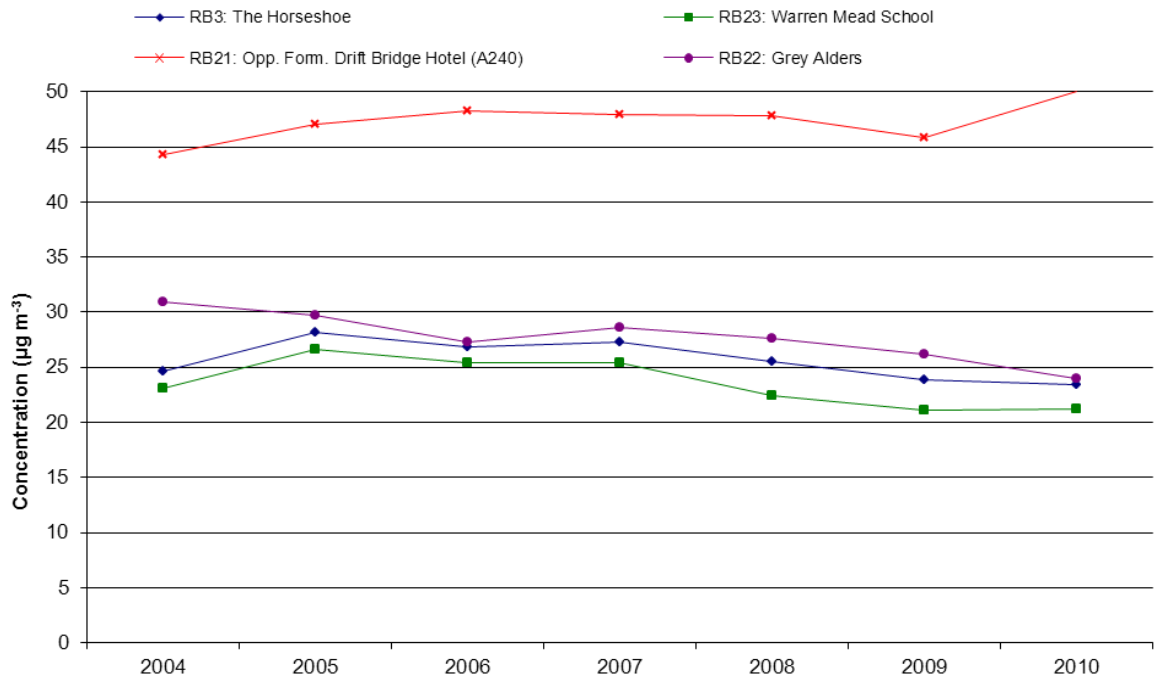
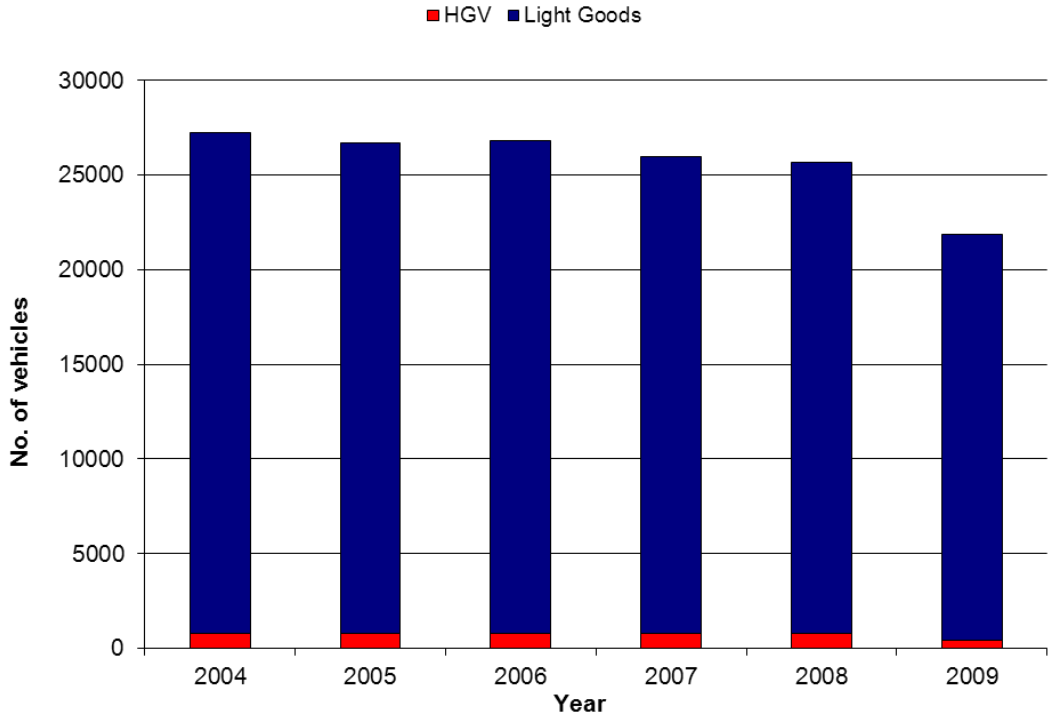
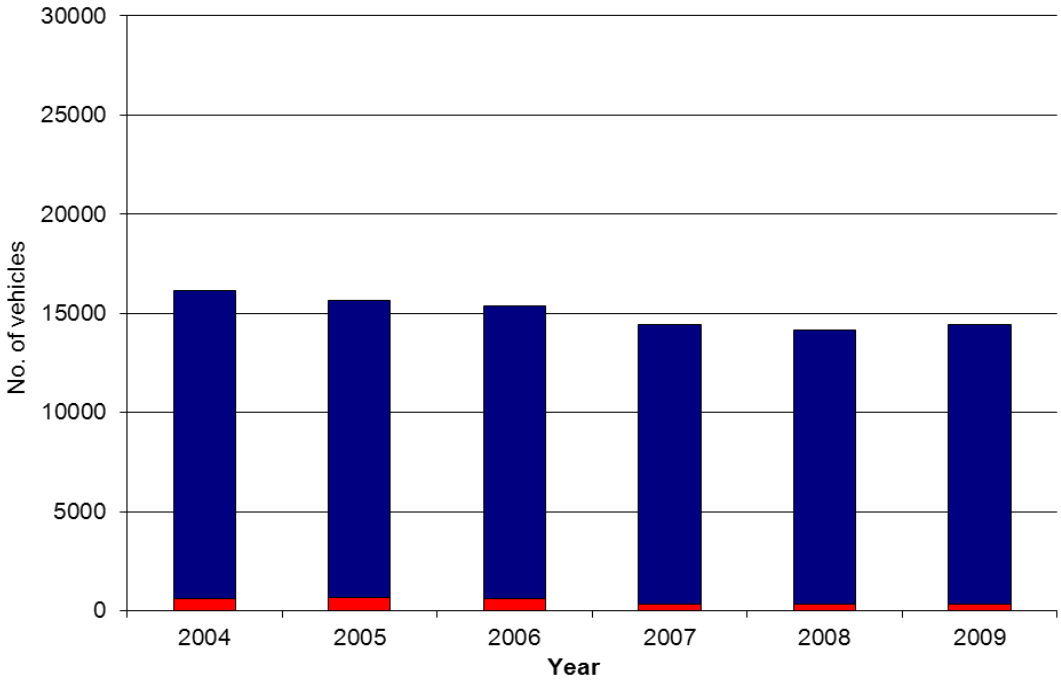


Figure 2.12 Annual Mean Daily Traffic Flows in Drift Bridge (A240 North of Junction with A2022 and B291 (DfT site 18438))



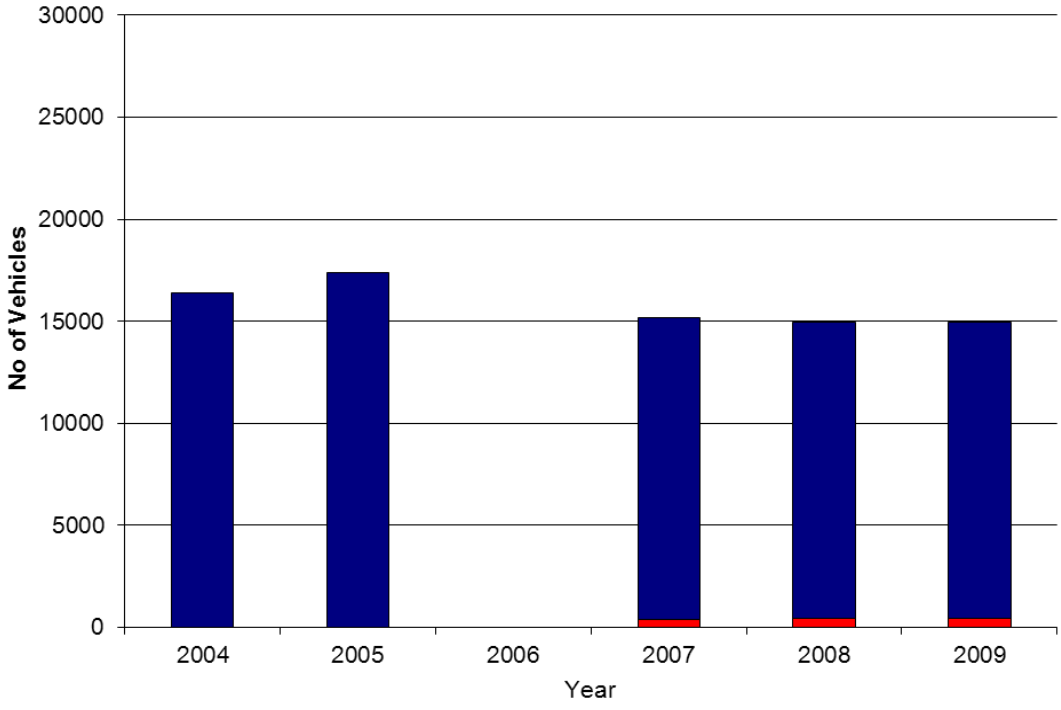
NB DfT data: 2010 data not available until July 2011

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



NB DfT data: 2010 data not available until July 2011

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



NB DfT data: 2010 data not available until July 2011

Merstham High Street

2.20 Concentrations within the Merstham AQMA in 2010 were higher than in 2009. The annual mean concentration at site RB110, which represents relevant exposure, was above the air quality objective; the concentration at RB124 also increased in 2010 in comparison with 2009. 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 (2002-2010).

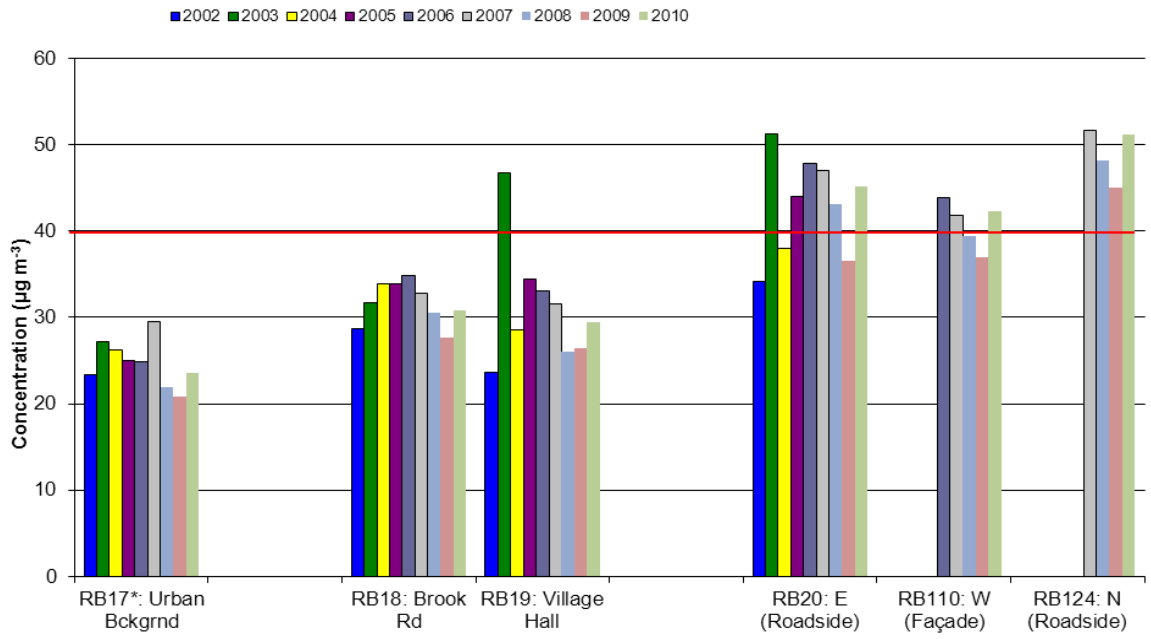


Figure 2.16 3-Year Rolling Average Concentrations – Merstham (2002-2010).

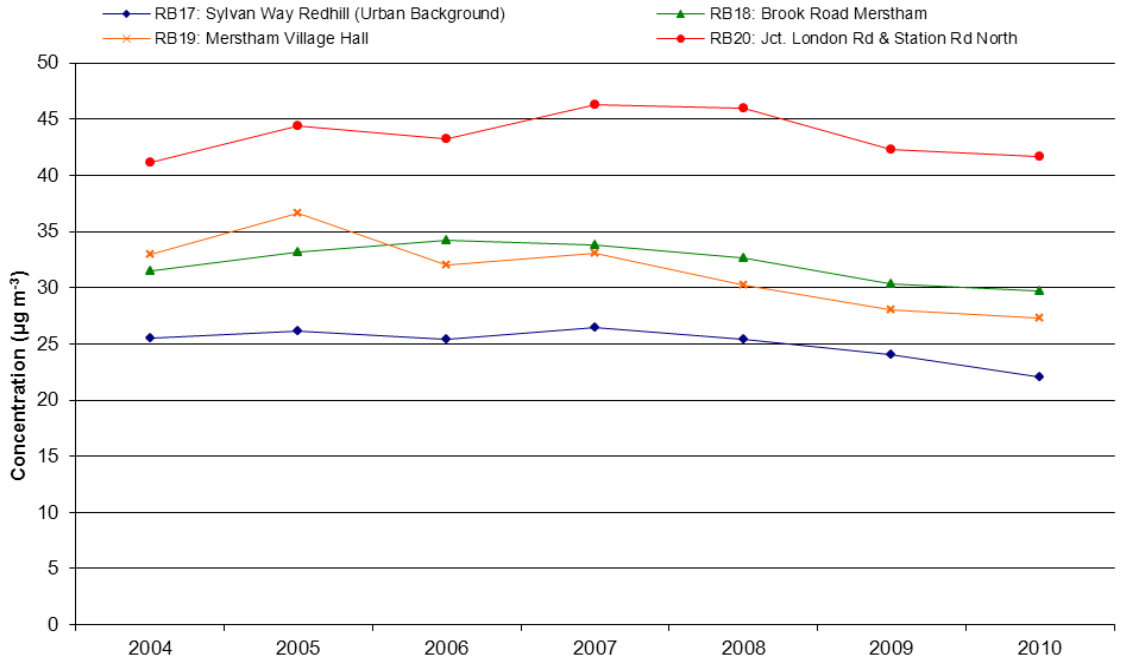
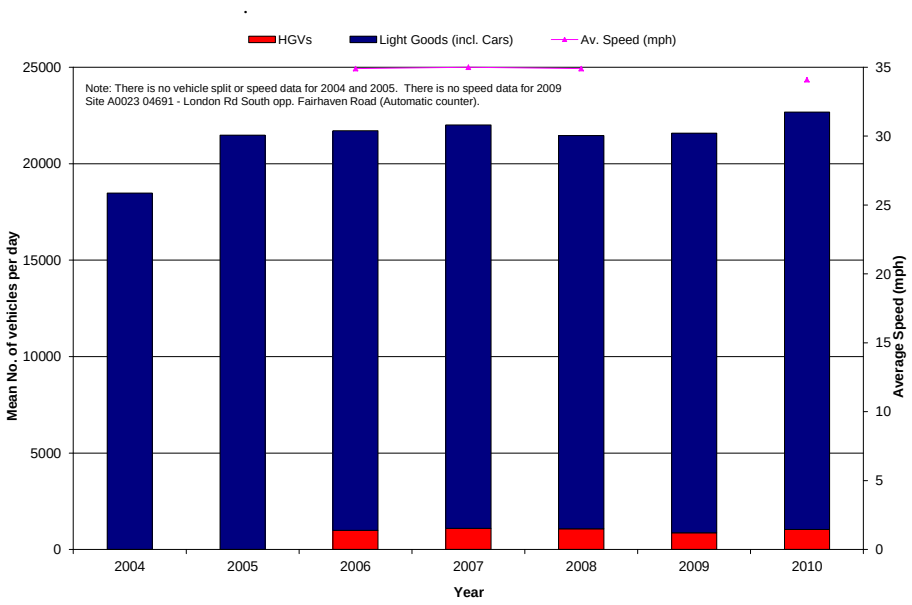


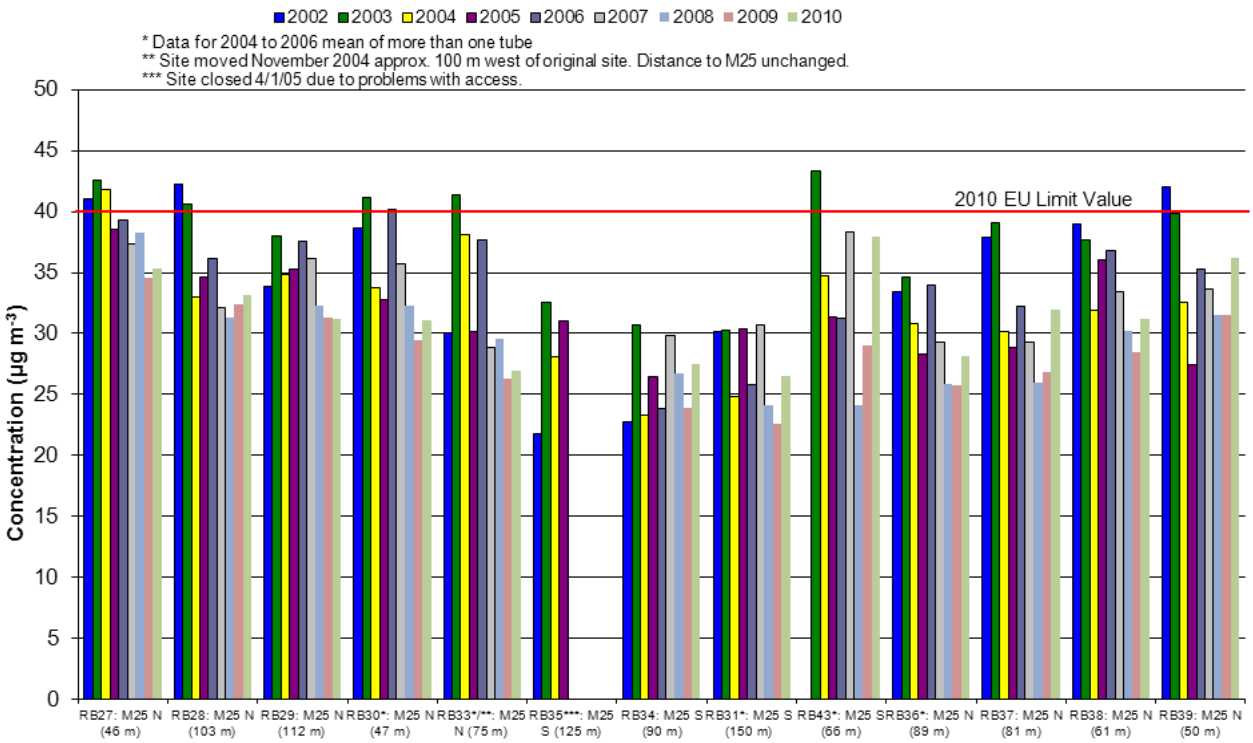
Figure 2.17 Annual Mean Daily Traffic Flows in Merstham (2004-2010).



M25 AQMA

2.21 The M25 AQMA is located between junctions 7 and 9 of the M25, and consists of a 30m strip either side of the motorway. Monitoring takes place at 12 locations, with all the tubes situated at property facades (with the exception of RB33 which is now on a post at an equal distance from the motorway as the original property). There have been no recorded exceedences of the annual mean objective at any site over the past three years, although when monitoring data for site RB39 are extrapolated to a receptor that is closer to the motorway, there is a marginal exceedence[3]. Because of this, 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 a reduction in traffic flows between junctions 7 and 8 (Figure 2.20). Traffic flows are relatively stable between junctions 8 and 9.

Figure 2.18 Annual Average Concentrations – M25 (2002-2010).



[3] Using the Nitrogen Dioxide Fall off with Distance Calculator (http://laqm.defra.gov.uk/tools-monitoring-data/no2-falloff.html) assuming background concentration of 26.2 µg/m^3, monitoring site 38m from the carriageway and the property 13m from the carriageway.

Figure 2.19 3-Year Rolling Averages – M25 (2002-2010).

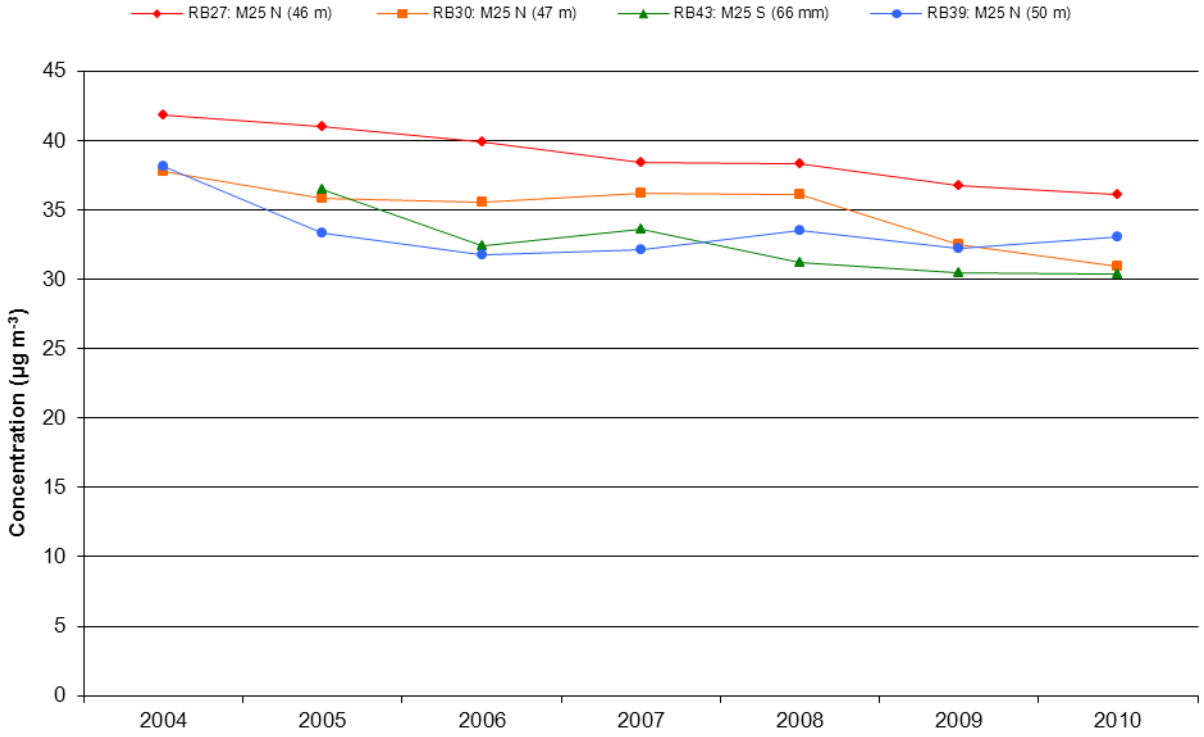
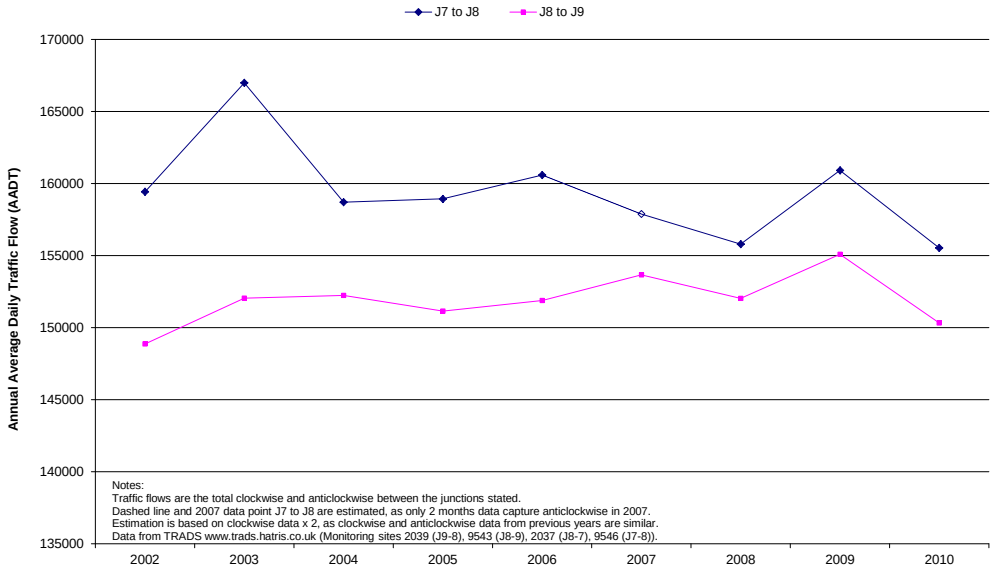


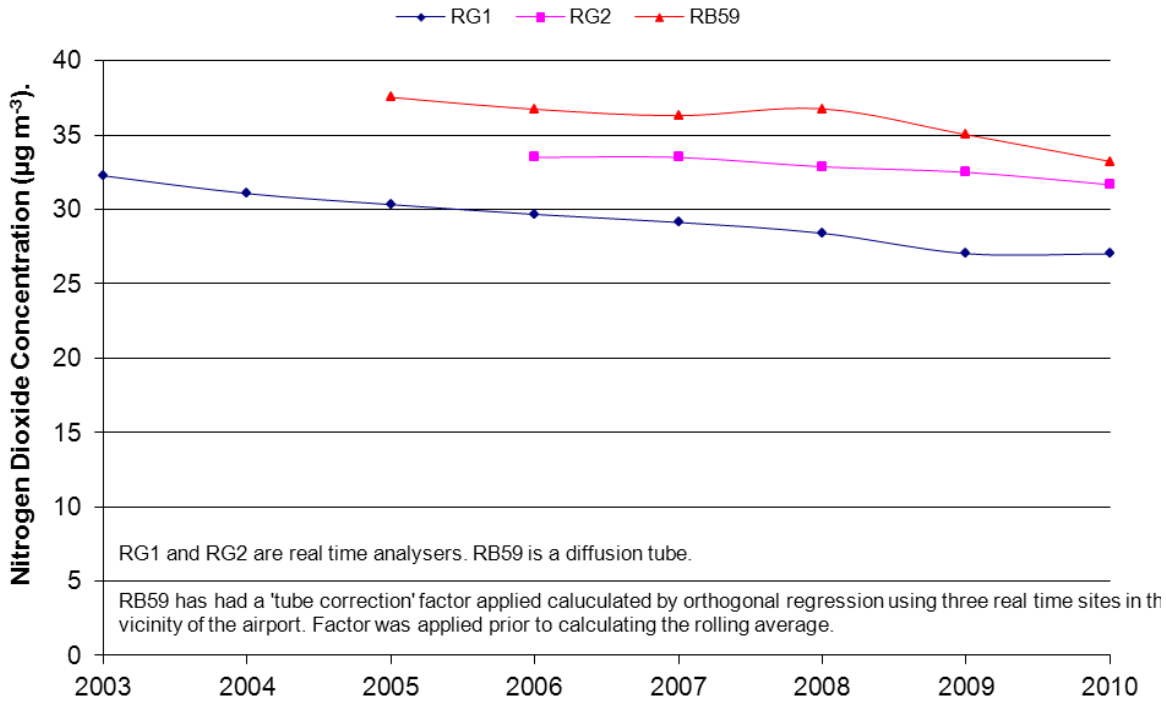
Figure 2.20 Annual Mean Daily Traffic Flows on M25 (2002-2010).



Horley AQMA

2.22 The Horley AQMA essentially covers the Horley Gardens Estate located to the NE of Gatwick Airport. Monitoring takes place at 29 diffusion tube locations as well as at two automatic sites (RG1 and RG2). Monitoring is also undertaken by the Council at a further site (RG3), which is located to the southwest of the airport in Crawley. Concentrations at all of the monitoring sites are currently below the nitrogen dioxide air quality objectives, and show evidence of a decrease over recent years (Figure 2.22). However, given that Airport passenger numbers have fallen steadily since 2007, from 35.2 million passengers per annum (mppa) to 32.4 mppa in 2009 and 31.4 mppa in 2010, the current AQMA should be retained as there is still some uncertainty as to how any future increase in passenger traffic will affect nitrogen dioxide concentrations in the short to medium term along the south/southwestern side of the AQMA.

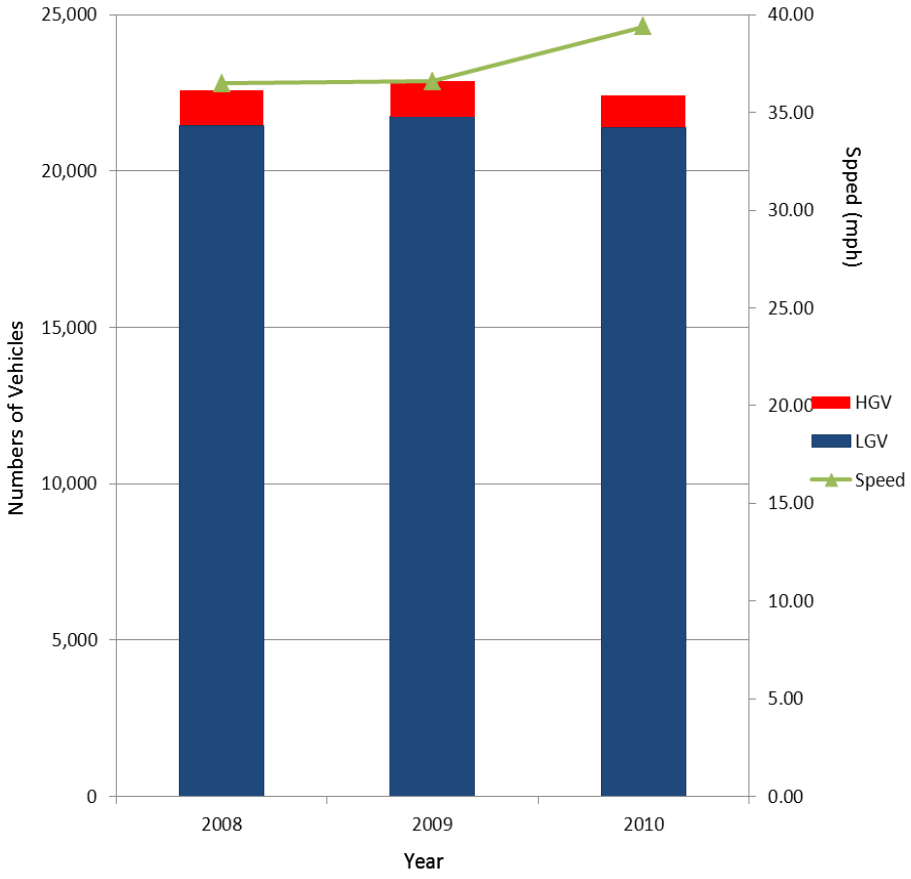
Figure 2.22 3-Year rolling averages in Horley, near to Gatwick Airport



Reigate Hill

2.23 The Reigate Hill AQMA has not yet been formally declared. The majority of properties along Reigate Hill are residential, and are thus relevant for the annual mean objective. Monitoring takes place at one diffusion tube site (RB125) which is currently exceeding the annual mean objective. Figure 2.23 shows traffic flows at Reigate Hill. It is too early to infer a trend, but it appears that traffic may be reducing and speeds correspondingly increasing.

Figure 2.23 Annual Mean Daily Traffic Flows and Speeds on Reigate Hill (2008-2010)



PM$_{10}$

2.24 Reigate and Banstead Borough Council monitors PM_{10} concentrations at the RG1 – Michael Crecent, Horley automatic monitor. Concentrations for 2008 – 2010 are presented in Tables 2.6a and 2.6b below. Longer-term data are presented in Figure 2.24. 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 2010 Calendar Year (%)	Annual Mean Concentrations (µg/m^3)		
				2008	2009	2010
RG 1[a]	RG 1 - Michael Crescent, Horley	N	93.9	19.7	18.8	18.7[b]

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

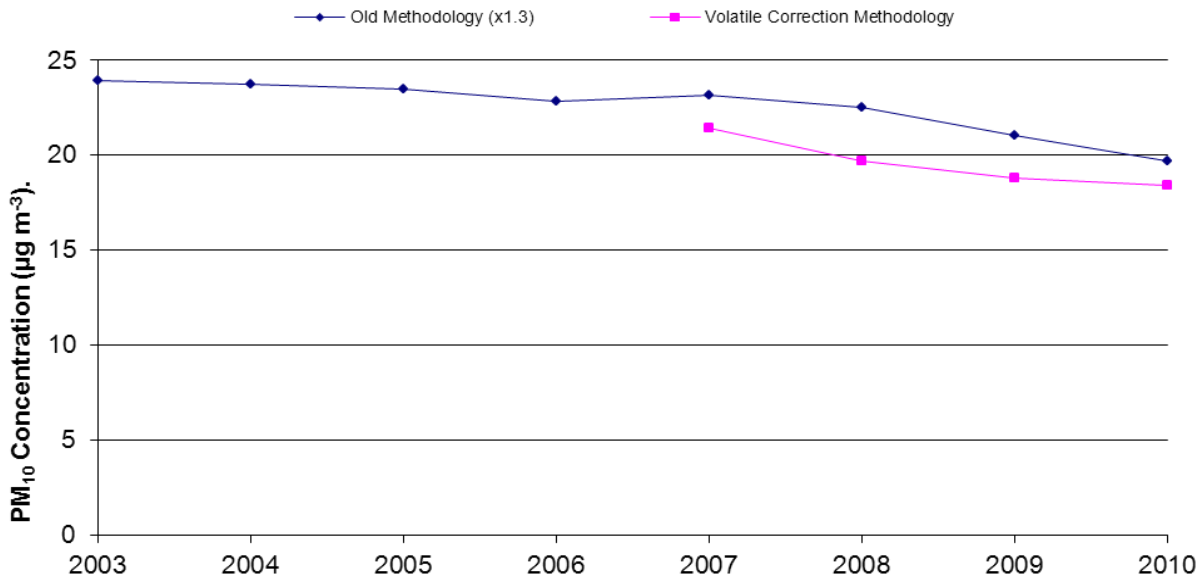
Table 2.6b: Results of PM_{10} Automatic Monitoring: Comparison with 24-hour Mean Objective

Site Name	Location	In AQMA?	Data Capture for 2010 Calendar Year[b] (%)	Number of Exceedences of Daily Mean (50 µg/m^3)		
				2007	2008	2009
RG 1[a]	RG 1 - Michael Crescent, Horley	N	93.9	5	4	1[b]

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

[b] Data provisional

Figure 2.24 Three Year Rolling Annual Average PM_{10} concentration at RG1, Michael Crescent, Horley



Benzene

2.25 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, London Road, Merstham, and Riverside, Horley. Annual mean concentrations are presented in Table 2.7. The measured annual mean benzene concentrations were well below the 2010 air quality objective at all locations.

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

Site ID	Location	Within AQMA?	Data Capture 2010 %	Annual Mean Concentrations (μg/m^3)		
				2008	2009	2010
RB1	High Street, Reigate	N	100	3.04	1.03	2.27
RB11	Riverside, Horley	N	100	2.33	0.71	1.76
RB20	London Road, Merstham	N	100	2.93	1.26	2.40
Objective				**5**	**5**	**5**

Other pollutants monitored

2.26 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: Annual Mean Concentrations

Location	Within AQMA?	Data Capture 2010 %	Annual Mean Concentrations (μg/m^3)		
			2008	2009	2010
RG 3 - Poles Lane Pumping Station, Crawley	N	99.1	51.1	49.7	46.8

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

Location	Within AQMA?	Data Capture 2010 %	Number of Exceedences of 8 Hour Mean (100 μg/m^3)		
			2008	2009	2010
RG 3 - Poles Lane Pumping Station, Crawley	N	99.1	41	26	23
Objective			**10**	**10**	**10**

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

Summary of Compliance with AQS Objectives

2.28 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.

2.29 For nitrogen dioxide, at the majority of sites in the borough in 2010, concentrations were below relevant air quality objectives. However, there are sites within existing AQMAs which are exceeding the annual mean objective. In addition, concentrations at a number of diffusion tube sites outside of existing AQMAs exceeded the annual mean objective in 2010. The two sites in Hooley (RB136 and RB137) are also over, or near, 60 µg/m^3 suggesting potential issues with the hourly mean objective. A Detailed Assessment has already been undertaken at this location and an AQMA is to be declared covering both the annual and hourly objective.

2.30 All the diffusion tube sites in Redhill which exceeded the annual mean objective in 2010 (RB120, RB121, RB122, RB123 and RB145) will be covered by an AQMA to be declared in 2011.

2.31 Concentrations at RB21 (Drift Bridge Hotel) and RB126 (Banstead High Street) are exceeded the objective in 2010, but neither of these sites are representative of relevant exposure and hence no further action is necessary.

2.32 Site RB125 (Reigate Hill) was the subject of a recent Detailed Assessment and will be declared an AQMA in 2011.

2.33 Site RB82 is within the existing Dean Lane AQMA, but is not representative of exposure. When concentrations are projected back to the façade of the property which constitutes the AQMA, the level is well below the objective; the conclusion in the last Progress Report to revoke this AQMA is supported.

2.34 A Detailed Assessment will therefore not be required in 2012.

2.35 The recommendations relating to the AQMAs in the last Progress Report have not yet been formerly actioned and therefore still stand. Data presented in this Progress Report support these previous conclusions. As such, it is recommended that:

- The Dean Lane AQMA is revoked
- The M23 South AQMA is revoked
- The Rushworth AQMA is revoked

2.36 All other AQMAs are to be retained and in addition, further AQMAs are to be declared in Hooley, Redhill and at Reigate Hill, following recent Detailed Assessments.

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 $\mu g/m^3$ by 2019 with the development in place, compared to 31 $\mu g/m^3$ without development when only 36 mmpa would use the airport. The implications of these predictions were discussed in the 2010 Progress Report.

Industrial Sources

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

Commercial and Domestic Sources

3.5 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 2011. The Planning Application submitted by Tesco for a new superstore in the town centre was refused. Plans have recently been submitted to expand the retail floor space of the existing Sainsbury's in Redhill from 2489 m^2 to 7284 m^2 and additional 287 parking spaces plus the construction of a gym and hotel. Although this represents a significant increase in retail floor

space, the detailed assessment of Redhill (2016 scenario) had factored in these and a number of other developments in Redhill over the next 5 years.

3.6 In addition, a biomass boiler (490 kW) is proposed at a new Leisure Centre in Horley. The air quality impact of the boiler has been assessed, and it was judged that there will be no significant air quality impact and the proposed site is located away from the current AQMA.

Residential development

3.7 There are no new or newly identified large scale residential developments which need to be taken into consideration within the Review and Assessment process at this stage.

New Developments with Fugitive or Uncontrolled Sources

3.8 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 An Air Quality Strategy has been included as part of the third Local Transport Plan for Surrey. The aim of the Air Quality Strategy is: *To improve air quality in AQMAs 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 objectives within the strategy are:

- Working with the accountable borough or district council for each designated AQMA, to incorporate physical transport measures in the borough or district council's Infrastructure Delivery Plan, agree options for the enforcement of existing regulations and agree options for supporting smarter travel choices, for future implementation as and when funding becomes available, in order to reduce air pollution from road traffic sources;
- To provide assistance to the borough and district councils in producing their review and assessment reports, and Action Plan progress reports; and,
- To consider air quality impacts when identifying and assessing transport measures in Surrey.

4.3 A twin-track preferred strategy approach is proposed:

- **A focus on AQMAs** through incorporating appropriate physical transport measures in Infrastructure Delivery Plans, enforcing existing regulations for parking and loading, supporting travel choices that are better for air quality and considering air quality issues in planning and other 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.

4.4 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 in 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 third Surrey Transport Plan is partly an aspirational document. The strategies look forward to 2026 and will be reviewed every three to five years as necessary. The implementation programmes will cover a three-year cycle and will be updated and rolled forward annually.

6.2 To help people to meet their transport and travel needs effectively, reliably, safely and sustainably within Surrey; in order to promote economic vibrancy, protect and enhance the environment and improve the quality of life

6.3 Based on this vision there are four objectives for the Surrey Transport Plan.

6.4 Objectives

- **Effective transport:** To facilitate end-to-end journeys for residents, business and visitors by maintaining the road network, delivering public transport services and, where appropriate, providing enhancements.
- **Reliable transport:** To improve the journey time reliability of travel in Surrey.
- **Safe transport:** To improve road safety and the security of the travelling public in Surrey.
- **Sustainable transport:** To provide an integrated transport system that protects the environment, keeps people healthy and provides for lower carbon transport choices.

6.5 A number of transport strategies have been produced or updated as part of the Surrey Transport Plan including one on air quality and one on climate change. The purpose of each strategy is to set out clearly the most effective, value for money, and customer-focused measures, interventions and policy tools that will best tackle problems and address objectives and targets. These are the preferred type of measures, comprising a 'toolkit' of possible interventions rather than specific transport schemes.

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 In addition, the Climate Change Strategy of the Surrey Transport Plan sets out Surrey's ambition to reduce carbon dioxide (CO_2) emissions from transport in Surrey and to manage risks posed to the transport network arising from climate change. The aim is to develop a lower carbon transport system that is more resilient to future climate risks and higher energy prices.

7.4 The objectives of the strategy are to:

- Reduce distance travelled by reducing the need to travel
- Increase the proportion of travel by sustainable modes such as walking and cycling, maintain public transport patronage and increase vehicle occupancy
- Switch to lower carbon vehicles, encourage efficient driving and manage traffic flows
- Reduce energy use of highway infrastructure and transport services

- Manage the risks posed to transport, by forecasted effects of climate change

7.5 The main activities by the strategy partners are:

- Make sustainable land use planning decisions for new development
- Encourage providers to invest in faster broadband in rural areas
- Develop school and workplace travel plans to promote sustainable choices
- Maximise the benefits from developer contributions to infrastructure
- Expand car clubs for pay-as-you drive hire of lower carbon vehicles
- Enforce legislation for car salesrooms to provide fuel efficiency information to consumers
- Procure lower emissions vehicles within our own fleets
- Support electric vehicle use through provision of charging infrastructure at appropriate parking locations
- Upgrade street lights to include variable brightness controls for efficiency
- Use sustainable materials for highway maintenance
- Identify in greater detail the potential impacts of climate change through service risk registers and decide appropriate actions to avoid, reduce, share or accept risks

7.6 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 Dean Lane, M23 South and Rushworth Road AQMAs are in the process of revocation, 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 2011.

8.3 Drift Bridge and Merstham Air Quality Action Plans are also to be drafted in 2011.

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 Highways Agency were proposing. 'Ramp Metering' was installed in 2010 at J8 (anticlockwise). Aim is / was 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.

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. By Sept 2010 had 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 was proposed (2010) for J7 to J10 of the M25, and work on this has now commenced. Aim is to increase road capacity (hard shoulder running) / improve traffic flow. Possible AQ improvements from improved flow, though potential to be off set by increase in traffic. **Work due for completion late 2011. For details see HA (2011).**
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	April 2011	Final data not in but target met given growth to end of 2008, and recession. Note without recession projections suggest target would still have been met.	Traffic on the A217 fell 6.5 % in 2010 compared to 2004, but had risen 2.2 % 2004 to 2009. Traffic also fell around 12 % on the M23 spur between 2006 and 2010. Note much of the improvement on M23 spur is likely to be recession driven given 8 % fall in passengers at the airport 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.	Ongoing	Final stage of the route will be completed once construction of new housing (NW sector) begins in 2012 /13.
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.
Bus Priority Lanes on A23 (p105 5.43 in LTP2).	Medium (2)	<0.1 µg m^{-3} (3) at RB59	SCC / RBBC for information contact Peter Boarder	Project Completion	Unknown	April 2015	Scheme still under consideration, and entered for 2011 funding round.	Ongoing	Minimal benefit to air quality within Horley AQMA. Scheme entered for 2011 funding round.

Measure	Cost[a]	Air Quality Improvement [b]	Person / organisation responsible	Indicator	Start Date	Completion Date	Actual Completion Date / or Progress	Outcome	Comments
			Policy & Regeneration (RBBC).						
Extension of Fastway to Redhill and Reigate. (LTP2 aspiration).	High (3)	<0.1 µg m^{-3} (3) at RB59	SCC / RBBC contact Peter Boarder Policy & Regeneration.	Project Completion	Unknown	April 2015 (if implemented)	Extension to Redhill completed in 2008	Ongoing	Extension of route to Reigate is still under consideration (2011).
Maintain current taxi licensing regime.	Low (1)	<0.1 µg m^{-3} (3) at RB59	RBBC Licensing.	Taxi standards maintained	Ongoing	Ongoing	Ongoing	Ongoing	Current scheme means that entire taxi fleet is replaced every 9 years. Minimal impact on Horley AQMA.
Public Service Agreement to reduce Congestion on the A217 and A23 (Horley Road).	Low (1) (to RBBC)	<0.1 µg m^{-3} (3) at RB59	SCC / RBBC/ ODPM. Contact Linden Mendes SCC.	5 % reduction in average vehicle delay by March 2008.	March 2005	March 2008	March 2008	The 5% reduction target was met, but due to traffic signal changes alone, and not signal changes and greater car sharing combined as originally intended.	Project had no bearing on 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	<0.1 µg m^{-3} (3) at RB59	RBBC / Local employers Contact Tim	4 to 5 plans to be completed per annum.	Ongoing	Ongoing	Ongoing	Ongoing (2011)	As most major employers in Horley had a travel plan in place impact on AQMA itself was limited. Preliminary work beginning on the feasibility of a Horley wide travel plan i.e.

Measure	Cost[a]	Air Quality Improvement [b]	Person / organisation responsible	Indicator	Start Date	Completion Date	Actual Completion Date / or Progress	Outcome	Comments
	(1 to 2)		Dukes (SCC).						examining travel for the whole town rather than on individual employer / school level.
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.	Ongoing	December 2010.	Ongoing and currently on target.	Note impact from scheme on concentrations within 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.
Continued Promotion of Surrey Car Share.	Low (1) (to RBBC)	<0.1 µg m^{-3} (3) at RB59	Contact at SCC – Marc Woodall.	Steady Growth in number of participants. (1300 users at start of 2006).	Ongoing	Ongoing	Ongoing. Currently (2011) 3500 active members.	Ongoing.	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 has also introduced (Q4 2010) 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	Low (1) to	Variable,		Incorporation				Document now	Benefit to Horley AQMA marginal

Measure	Cost[a]	Air Quality Improvement [b]	Person / organisation responsible	Indicator	Start Date	Completion Date	Actual Completion Date / or Progress	Outcome	Comments
Sustainable energy policy into local development framework document.	RBBC, possibly Medium (2) to High (3) to developers.	depending on scheme.	RBBC Policy & Regeneration Raymond Dill.	of policy	Current	Jan 2007	Complete.	included.	in short term. However, may help reduce growth in background NO_2 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.	Ongoing	Jan 2007 for local development framework policy	Initial stage complete Jan 2007.	Measure now in design guide.	Measure adopted by developers (2010/11). Aim is to use a mix of solar heating and air source heat pumps, so no risk of NOx 'hot spots'. Some discussion at present (2011) of CHP plant thus risk of localised NO_x 'hot spot' remains.
- Home Zone.	Medium (2)	<0.1 µg m^{-3} (3) at RB59	RBBC Planning	New developments completed as home zones.	Ongoing	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	N/A	RBBC	Data capture > 90 %.	Ongoing	Ongoing	Ongoing.	Data capture consistently in excess of 90 %,	Sites are important for examining trends in measured pollutant concentrations, compliance

Measure	Cost[a]	Air Quality Improvement [b]	Person / organisation responsible	Indicator	Start Date	Completion Date	Actual Completion Date / or Progress	Outcome	Comments
	on time scale		Leon Hibbs					new equipment purchased and installed in 2010.	monitoring, and 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.	Ongoing	Ongoing	Meetings are on going. Airport action plan produced Jan 2009.	Ongoing	Modelling of 2025 due for completion May 2011. Progress on the airport's action plan is subject to quarterly monitoring - all measures are currently on track (April 2011).
- 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.	Ongoing	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.
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.

Measure	Cost[a]	Air Quality Improvement [b]	Person / organisation responsible	Indicator	Start Date	Completion Date	Actual Completion Date / or Progress	Outcome	Comments
- 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.**
Sites 6009 and 6010 were subsequently closed at the end of 2008. Two new counters were installed mid 2006.
In 2006 (the first year for which data is available) the figures for this site were:

	5980/1 east bound alt ref 4/30015253 (529950, 141730)	32,851	1746 (9 to 10am) to M23	2480 (18 to 19:00)
	5981/1 west bound alt ref 4/30015254 (530240, 141693)	31,553	2917 (9 to 10am) to Gatwick	1509 (13 to 14:00)

2010 Figures:

A217 (Mill Lane / Nursery Lane)	A0217 (04063A)	16885	1642 (8 to 9am)	1617 (17 to 18:00)

A23 (just before Massetts Rd / Woodroyd Av.)	A0023 (04082C)	Down 6.5 % on '04. Down 19.3 % on 2004. Site discontinued in 2005 and replacement site not installed as planned.		Down 5.0 % on 2004.
M23 Gatwick Spur	6009 & 6010 (TRADS 2 Ref)	Site closed end 2008		
	5980/1 alt ref 4/30015253	28,703 (Down 12.6 % on 2006)	1517 (9 to 10am) to M23 (Down 13.1% on 2006)	2326 (18 to 19:00) (Down 6.2 % on 2006)
	5981/1 west bound 4/30015254	27,790 (Down 11.9 % on 2006)	2533 (8 to 9am) to Gatwick (Down 13.1 % on 2006)	1387 (18 to 19:00) (Down 8.0 % on 2006)

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, at the majority of sites in the borough in 2010, concentrations were below relevant air quality objectives. However, there are sites within existing AQMAs which are exceeding the annual mean objective. In addition, concentrations at a number of diffusion tube sites outside of existing AQMAs exceeded the annual mean objective in 2010. The two sites in Hooley (RB136 and RB137) are also over, or near, 60 $\mu g/m^3$ suggesting potential issues with the hourly mean objective. A Detailed Assessment has already been undertaken at this location and an AQMA is to be declared covering both the annual and hourly objective.

9.3 All the diffusion tube sites in Redhill which exceeded the annual mean objective in 2010 (RB120, RB121, RB122, RB123 and RB145) will be covered by an AQMA to be declared in 2011.

9.4 Concentrations at RB21 (Drift Bridge Hotel) and RB126 (Banstead High Street) are exceeded the objective in 2010, but neither of these sites are representative of relevant exposure and hence no further action is necessary.

9.5 Site RB125 (Reigate Hill) was the subject of a recent Detailed Assessment and will be declared an AQMA in 2011.

9.6 Site RB82 is within the existing Dean Lane AQMA, but is not representative of exposure. When concentrations are projected back to the façade of the property which constitutes the AQMA, the level is well below the objective; the conclusion in the last Progress Report to revoke this AQMA is supported.

9.7 A Detailed Assessment will therefore not be required in 2012.

9.8 The recommendations relating to the AQMAs in the last Progress Report have not yet been formerly actioned and therefore still stand. Data presented in this Progress Report support these previous conclusions. As such, it is recommended that:

- The Dean Lane AQMA is revoked
- The M23 South AQMA is revoked
- The Rushworth AQMA is revoked

9.9 All other AQMAs are to be retained and in addition, further AQMAs are to be declared in Hooley, Redhill and at Reigate Hill, following recent Detailed Assessments.

Conclusions relating to New Local Developments

9.10 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

9.11 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) has been updated in 2011 and partnership working between transport planners and air quality professionals has resulted in an Air Quality Strategy accompanying that document. It is hoped that as the LTP and Air Quality Strategy are taken forward, there will be consequent reductions in pollutant emissions across the Reigate and Banstead area.

Proposed Actions

9.12 An Updating and Screening Assessment will be required in April 2012.

9.13 AQMAs will be declared in Reigate Hill, Redhill and Hooley.

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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

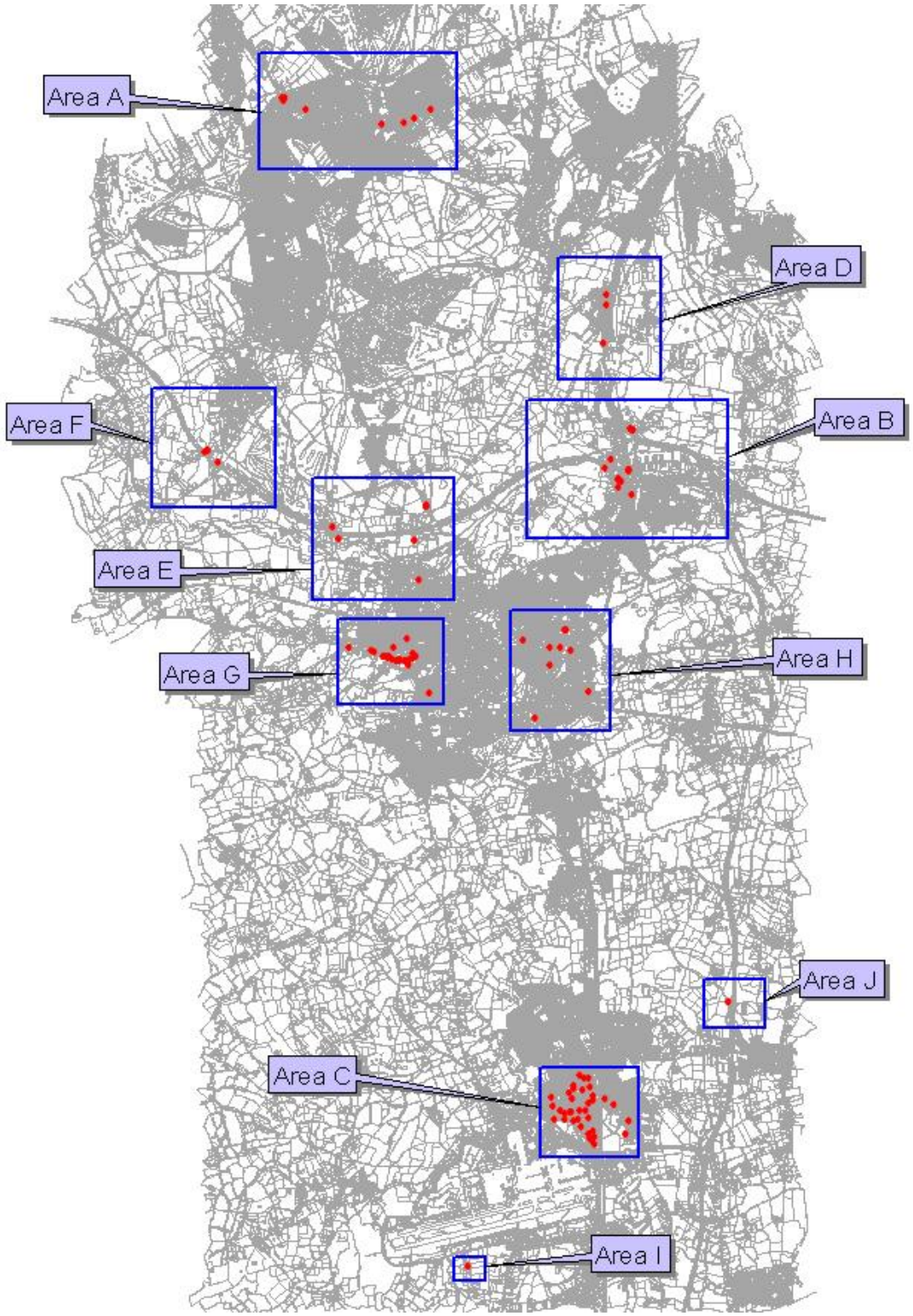


Figure A1.2 Diffusion tube monitoring sites in Banstead and Drift Bridge (Area A). © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

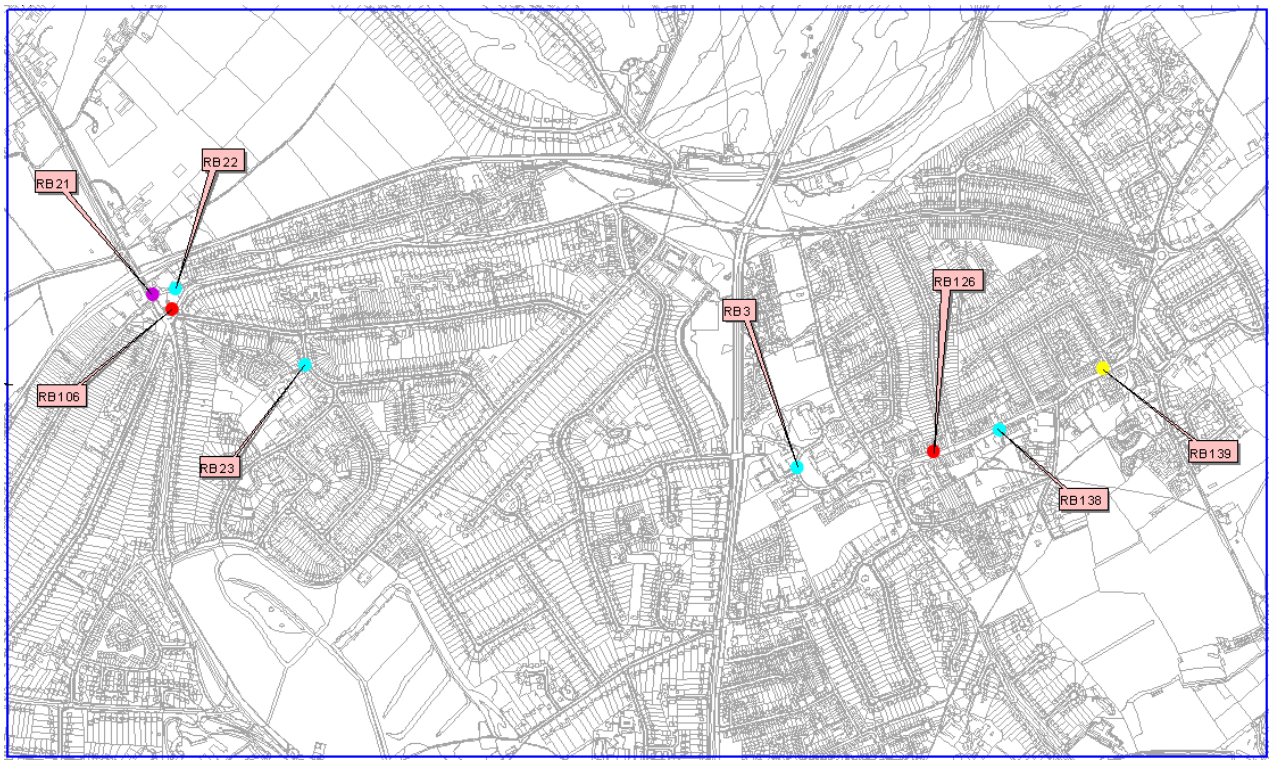
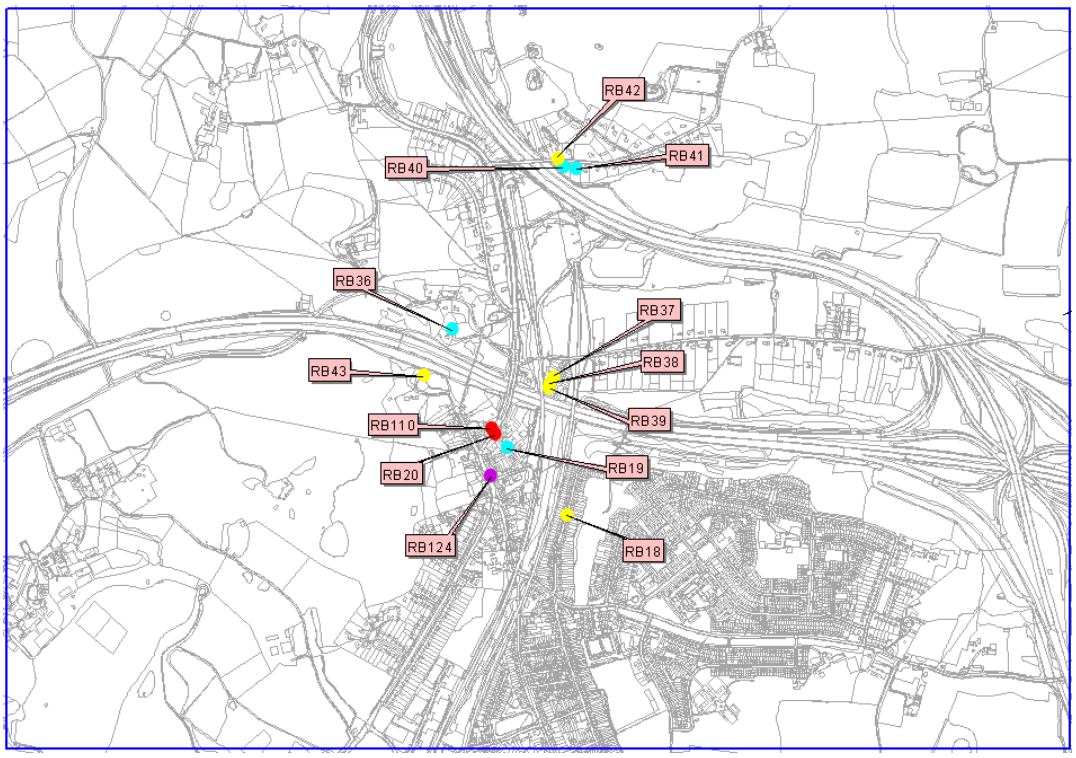


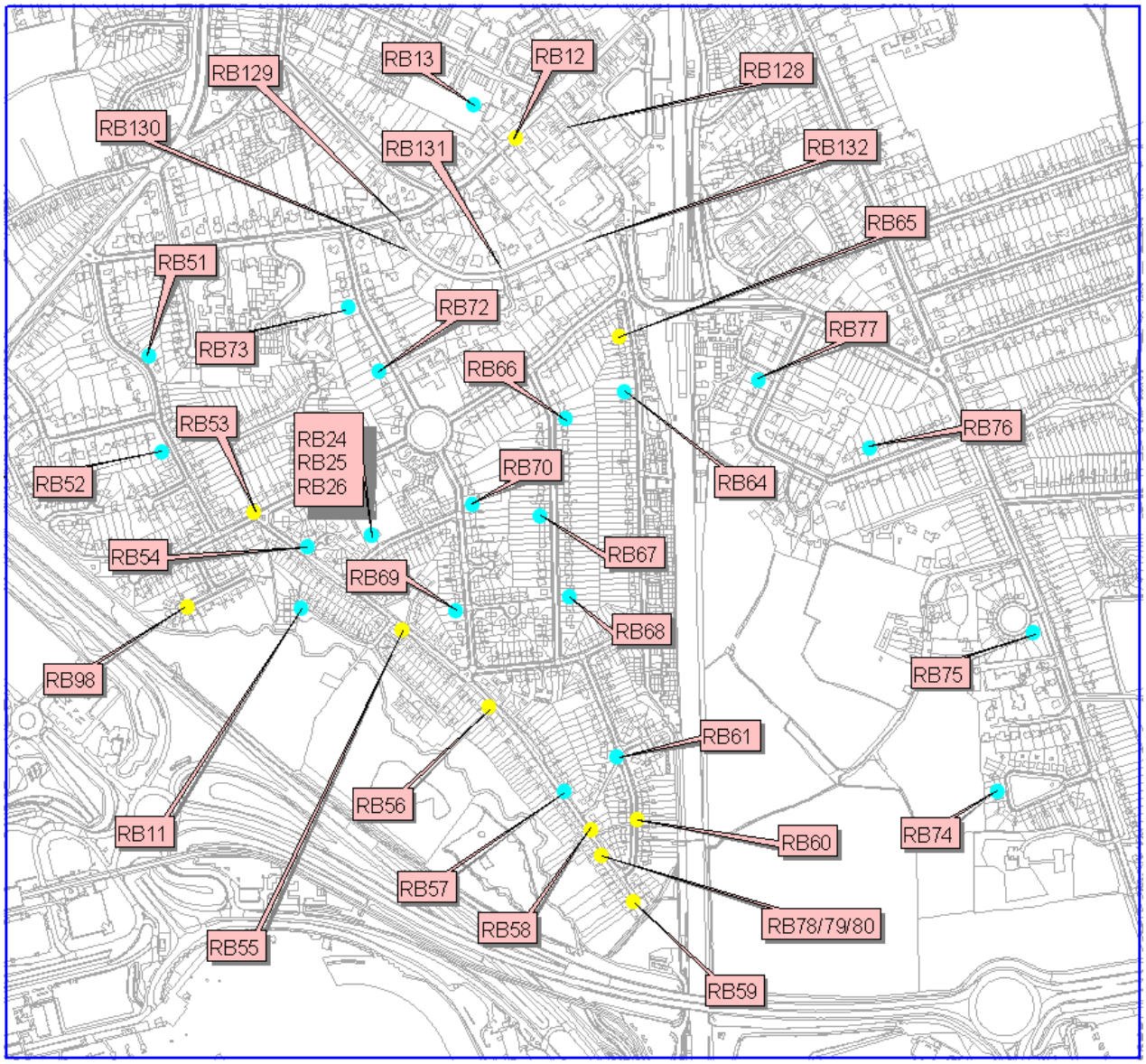
Figure A1.3 Diffusion tube monitoring sites near M23/ M25 East (Area B) © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405



Annual mean nitrogen dioxide concentrations 2010 (µg/m^3)

- <30
- 31 - 40
- 41 - 50
- 51 - 60
- >61

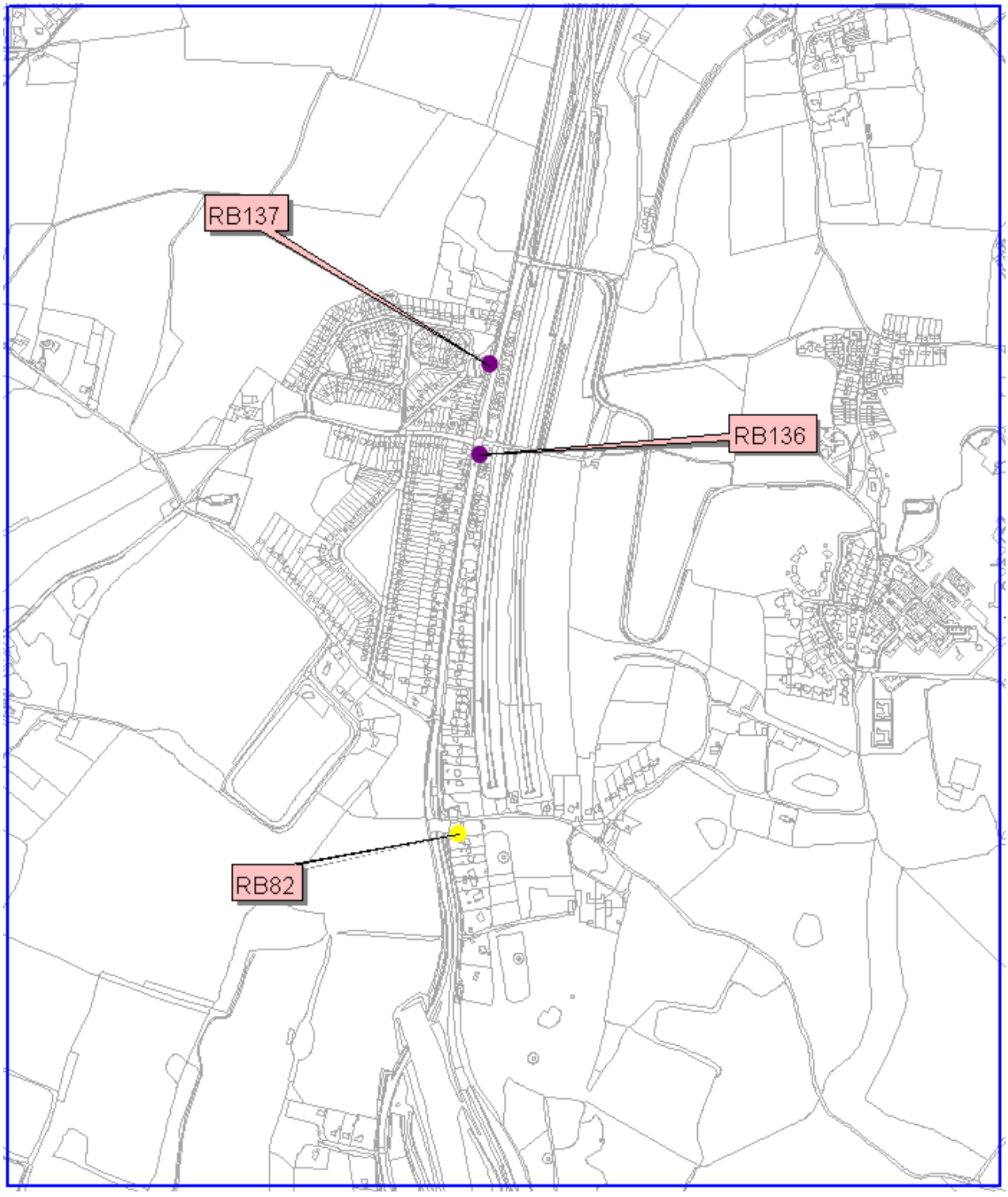
Figure A1.4 Diffusion tube monitoring sites within Horley AQMA (Area C). © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405



Annual mean nitrogen dioxide concentrations 2010 (µg/m^3)

- <30
- 31 - 40
- 41 - 50
- 51 - 60
- >61

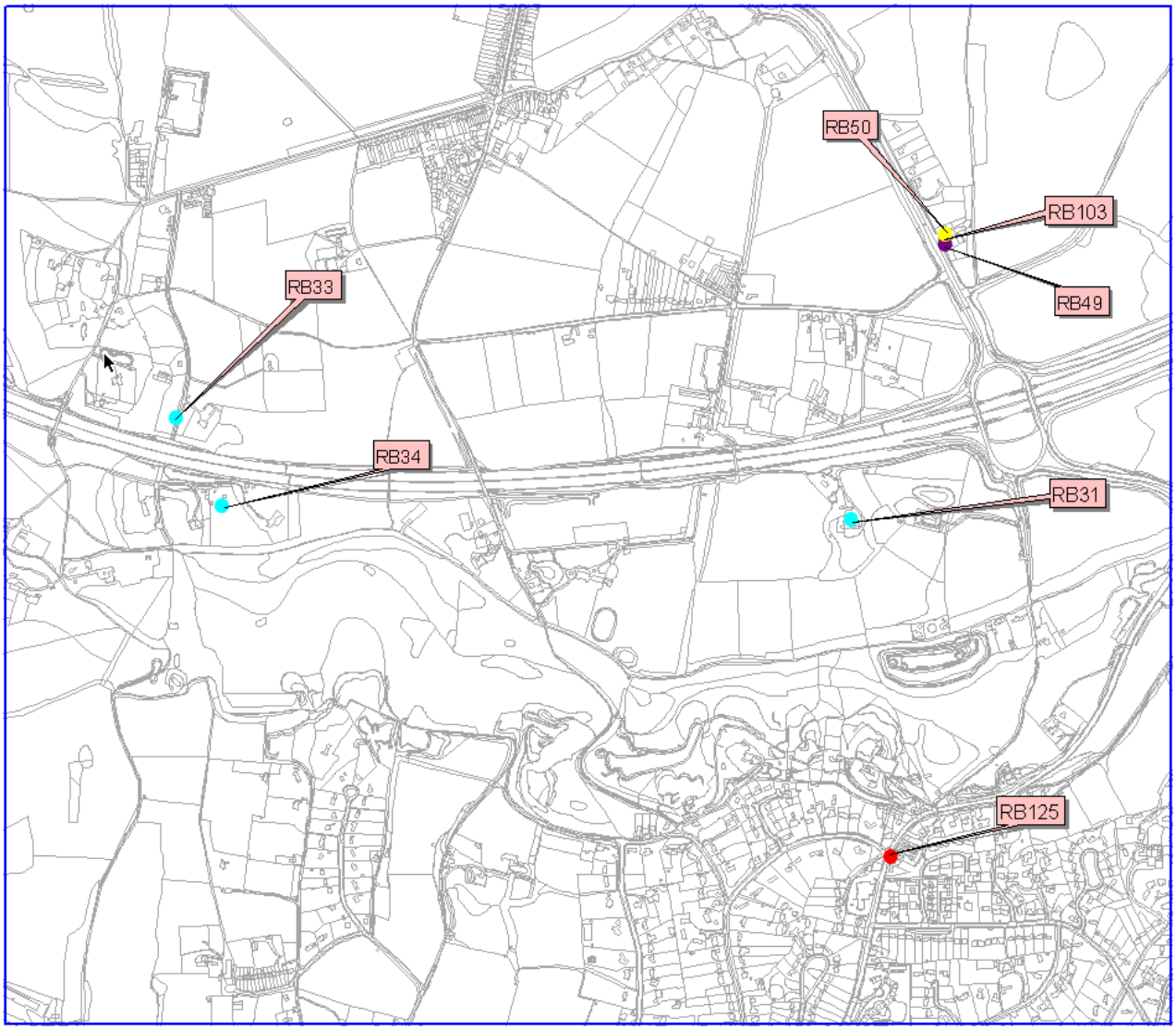
Figure A1.5 Diffusion tube monitoring sites in Hooley (Area D). © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405



Annual mean nitrogen dioxide concentrations 2010 (µg/m^3)

- <30
- 31 - 40
- 41 - 50
- 51 - 60
- >61

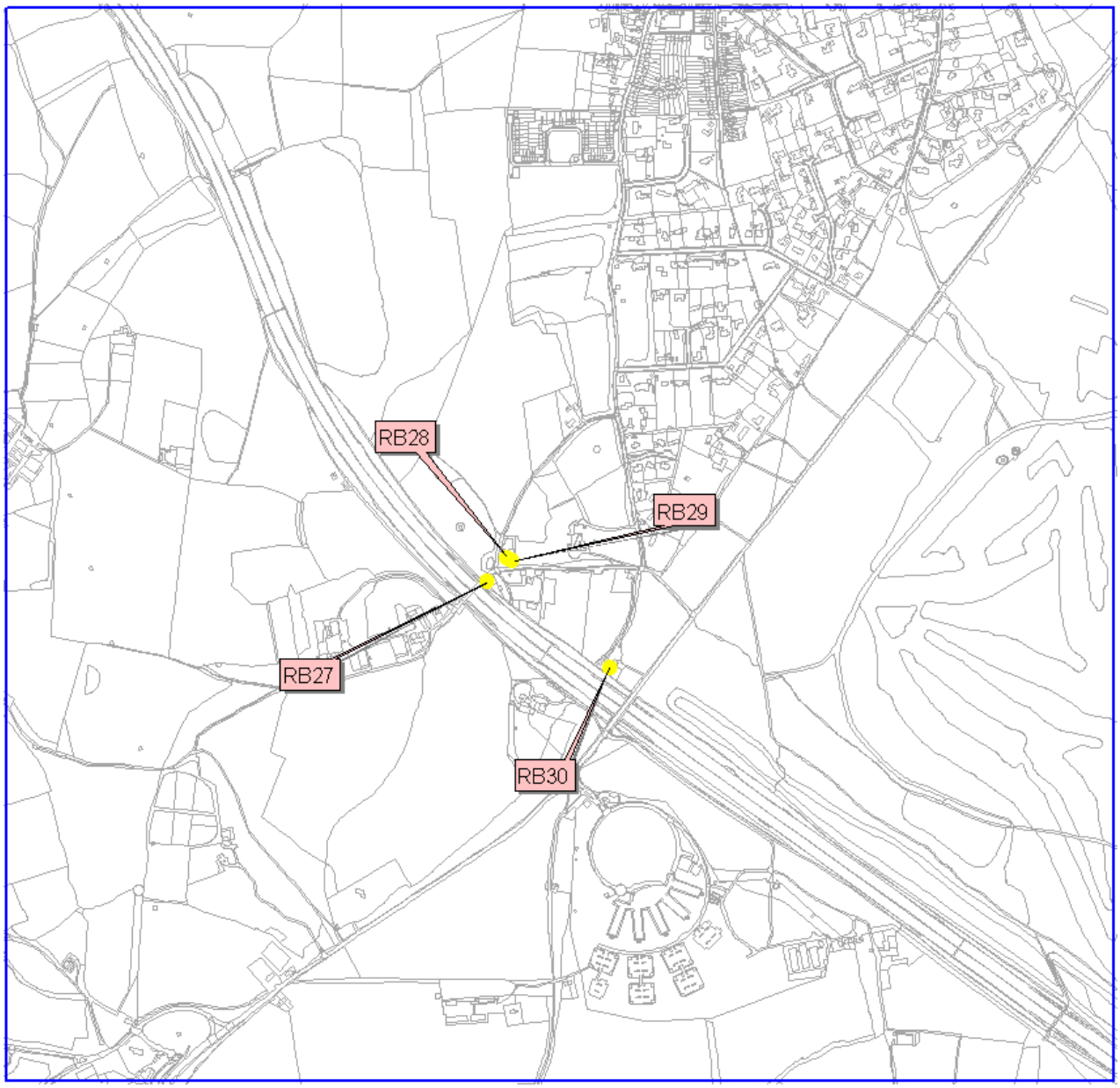
Figure A1.6 Diffusion tube monitoring sites near the M25 (Area E). © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405



Annual mean nitrogen dioxide concentrations 2010 (µg/m^3)

- <30
- 31 - 40
- 41 - 50
- 51 - 60
- >61

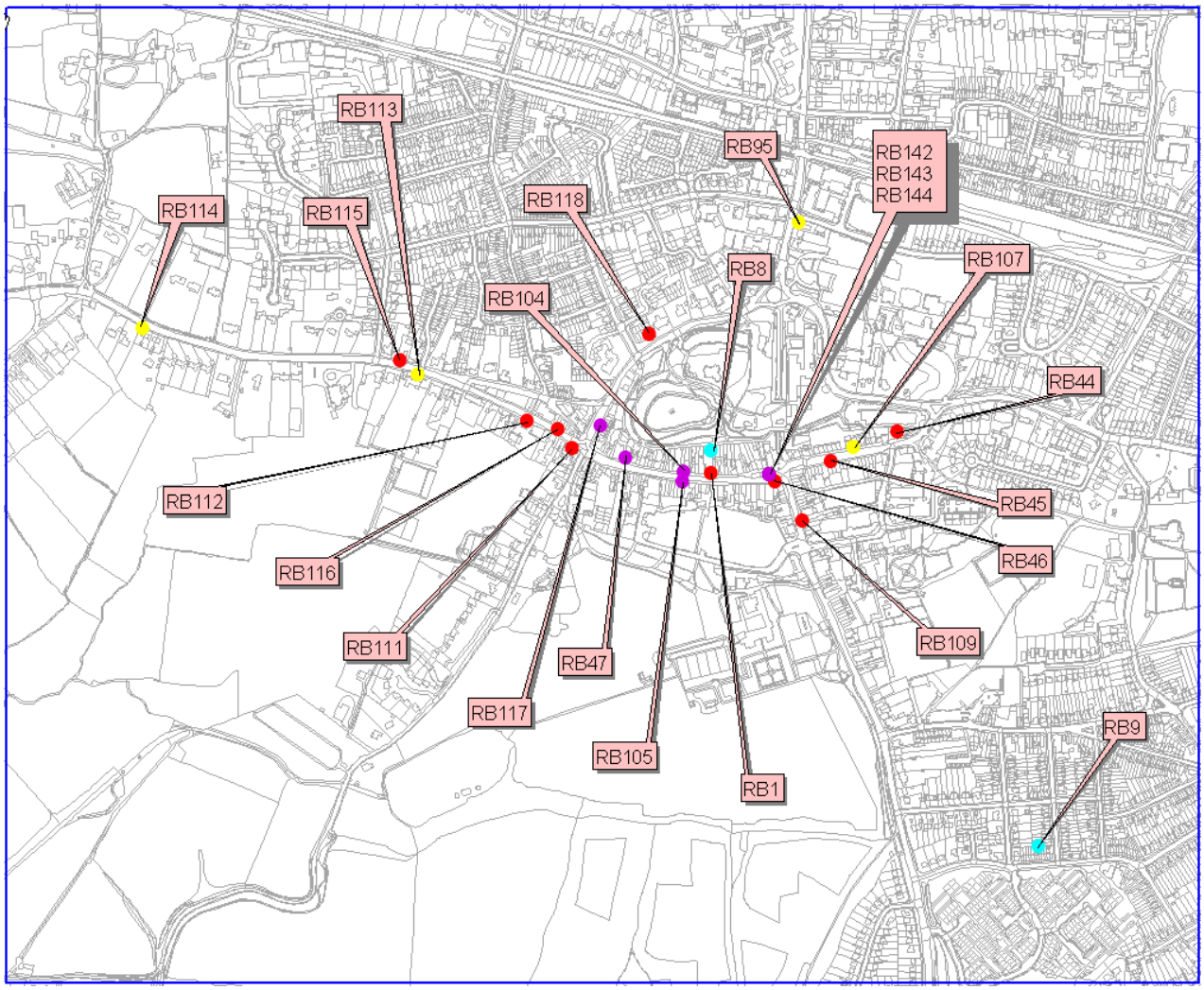
Figure A1.7 Diffusion tube monitoring sites near the M25 West (Area F). © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405



Annual mean nitrogen dioxide concentrations 2010 (µg/m^3)

- <30
- 31 - 40
- 41 - 50
- 51 - 60
- >61

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



Annual mean nitrogen dioxide concentrations 2010 (µg/m^3)

- <30
- 31 - 40
- 41 - 50
- 51 - 60
- >61

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

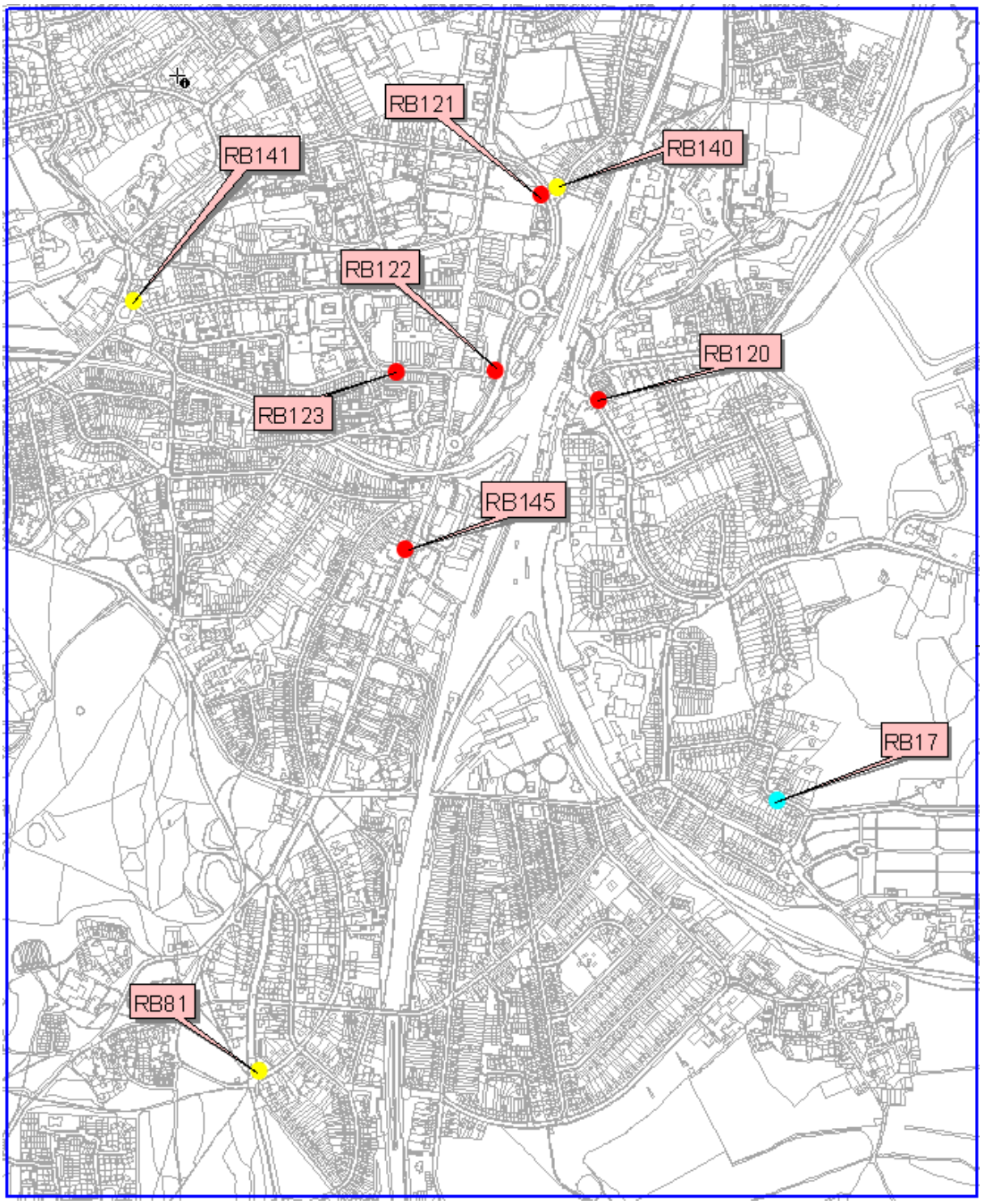


Figure A1.10 Diffusion tube monitoring site in Crawley (Area I). © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405

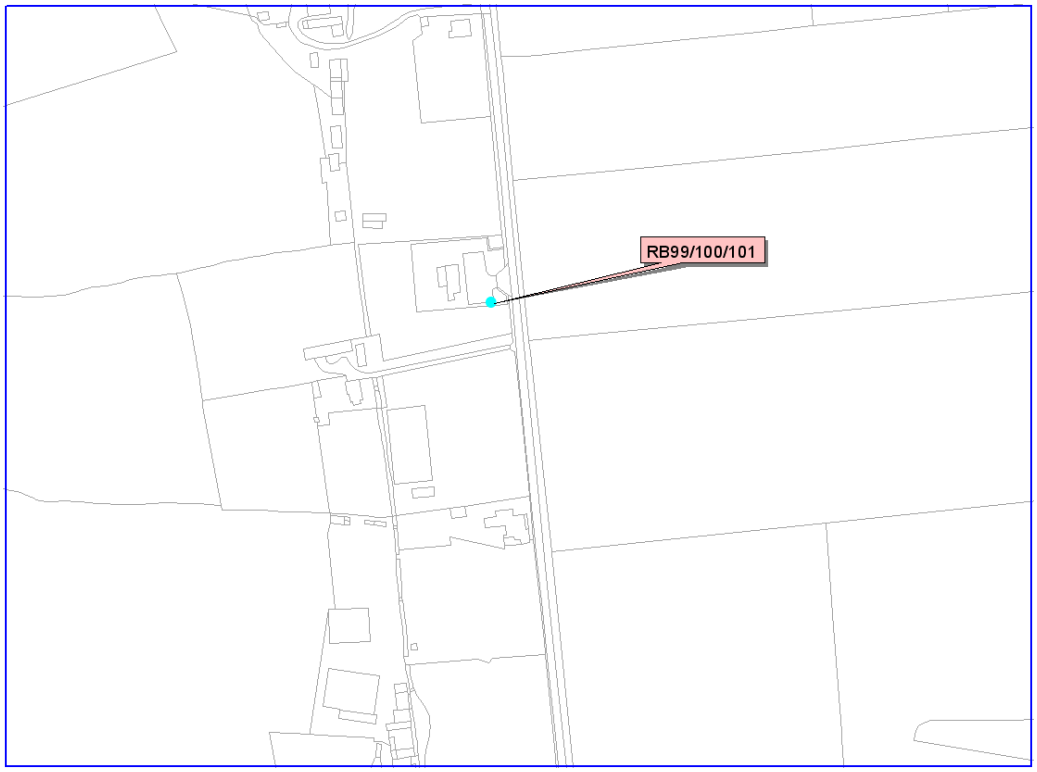
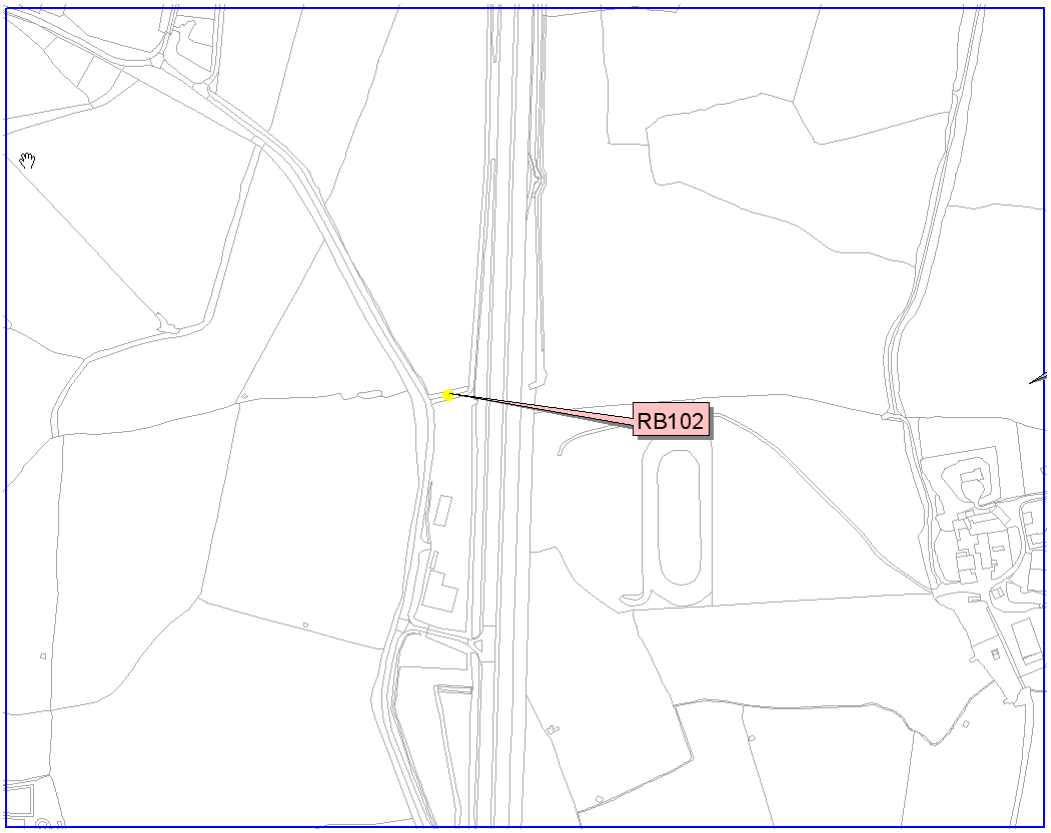


Figure A1.11 Diffusion tube monitoring sites in M23 South AQMA (Area J). © Crown Copyright. Reigate & Banstead Borough Council. Licence no 100019405



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 1.08 (spreadsheet 05/11) compared to the local factor for Reigate and Banstead of 1.05. There are also some tubes (M25, RB59 and RB102) which are analysed by Gradko (20% TEA in water). The national bias adjustment factor for Gradko 20% TEA in water is 0.92 (spreadsheet 05/11). 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	11	25	29	**1.14**
O	12	30	31	**1.05**
O	12	21	21	**0.97**
Average Factor using orthogonal regression				**1.05**

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[4] show acceptable performance for Lambeth Scientific Services, and the laboratory precision was poor in 2010 (precision spreadsheet 04/11). Lambeth Scientific Services have also confirmed that they follow the procedures set out in the Harmonisation Practical Guidance.

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