



2010 Air Quality Progress Report for *Runnymede Borough Council*

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

August, 2010

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Executive Summary

This is a Progress Report carried out by Runnymede Borough Council as part of their Local Air Quality Management (LAQM) duties. The Action Plan Progress Report has been incorporated in this Progress Report and is provided in **Section 9**.

Section 2 of this report provides results of last year's monitoring data and analyses trends in pollutant concentrations for the last decade. Monitoring of nitrogen dioxide continued during 2009 using diffusion tubes. New monitoring programme started in October 2009 and its focus has been on town centres and busy congested roads. There was no case of NO₂ annual mean concentrations exceeding the AQS objective of 40µg/m³ outside of the AQMAs in 2009, nor in the three preceding years. Within the AQMAs, the sites at Runnymede Civic Centre in Addlestone (RY1) and Sports Centre in Egham (RY3) exceeded the NO₂ objective over the years 2007-2009. The new monitoring programme has indicated that the exceedences of the NO₂ objectives were likely to occur at Chertsey and Egham town centres, and at busy junctions.

New potential sources of air pollution – transport, industry, commercial and domestic sites – are reviewed in **Section 3**. There are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

The following chapters set out how air quality impacts are mitigated through land use planning. The current procedures used to assess air quality impacts of proposed development are outlined in **Chapter 6**. New developments, including the planning application to redevelop the former DERA site are discussed in **Chapter 5**. Runnymede's Air Quality Action Plan is scheduled to be integrated with Surrey's third Local Transport Plan, which is currently at the consultation stage (**Section 7**).

The work on the Air Quality Action Plan is still ongoing and the Plan should be completed by September 2010. The focus of the AQAP will be on promoting practices that help to reduce air pollution through dissemination of information and education and the raising of air quality awareness. Once it has been approved by Defra, the Action Plan, along with the supporting Further Assessment of Addlestone town centre (2010) will be sent to the consultees.

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GLOSSARY

AQ	Air Quality
AQMA	Air Quality Management Area
AQS	Air Quality Standard
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CO₂	Carbon dioxide
Defra	Department for Environment and Rural Affairs
HA	Highways Agency
LAQM	Local Air Quality Management
LAQN	Local Air Quality Network
LDF	Local Development Framework
LTP	Local Transport Plan
n.d.	No data
NETCEN	National Environmental Technology Centre
R&A	Review and Assessment
RBC	Runnymede Borough Council
SCC	Surrey County Council
SPD	Supplementary Planning Document
TEA	Triethylamine
t.m.	Tube missing
VOC	Volatile Organic Compounds
WASP	Workplace Analysis Scheme for Proficiency

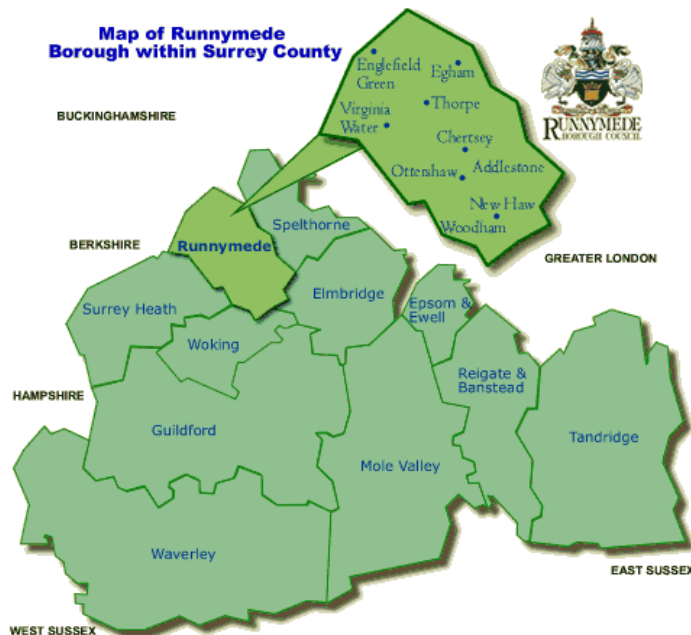
1 Introduction

1.1 Description of Local Authority Area

Main Characteristics

Runnymede Borough lies approximately 30km in straight line southwest from central London. It is located in northwest Surrey. Its northern and eastern edges are formed by the rivers Thames and Wey respectively, its western boundary crosses Windsor Great Park and reaches the edge of Chobham Common (outside Borough Boundary), while to the south, the area extends almost to Woking. Runnymede includes the towns and villages of Addlestone, Chertsey, Egham, Egham Hythe, Englefield Green, Lyne, New Haw, Ottershaw, Row Town, Thorpe, Woodham and Virginia Water (as shown in **Figure 1.1** below).

Figure 1.1 Location of Runnymede in Surrey County



Total area of Runnymede amounts to 7,804 hectares [Surrey CC, 2001], out of which 6,140 hectares (79%) is designated as the Metropolitan (London) Green Belt.

The population is 82,600 (Office for National Statistics, 2008). The largest towns are listed below [Surrey CC, 2001]:

▪ Addlestone	16,657
▪ Chertsey	11,766
▪ Egham	11,179
▪ Englefield Green	11,180

Road Traffic

Road traffic is the main source of pollutants in Runnymede.

The Borough is intersected by two motorways: the M25, which goes round London and runs north south through the Borough, and the M3 crossing east west, which links South West London to Southampton and the South Coast. Other major roads are the A30, A318, A317, and A320. The three largest towns of Addlestone, Chertsey and Egham are connected by A and B category roads. Main A roads connect the west part of the Borough with Windsor and Bracknell and the south side of the borough connects well with Woking and Guildford. There is good access by road to the airports of Heathrow and Gatwick.

There are also a number of bus routes using the road network, however the exact number of routes, service frequency and location of access points has not been yet analysed.

Railway

Runnymede has main line rail connections to London (Waterloo) and Reading. Southwest destinations can be reached through links with Weybridge, Woking and Guildford.

Airports

The distance from the Borough's boundary (intersecting M25) to Heathrow Airport (Terminal 5) via M25 is about 6 km.

Industry and infrastructure

Main sources of employment are in the service sector [RBC, 2009].

It must be noticed that 79% of the borough area is comprised of Green Belt where there is a general presumption against major development with the exception of 'very special circumstances' as dictated by Planning Policy Guidance Note 2, Green Belts (1995). The restrictions over development extend to housing, where control goes as far as residential extensions and replacement dwellings.

Some 572 hectares (9%) of the borough's area is affected by heavy exploitation of its natural gravel and sand deposits, which have occurred for many decades, with another 142 hectares targeted for future extractions. The empty extraction pits have mainly been utilised by landfilling with domestic and inert commercial waste [RBC, 2001].

Most of the built environment in Runnymede is residential in nature, due to the borough's close proximity and good road/rail access to London [RBC, 2001].

Small pockets of industrial land use are mainly located on designated industrial/trade estates. More recently the area has been targeted for office developments [RBC, 2001].

1.2 Purpose of Progress Report

Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the Local Air Quality Management process.

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

1.3 Air Quality Objectives

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

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

Pollutant	Concentration	Measured as	Date to be achieved by
Benzene	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	5.00 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
Particles (PM₁₀) (gravimetric)	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

1st Round of Review and Assessment. Declaration of AQMA along M25.

Runnymede Borough Council (the Council) undertook its first round of air quality review and assessment between the years 1999 and 2002. The assessment was carried out in 4 stages as prescribed by the then statutory guidance and published as four consecutive air quality reports. In light of the more accurate and detailed Stage 3 Review and Assessment completed in 2000, the Council declared an AQMA for NO₂ and PM₁₀ in November 2001 for the areas:

- (Area 1 - north of junction 11) extending 70m east and west of the centre line of the M25 between Junction 11 and the Borough's boundary north of Junction 13 (**Figure 1.2**).
- (Area 2 - south of junction 11) extending 55m east and west of the centre line of the M25 between Junction 11 and the southern boundary of the borough at New Haw/Byfleet (**Figure 1.2**).

2nd Round of Review and Assessment.

NO₂ monitoring data collated for the 2003 Updating and Screening Assessment report found that all the annual mean concentrations of nitrogen dioxide from the monitored sites complied with the AQS objectives. However, assessment of Runnymede roads identified some roads that were at risk of NO₂ objectives being exceeded:

- One road with increased traffic flow: Woburn Hill;
- Three junctions: Eastwood Rd/Guildford Street; High Street/Church Rd; Woodham Lane/New Haw Rd.

A Detailed Assessment was undertaken for the above locations in 2004, however pollutant concentrations modelling indicated that the only areas predicted to exceed the 2005 objective for NO₂ were those close to the M25 motorway (already part of the Council's AQMA).

3rd Round of Review and Assessment. Declaration of AQMA in Addlestone town centre.

Updating and Screening Assessment (2006) recorded elevated levels of NO₂ at roadside monitoring sites - RY1 in Addlestone and RY6 at the Leisure Centre in Egham (already within the M25 AQMA, area north of junction 11).

No roads were identified as requiring a dispersion modelling assessment. Therefore, a Detailed Assessment (2007) was based on the monitoring findings and focused on the town centre in Addlestone. As a result, an AQMA for NO₂ was declared in July 2008 for the junction of High Street, Brighton Road and Church Road in Addlestone. The extent of this AQMA can be seen in **Figure 1.3**.

Air Quality Action Plan

In 2008, a draft action plan was prepared for the Air Quality Management Areas which sets out measures aimed to achieve the air quality objectives within the timescales. It must be stated that the Council influence over local air quality in the AQMAs is limited, mainly because road traffic remains the main source of emissions and the major roads in the Borough are the responsibility of the Highways Agency and Surrey County Council. The plan however includes measures to seek to reduce traffic flow and vehicle emissions that are consistent with other Council policies.

Figure 1.2 Map of M25 AQMA Boundaries

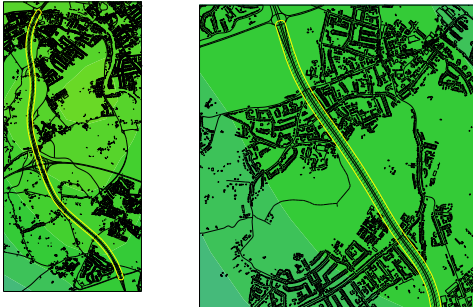


Figure 1.3 Map of Addlestone AQMA Boundaries



2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

The Council does not operate any automatic monitoring stations for any of the specified pollutants.

2.1.2 Non-Automatic Monitoring

The Council carries out diffusion tube monitoring for NO₂ only and participates in two nitrogen dioxide monitoring programmes. The major one is coordinated by NETCEN. There are also two additional tubes, which are part of the Highway Agency's network (*Highways Agency Road Network Survey*).

NO₂ 'NETCEN' Monitoring Programme

Currently Runnymede has 29 monitoring sites (please see **Tables 2.1**), 6 of which (RY1, RY3, RY4, RY6, RY8 and RY9) have been monitored since the launch of Defra's UK Nitrogen Dioxide Network programme in 1993. The programme operated until 2005 and has been continued on a voluntary basis with the coordination of NETCEN.

Circa 2004, three tubes - RY10, RY11 and RY12 - have been added up to the programme for the purposes of a co-location study. They are located at a Highways Agency's M25 site near Staines and deployed by the Centre for Sustainability, TRL, alongside Highways Agency's continuous analyser.

The existing monitoring data and modelling results from previous years have provided basis for the identification of 20 new sites for monitoring. The new monitoring programme started in October 2009 and its focus is on town centres with roads of the following characteristics:

- Narrow congested streets with residential properties,
- Busy streets where people may spend 1 or more hours.

Runnymede monitoring sites can be classified according to the surroundings into the following categories, according to TG(09) guidance:

- **Roadside:** 1-5m from the kerb of a busy road (can be up to 15m from the kerb in some cases),
- **Urban background:** >50m from any busy road. It is an urban location distanced from pollution sources, therefore representative of urban background conditions.

The exposed tubes use 50% TEA in acetone and are supplied by Lambeth Scientific Services laboratory. The laboratory follows the procedures set out in the Harmonisation Practical Guidance; the details of quality assurance/control are provided in **Appendix 1**.

Table 2.1 **Details of Non- Automatic Monitoring Sites – 'NETCEN' Survey.**

Tube ID	Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location ?
RY1	Civic Centre, Station Road, Addlestone	Roadside	X 505095 Y 164623	NO ₂	Y	Y (2.0 m)	2.0 m	N
RY3	Brockhurst Residential Home, Brox Road, Ottershaw	Urban background	X 502663 Y 163693	NO ₂	N	Y (22.0 m)	7.0 m	N
RY4	Riverside Sheltered Housing, Pitson Close, Addlestone	Urban background	X 505712 Y 164622	NO ₂	N	Y (5.0 m)	5.0 m	N
RY6	Egham Sports Centre, Vicarage Road, Egham	Roadside	X 501595 Y 171124	NO ₂	Y	Y (12.0 m)	11.0 m	N
RY8	Ongar Place First School, Milton Road, Addlestone	Roadside	X 504325 Y 163940	NO ₂	Y	Y (26.0 m)	21.0 m	N
RY9	175 New Haw Road, New Haw	Roadside	X 505395 Y 163337	NO ₂	N	Y (13.0 m)	2.0 m	N
RY10*	M25A Staines Site	Roadside	X 502730 Y 173480	NO ₂	N**	N	34.0 m	N
RY11*	M25A Staines Site	Roadside	X 502730 Y 173480	NO ₂	N**	N	34.0 m	N
RY12*	M25A Staines Site	Roadside	X 502730 Y 173480	NO ₂	N**	N	34.0 m	N
RY13	44 High Street, Addlestone	Roadside	X 504959 Y 164778	NO ₂	Y	Y (0.5 m)	2.0 m	N
RY14	1 Church Road, Addlestone	Roadside	X 504993 Y 164600	NO ₂	Y	Y (0.5 m)	1.5 m	Y
RY15	1-16 Dukes Court, Brighton Road, Addlestone	Roadside	X 505036 Y 164554	NO ₂	Y	Y (4.5 m)	5.5 m	N
RY16	116 Station Road, Addlestone	Roadside	X 505391 Y 164704	NO ₂	N	Y (4.5 m)	3.5 m	N
RY17	Railway crossing, Station Road, Addlestone	Roadside	X 505589 Y 164844	NO ₂	N	Y (0.5 m)	3.5 m	N
RY18	New Haw Road/Woodham Lane roundabout, New Haw	Roadside	X 505443 Y 163107	NO ₂	N	Y (1.0 m)	4.5 m	Y
RY19	78 Woodham Lane, New Haw	Roadside	X 505227 Y 162701	NO ₂	Y	Y (8.5 m)	2.5 m	Y
RY20	26 Windsor Street, Chertsey	Roadside	X 504117 Y 167060	NO ₂	N	Y (0.5 m)	3.5 m	N
RY21	London Street/Heriot Road junction, Chertsey	Roadside	X 504261 Y 166945	NO ₂	N	Y (0.5 m)	1.0 m	Y
RY22	Guildford Street, Chertsey	Roadside	X 504203 Y 166940	NO ₂	N	Y (0.5 m)	3.5 m	Y
RY23	37 Bridge Road, Chertsey	Roadside	X 504888 Y 166786	NO ₂	N	Y (4.5m)	1.0 m	Y
RY24	Eastworth Road/Chertsey Road junction	Roadside	X 504852 Y 166046	NO ₂	N	Y (9.5 m)	3.0 m	Y
RY25	Vicarage Rd/Pooley Green Rd junction, Egham	Roadside	X 501748 Y 171316	NO ₂	N	Y (8.0 m)	1.5 m	Y
RY26	Railway crossing, Vicarage Road, Egham	Roadside	X 501716 Y 171383	NO ₂	N	Y (6.0 m)	2.5 m	Y
RY27	Egham Hill roundabout (193/195 High Street), Egham	Roadside	X 500634 Y 171287	NO ₂	N	Y (3.0 m)	1.0 m	15 Y

RY28	38 Station Road, Egham	Roadside	X 501028 Y 171167	NO ₂	N	Y (2.0 m)	2.5 m	Y
RY29	Railway crossing, Station Road (3 Rusham Park Avenue), Egham	Roadside	X 501100 Y 170991	NO ₂	N	Y (2.0 m)	1.5 m	Y
RY30	Railway crossing, Thorpe Road, Egham	Roadside	X 502965 Y 171231	NO ₂	N	Y (5.0 m)	2.5 m	Y
RY31	Thorpe Road, Egham	Roadside	X 503036 Y 171386	NO ₂	N	Y (6.0 m)	1.0 m	Y
RY32	Beechtree Avenue, Englefield Green	Urban Background	X 498638 Y 170580	NO ₂	N	Y (8.0 m)	> 50.0 m	N

*Highways Agency's site

**Not within Runnymede Borough

Highways Agency Road Network Survey

Two tubes, owned by Highways Agency, are deployed by the Council at the Elmside/M25 sites as part of Highways Agency's M25 survey (**Table 2.2**). The exposed tubes are sent to analysis by RPS, who is managing the survey on behalf of Highways Agency. The tubes are analysed by Gradko laboratory, and prepared using 20% TEA in water (more details in **Appendix 1**).

Table 2.2 Details of Non- Automatic Monitoring Sites – Highways Agency Survey.

Tube ID	Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQM A?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location ?
051	Elmside	Roadside	X 501637 Y 168831	NO ₂	Y	Y (22m)	20m from Thorpe By-Pass 35m from M25	N
052	M25 Boundary	Roadside	X 501607 Y 168830	NO ₂	Y	Y (29m)	5m	N

The maps below (**Figures 2.1 and 2.2**) show the locations of all diffusion tubes deployed by the Council.

Figure 2.1 Map of Diffusion Tube Monitoring Sites – ‘NETCEN’ Survey.

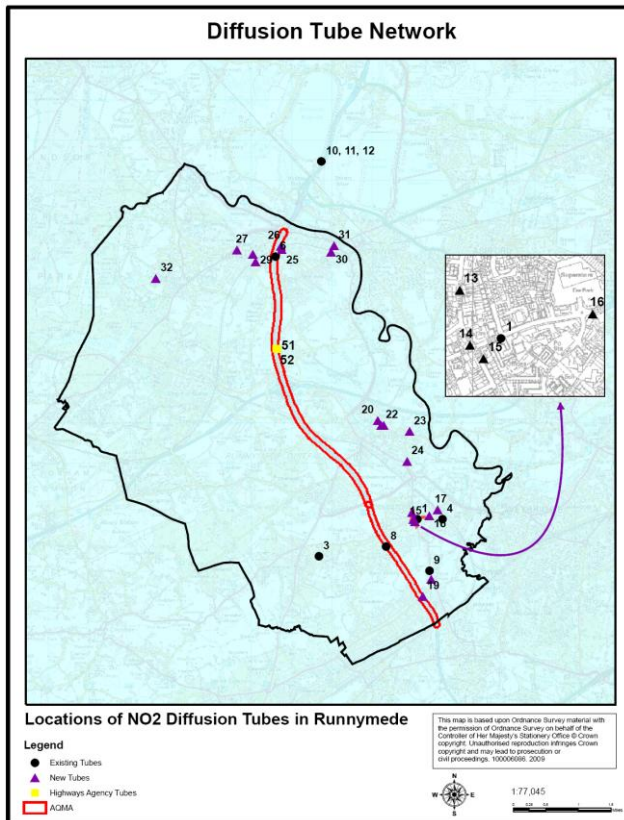
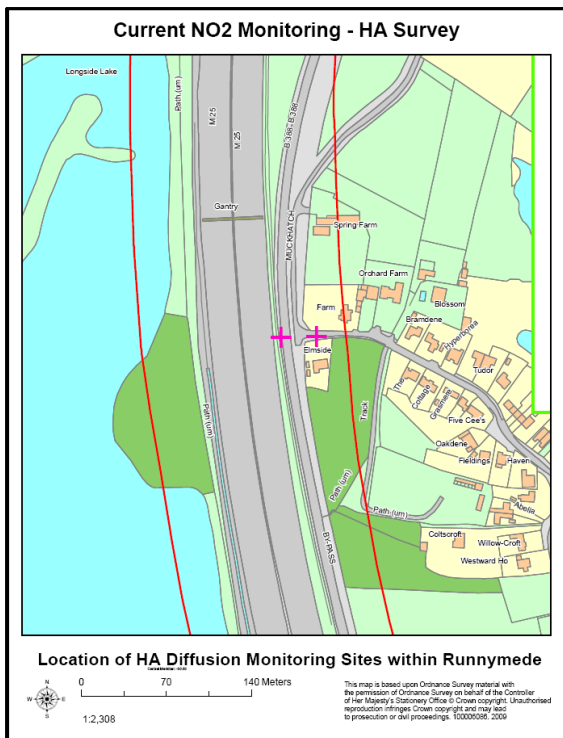


Figure 2.2 Map of Diffusion Tube Monitoring Sites – Highways Agency Survey.



VOC Survey

The monitoring of Volatile Organic Compounds (VOC) is undertaken at Brockhurst Residential Home in Ottershaw (monitoring site RY3) by means of a passive BTEX diffusion tube.

The tube, provided by Lambeth Scientific Services is filled with a polymer absorbent and exposed for a period of one month. The tubes are subject to the WASP QA/QC programme in the same way as NO₂ tubes.

The monitoring site is representative of relevant residential exposure – the tube is sited approximately 30m from the Brockhurst Residential Home.

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Diffusion Tube Monitoring Data

The results from the 'NETCEN' monitoring survey are shown in **Tables 2.3** (bias unadjusted) and **2.4** (bias adjusted). The annual mean concentrations above 40µg/m³ were marked in bold.

It can be seen from the results that there was no case of NO₂ annual mean concentrations exceeding the AQS objective of 40µg/m³ outside of the AQMAs in 2009, nor in the three preceding years.

Within the AQMAs, the sites at Runnymede Civic Centre in Addlestone (RY1) and Sports Centre in Egham (RY3) exceeded the objective over the years 2007-2009 (although RY1 showed compliance in 2008).

The data capture for the M25 sites – RY10, Ry11 and RY12 was very low in 2004; therefore it should be excluded from further analysis. Nevertheless, the records for all the other years of monitoring have showed consistent exceedences of the AQS objectives (**Tables 2.3** and **2.4**). This has been confirmed by the results from the Highways Agency Survey – **Table 2.6**.

As the data records from the NETCEN monitoring programme have been available for the last decade, they could be used to assess long-term trends in the pollutant concentrations.

The annual mean results plotted in **Figure 2.3** for the site RY1 showed large variability; still the monitoring trendline indicated small rises in concentrations (8.3%) over the period 1999-2009. Similarly, the trendline at the site RY6 showed slightly rising concentrations (3.1%) over the same period of time (**Figure 2.6**).

The annual mean concentrations at the remaining monitoring sites showed a declining tendency – as can be seen in **Figures 2.4, 2.5, 2.7** and **2.8**.

Table 2.3 NO₂ results for 1998-2009, bias unadjusted.

Tube ID	Annual Mean Concentrations [µg/m ³] / Data Capture [%]											
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
RY1	38.8	48.5	35.9	37.2	36.1	35.5	35.1	27.6	28.5	38.6	37.6	43.2
	100.0	91.7	100.0	100.0	100.0	91.7	100.0	58.3	83.3	100.0	91.7	83.3
RY3	23.5	25.9	25.1	20.4	22.9	22.6	19.5	16.7	15.9	20.5	21.8	20.4
	91.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	83.3	91.7	83.3	100.0

RY4	24.8	26.6	25.5	25.4	22.2	21.8	17.8	17.4	19.9	22.3	23.8	22.7
	100.0	100.0	100.0	100.0	91.7	100.0	83.3	100.0	91.7	100.0	75.0	91.7
RY6	46.0	46.9	47.1	34.2	32.7	39.5	33.6	34.2	28.3	40.2	42.1	42.1
	100.0	100.0	91.7	91.7	100.0	100.0	91.7	83.3	91.7	100.0	83.3	91.7
RY8	26.3	29.2	26.6	30.0	25.7	29.7	22.0	23.0	19.9	22.7	24.2	24.0
	100.0	100.0	91.7	91.7	100.0	100.0	100.0	91.7	83.3	100.0	91.7	91.7
RY9	-	-	-	33.3	34.4	36.8	34.0	28.5	29.2	33.2	32.5	30.9
	-	-	-	100.0	100.0	100.0	100.0	100.0	91.7	91.7	91.7	91.7

M25 Co-location Tubes

RY10	-	-	-	-	-	55.9	35.3	40.8	45.1	49.7	50.7	58.0
	-	-	-	-	-	91.7	25.0	91.7	91.7	100.0	91.7	100.0
RY11	-	-	-	-	-	59.9	24.5	38.8	41.5	51.2	50.6	59.3
	-	-	-	-	-	75.0	25.0	91.7	91.7	100.0	91.7	100.0
RY12	-	-	-	-	-	-	28.7	34.3	40.6	49.1	57.2	54.6
	-	-	-	-	-	-	25.0	91.7	91.7	91.7	91.7	100.0

* Difference between the years 2001-2009

	Data capture of below 90%
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	Data were not adjusted to estimate annual mean
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	Data adjusted to estimate annual mean
--	---------------------------------------

Table 2.4 NO₂ results for 1998-2009, bias adjusted - national database bias factor.

Tube ID	Annual Mean Concentrations [$\mu\text{g}/\text{m}^3$] / Data Capture [%]												Trend in annual mean concentrations 1999 - 2009
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
RY1	*	*	34.8	40.5	41.5	37.2	41.8	34.2	36.5	41.3	36.9	44.5	+ 8.3 %
	100.0	91.7	100.0	100.0	100.0	91.7	100.0	58.3	83.3	100.0	91.7	83.3	
RY3	*	*	24.3	22.3	26.4	23.7	23.2	20.7	20.4	22.0	21.4	21.0	- 17.3 %
	91.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	83.3	91.7	83.3	100.0	
RY4	*	*	24.7	27.7	25.5	22.9	21.2	21.6	25.5	23.8	23.3	23.4	- 10.2 %
	100.0	100.0	100.0	100.0	91.7	100.0	83.3	100.0	91.7	100.0	75.0	91.7	
RY6	*	*	45.7	37.3	37.6	41.5	40.0	42.4	36.2	43.0	41.3	43.4	+ 3.1 %
	100.0	100.0	91.7	91.7	100.0	100.0	91.7	83.3	91.7	100.0	83.3	91.7	
RY8	*	*	25.8	32.7	29.5	31.2	26.2	28.5	25.5	24.3	23.7	24.7	- 22.3 %
	100.0	100.0	91.7	91.7	100.0	100.0	100.0	91.7	83.3	100.0	91.7	91.7	
RY9	-	-	-	36.2	39.6	38.7	40.5	35.3	37.4	33.2	31.9	31.8	- 22.1 %
	-	-	-	100.0	100.0	100.0	100.0	100.0	91.7	91.7	91.7	91.7	

M25 Co-location Tubes

RY10	-	-	-	-	-	58.7	42.0	50.6	57.7	53.1	49.7	59.7
	-	-	-	-	-	91.7	25.0	91.7	91.7	100.0	91.7	100.0
RY11	-	-	-	-	-	62.9	29.2	48.1	53.2	54.7	49.6	61.1
	-	-	-	-	-	75.0	25.0	91.7	91.7	100.0	91.7	100.0
RY12	-	-	-	-	-	-	34.1	42.5	52.0	52.5	56.0	56.2
	-	-	-	-	-	-	25.0	91.7	91.7	91.7	91.7	100.0

* Bias not determined.

	Data capture of below 90%
--	---------------------------

	Data were not adjusted to estimate annual mean
--	--

	Data adjusted to estimate annual mean
--	---------------------------------------

Figure 2.3 Annual mean NO₂ concentrations at site RY1, 2009-2009.

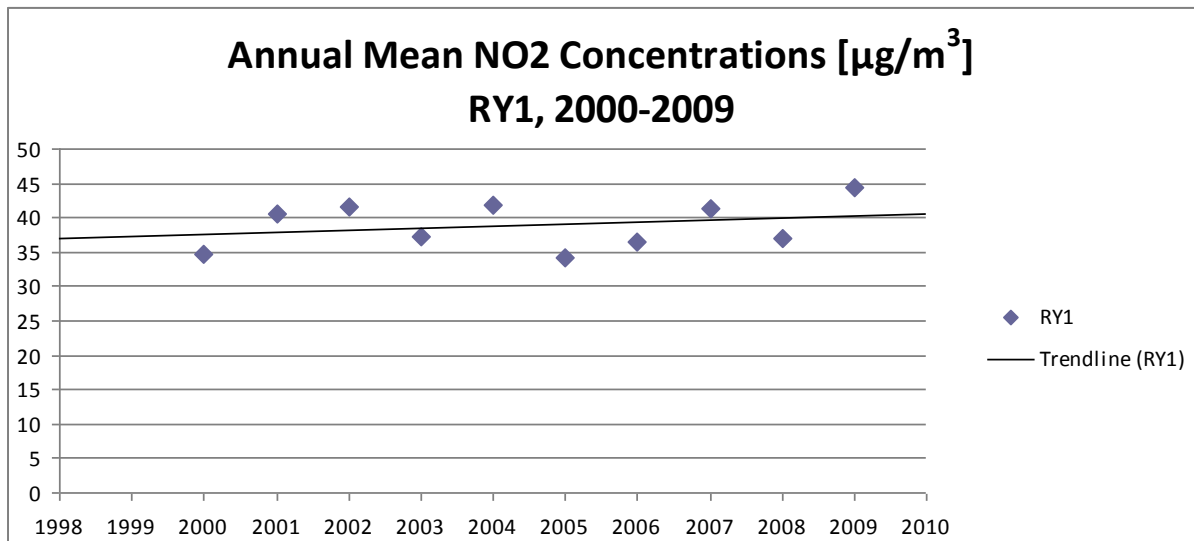


Figure 2.4 Annual mean NO₂ concentrations at site RY3, 2009-2009.

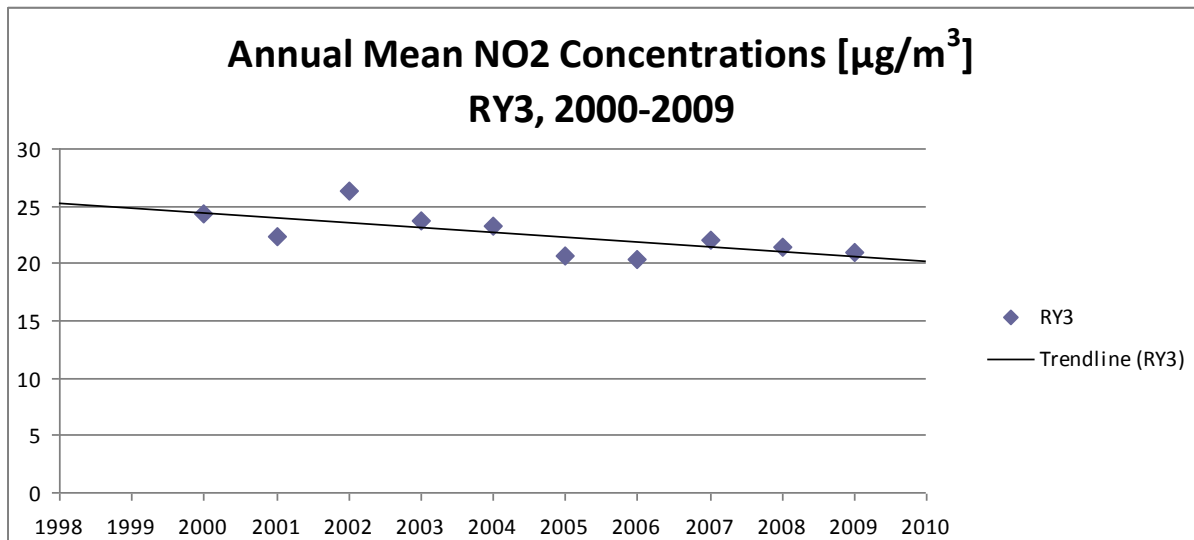


Figure 2.5 Annual mean NO₂ concentrations at site RY4, 2009-2009.

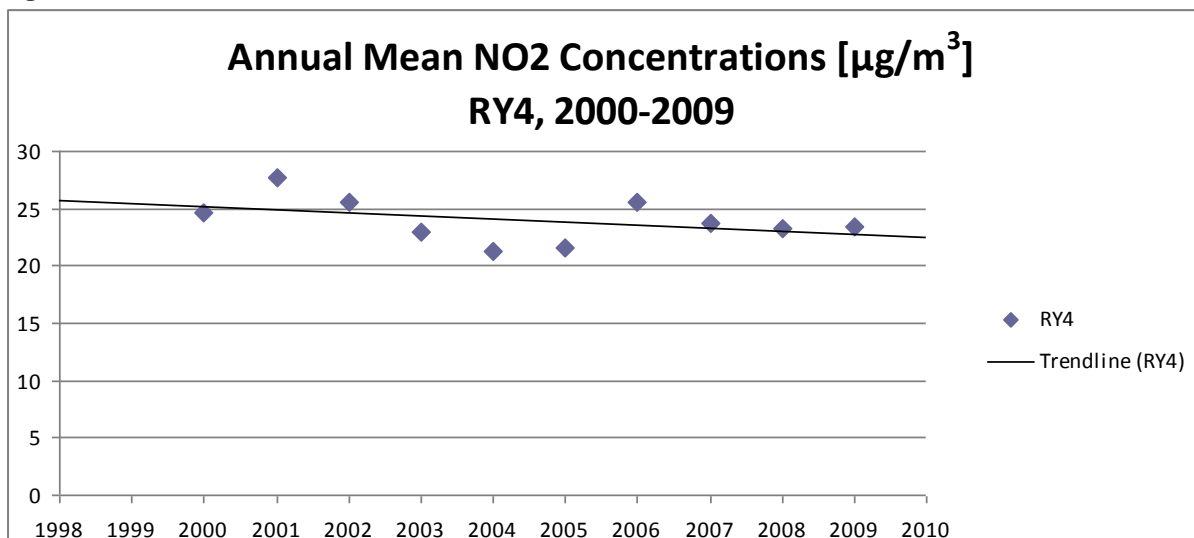


Figure 2.6 Annual mean NO₂ concentrations at site RY6, 2009-2009.

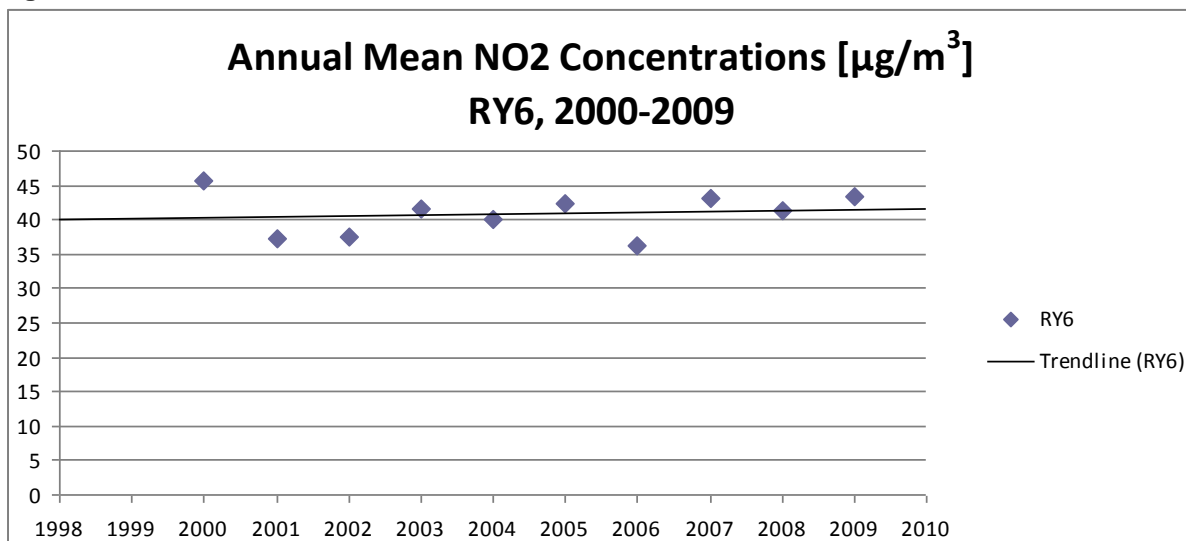


Figure 2.7 Annual mean NO₂ concentrations at site RY8, 2009-2009.

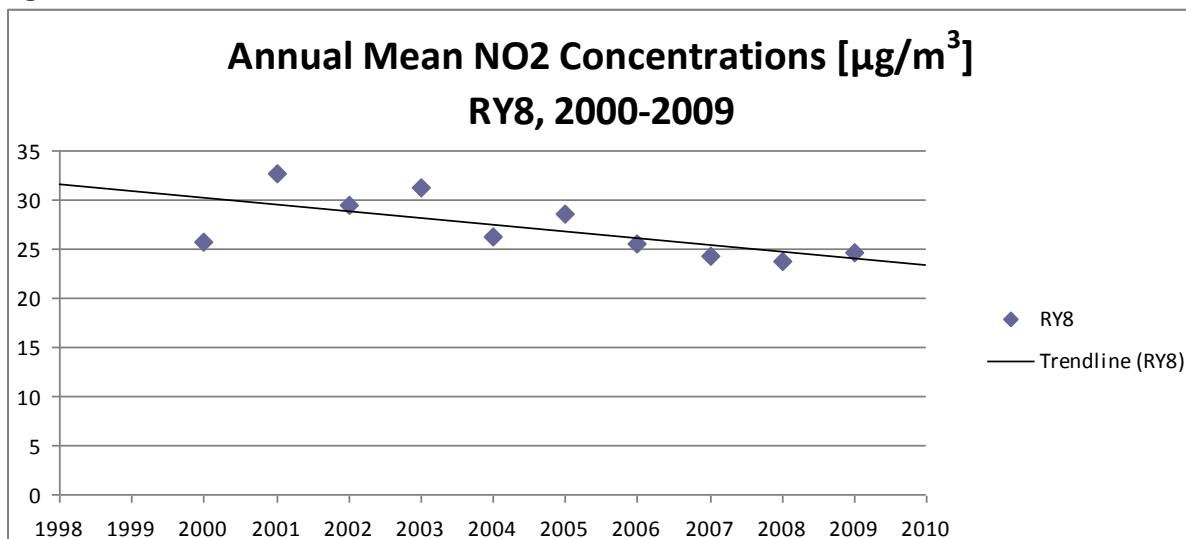
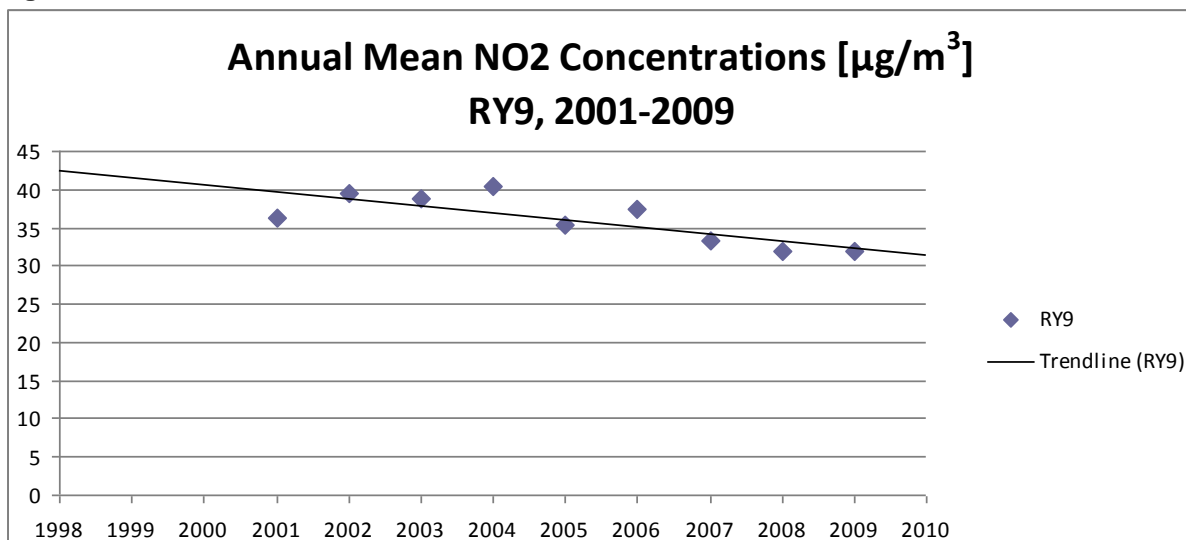


Figure 2.8 Annual mean NO₂ concentrations at site RY9, 2009-2009.



The results from the new monitoring programme are shown in **Table 2.5**. The eight-month monitoring mean showed NO₂ concentrations exceeding 40 µg/m³ at several sites within and outside the AQMAs, including Addlestone town centre, Woodham Lane in New Haw (in the proximity of the M25), Chertsey town centre, the Bridge Road/Weir Road junction, the Eastworth Road/Chertsey Road junction, the level crossing in Vicarage Road (notably at the site RY26 near the M25), the Egham Hill roundabout and Thorpe Road.

Table 2.5 NO₂ results from new monitoring programme (October 2009-May 2010), bias unadjusted.

Tube ID	Monthly Concentrations [µg/m ³] October 2009 – May 2010								
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Mean
RY13	46	40	56	55	64	36	51	49	50
RY14	55	59	59	57	61	44	55	57	56
RY15	31	43	57	59	54	32	45	33	44
RY16	44	32	41	t.m.	39	27	35	t.m.	36
RY17	t.m.	31	43	37	30	29	29	23	32
RY18	39	36	46	43	52	40	41	40	42
RY19	43	t.m.	11	46	48	45	48	39	40
RY20	35	34	45	40	48	29	35	33	37
RY21	35	32	49	48	48	35	54	42	43
RY22	45	39	44	42	38	30	40	32	39
RY23	58	57	31	52	58	35	60	t.m.	50
RY24	42	40	52	52	55	28	40	31	43
RY25	12	46	47	51	55	42	44	37	42
RY26	57	62	74	71	89	55	78	59	68
RY27	42	38	46	45	44	38	33	39	41
RY28	37	32	39	39	38	24	34	30	34
RY29	25	22	42	41	t.m.	29	36	31	32
RY30	37	32	43	41	48	22	34	37	37
RY31	36	38	50	48	43	tm	55	t.m.	45
RY32	24	19	28	26	25	16	20	n.d.	23

The unadjusted mean concentrations from **Table 2.5** have been adjusted for bias (using 2009 national database factor) and extrapolated from 8-months monitoring results to provide an estimate over a full calendar year – **Table 2.6**. After the adjustment, the sites that still exceeded 40 µg/m³ included Addlestone town centre, the Bridge Road/Weir Road junction, the level crossing in Vicarage Road and Thorpe Road (the site near the Causeway roundabout).

Table 2.6 NO₂ results from new monitoring programme, adjusted to estimate annual mean.

Tube ID	Monthly Concentrations [µg/m ³] October 2009 – May 2010								Mean Concentration [µg/m ³]	Bias-Adjusted Mean Concentration* [µg/m ³]	Estimated Annual Mean Concentration [µg/m ³]	Comments
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May				
RY13	46	40	56	55	64	36	51	49	49.6	51.1	44.8	In AQMA.
RY14	55	59	59	57	61	44	55	57	55.9	57.6	50.4	In AQMA.
RY15	31	43	57	59	54	32	45	33	44.3	45.6	39.9	In AQMA.
RY18	39	36	46	43	52	40	41	40	42.1	43.4	38.0	New Haw Road / Woodham Lane roundabout. Nearest Receptor – 1.0m.
RY19	43	t.m.	11	46	48	45	48	39	40.0	41.2	36.1	In AQMA.
RY21	35	32	49	48	48	35	54	42	42.9	44.2	38.7	Junction of London Street/Heriot Road. Nearest Receptor – 0.5m.
RY22	45	39	44	42	38	30	40	32	38.8	39.9	35.0	Guildford Street. Nearest Receptor – 0.5m.
RY23	58	57	31	52	58	35	60	t.m.	50.1	51.6	45.2	Bridge Road/Weir Road junction. Nearest Receptor – 4.5m.
RY24	42	40	52	52	55	28	40	31	42.5	43.8	38.3	Eastworth Road/Chertsey Road junction. Nearest Receptor – 10.0m.
RY25	12	46	47	51	55	42	44	37	41.8	43.0	37.7	Vicarage Rd/Pooley Green Rd junction. Nearest Receptor – 8.0m.
RY26	57	62	74	71	89	55	78	59	68.1	70.2	61.5	Railway crossing, Vicarage Road, Nearest Receptor – 6.0m.
RY27	42	38	46	45	44	38	33	39	40.6	41.8	36.7	Egham Hill roundabout (195 High Street). Nearest Receptor – 3.0m.
RY31	36	38	50	48	43	tm	55	t.m.	45.0	46.4	40.6	Thorpe Road, Egham. Nearest Receptor – 6.0m.


*2009 National Database Bias Factor (1.03)

Subsequently, the NO₂ with distance calculator was applied to predict the annual mean concentrations of nitrogen dioxide at receptor points (residential properties nearest to the monitoring sites). The output results (**Table 2.7**) were highlighted in pink to show exceedences of the annual mean objective. Those sites included Addlestone town centre and the level crossing in Vicarage Road. The results highlighted in orange were the ones within - 10% error margin of 40 µg/m³ – New Haw Road/Woodham Lane roundabout, Chertsey town centre (at the junction with Heriot Road) and the Bridge Road/Weir Road junction.

Table 2.7 Predicted annual mean NO₂ concentration at receptor points.

Tube ID	Distance from tube to kerb [m]	Distance from receptor to kerb [m]	Annual mean background NO ₂ concentration* [µg/m ³]	Measured adjusted annual mean NO ₂ concentration [µg/m ³]	Predicted annual mean NO ₂ concentration at receptor [µg/m ³]
RY13	2.0	2.5	25.9	44.8	43.8
RY14	1.5	2.0	25.9	50.4	48.9
RY15	5.0	10.0	22.3	39.9	36.3
RY18	4.5	5.0	19.4	38.0	37.4
RY19	2.5	11.0	29.0	36.1	33.5
RY21	1.0	1.5	21.5	38.7	37.3
RY22	3.5	4.0	21.5	35.0	34.5
RY23	1.0	5.5	21.5	45.2	37.1
RY24	3.0	12.5	21.5	38.3	32.1
RY25	1.5	9.0	30.6	37.7	34.9
RY26	2.5	9.0	30.6	61.5	51.7
RY27	1.0	4.0	18.0	36.7	31.5
RY31	1.0	7.0	25.8	40.6	34.8

* Derived from Defra's national background pollutant concentration maps

 Results exceeding the annual mean objective of 40 µg/m³


 Results above 36 µg/m³ (10% below the annual mean objective)

Table 2.6 Highways Agency Survey NO₂ results, bias adjusted - national database bias factor.

Highways Agency Road Network Survey (µg/m ³) 2006, 2007, 2008, 2009											
2006 Local Bias Factor (LF) - Collocation Study, Sheffield City Council, Tinsley AURN - 0.94			2007 Local Bias Factor (LF) - Collocation Study, Balby DC, Chichester Council, Salford, Thurrock -0.97			2008 Local Bias Factor (LF) - Not yet established - 0.97 taken as assumption			2008 Local Bias Factor (LF) - Not yet established - 0.97 taken as assumption		
2006 UWE R&A Helpdesk Bias Factor (NF) - 0.98			2007 UWE R&A Helpdesk Bias Factor (NF) - 0.89			2008 UWE R&A Helpdesk Bias Factor (NF) - 0.91			2008 UWE R&A Helpdesk Bias Factor (NF) -		
*Very low result/Result below Level Of Detection									Not yet established, 1.014 taken as assumption		
Very low result / Below level of detection (<LOD)											
MONITORING SITES, 2006			MONITORING SITES, 2007			MONITORING SITES, 2008			MONITORING SITES, 2009		
Site ID	51	52	Site ID	51	52	Site ID	51	52	Site ID	51	52
Site Location	Elmside	M25 boundary	Site Location	Elmside	M25 boundary	Site Location	Elmside	M25 boundary	Site Location	Elmside	M25 boundary
Within AQMA?	Y	Y	Within AQMA?	Y	Y	Within AQMA?	Y	Y	Within AQMA?	Y	Y
Site Type	Urban background	Roadside	Site Type	Urban background	Roadside	Site Type	Urban background	Roadside	Site Type	Urban background	Roadside
Jan	no data	no data	Jan	55	67	Jan	<LOD*	78	Jan	45	54
Feb	no data	no data	Feb	55	58	Feb	73	no data	Feb	77	101
Mar	no data	no data	Mar	44	58	Mar	52	50	Mar	52	66
Apr	49	61	Apr	47	66	Apr	<LOD*	77	Apr	44	66
May	45	55	May	<LOD*	22	May	<LOD*	52	May	17	55
Jun	46	<LOD*	Jun	no data	no data	Jun	no data	68	Jun	43	53
Jul	45	47	Jul	54	67	Jul	48	no data	Jul	41	47
Aug	45	68	Aug	58	48	Aug	60	50	Aug	39	52
Sept	46	60	Sept	47	12	Sept	42	35	Sept	44	55
Oct	52	no data	Oct	49	65	Oct	53	56	Oct	no data	no data
Nov	70	59	Nov	45	65	Nov	53	67	Nov	43	52
Dec	49	59	Dec	51	69	Dec	51	70	Dec	no data	no data
Data Capture [%]	75.0	58.3	Data Capture [%]	83.3	91.7	Data Capture [%]	66.7	83.3	Data Capture [%]	66.7	83.3
Annual Mean (Unadjusted)	49.6	58.2	Annual Mean (Unadjusted)	50.5	54.2	Annual Mean (Unadjusted)	53.8	60.5	Annual Mean (Unadjusted)	44.5	60.1
Annual Mean (Adjusted, LF)	46.6	54.7	Annual Mean (Adjusted, LF)	48.9	52.6	Annual Mean (Adjusted, LF)	52.2	58.7	Annual Mean (Adjusted, LF)	43.2	58.3
Annual Mean (Adjusted, NF)	48.6	57.1	Annual Mean (Adjusted, NF)	44.9	48.3	Annual Mean (Adjusted, NF)	49.0	55.0	Annual Mean (Adjusted, NF)	45.1	60.9

2.2.2 PM₁₀ / Sulphur Dioxide

The Council does not monitor any pollutants other than nitrogen dioxide, therefore any potential risks of exceeding the AQS objectives have been assessed using continuous monitoring data from neighbouring authorities. The latest Updating and Screening Assessment (2009) did not identify any exceedences.

2.2.3 Benzene

The annual mean concentrations from the BTEX tube were below the objective of 5.00 $\mu\text{g}/\text{m}^3$ in 2009 and the preceding years.

Site ID	Data Capture	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)*		
		2007	2008	2009
RY3	100%	n.d.	2.4	2.1

* Converted from ppb (1ppb = 3.25 $\mu\text{g}/\text{m}^3$)

2.2.4 Summary of Compliance with AQS Objectives

Runnymede Borough Council has examined the results from monitoring in the borough. Concentrations outside of the AQMA's are all below the objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment.

The readings from the new monitoring programme have shown that the 8-month averages did often exceed 40 $\mu\text{g}/\text{m}^3$. It is, however, recommended to continue monitoring until the end of 2010 and adjust the annual mean concentrations using a relevant bias factor, before assessing compliance with the objectives.

3 New Local Developments

3.1 Road Traffic Sources

Runnymede Borough Council confirms that since the last Updating and Screening Assessment there have been no new/newly identified roads where air quality could be unlikely to meet the AQS objectives.

The roads and junctions examined in the course of the 2009 Updating and Screening Assessment:

- Narrow congested streets / Busy Streets: Windsor Street, London Street and Guildford Street in Chertsey town centre; Station Road and Egham Hill in Egham
- Junctions: Eastworth Road/Chertsey Road, Church Road/Weir Road and Egham Hill roundabout

have been monitored using diffusion tubes since October 2009 to investigate the levels of NO₂ concentrations in their proximity. The results (**Table 2.5**) showed that the exceedences of NO₂ may occur in Chertsey town centre and the junctions listed above; however it is recommended that the monitoring continues for at least one year before a Detailed Assessment is undertaken.

3.2 Other Transport Sources

Runnymede Borough Council confirms that there are no other transport sources in the Local Authority area.

There are no locations in Runnymede where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

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

The closest airport to Runnymede is Heathrow. The distance from the Borough's boundary (at the point intersecting M25) to Heathrow Airport (Terminal 5) via M25 is about 6 km, therefore relevant exposure within 1,000m of the airport does not fall within the boundaries of Runnymede.

3.3 Industrial Sources

Runnymede Borough Council confirms that there are no industrial installations that meet the criteria for this year's Assessment within the Local Authority area.

3.4 Commercial and Domestic Sources

Runnymede Borough Council confirms that there are no commercial or domestic sources that meet the criteria for this year's Assessment within the Local Authority area.

3.5 New Developments with Fugitive or Uncontrolled Sources

Runnymede Borough Council confirms that there are no new developments that could give rise to fugitive or uncontrolled emissions within the Local Authority area.

Runnymede 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

It was considered advisable to wait until Surrey's third local transport plan (the Surrey Transport Plan) is drafted as this Plan will to a great extent influence the planning process. The Plan has currently reached a consultation stage and will commence from April 2011. It comprises six headline strategies, including a Climate Change Strategy (public consultation ran from 25/03/10 to 16/06/10) and Air Quality Strategy (consultation forthcoming). As soon as the final versions of both Strategies are available, Runnymede Borough Council will use them as a basis to draw up Runnymede's local strategy, which will preferably integrate measures mitigating both air pollution and climate change.

5 Planning Applications

The following planning applications have been received over the past year and are considered to give rise to air quality impacts:

Development	Description	Comments
Heathrow Airtrack	<p>Heathrow Airtrack is the proposed new railway linking Heathrow's Terminal 5 and the South West Trains suburban rail network to the south and west of the airport. The submitted ES reported the findings of an Environmental Impact Assessment (EIA) of the Scheme and has been prepared in accordance with the Transport and Works Act Application Rules.</p> <p>The Airtrack will provide direct rail links to Heathrow from Waterloo, Guildford, Reading and the wider hinterland of south-west London, Surrey and Berkshire.</p> <p>The following level crossing in Runnymede will be affected by the Scheme:</p> <ul style="list-style-type: none"> - Thorpe Road in Egham Hythe, - Vicarage Road at Pooley Green, - Station Road in central Egham, - Prune Hill at Rusham, - Guildford Road in Chertsey, - Station Road in Addlestone. 	<p>RBC objected to the application in November 2009 on the basis of the ES omitting the following information:</p> <ul style="list-style-type: none"> - assessment of cumulative effects on air quality - outline of the main alternatives/improvements to the project - measures envisaged to reduce or mitigate the adverse effects of the project. <p>RBC is concerned that the development will lead to increased queuing times at railway level crossings and consequently will have a negative impact on air quality. The air quality assessment carried out on behalf of the developer did not take into account long-term trends in the local monitoring data.</p>

DERA redevelopment	<p>The Consultants for the development at the DERA site have prepared a Development Framework Document to support the Core Strategy allocation. At the current stage (based on the current information) there is no barrier to a policy being included in the Core Strategy for the re-development of the site for mixed use (including residential).</p> <p>In due course, further work will be undertaken to inform the SPD and eventually an application.</p> <p>DERA redevelopment will involve 2,500 housing units and 68,810m² of commercial space.</p>	<p>The DERA redevelopment project is a very large development to occur in one location (Virginia Water) and with changes in land use. Surrey County Council assessed the highway network impact of the new proposed development in Runnymede (major part of which will consist of the DERA redevelopment). The results of this Assessment are presented in the report 'Transport Evaluation for Runnymede Borough Council's Core Strategy. 2026 Draft Transport Assessment'. The report indicated that DERA redevelopment would incur large increases in traffic flow in the following roads in Virginia Water:</p> <ul style="list-style-type: none"> - C10 Trumpsgreen Road - B389 Sandhills Lane - B388 Mill House Lane - C10 Chobham Lane - C10 Stroude Road - B375 London Street - B388 Vicarage Road <p>Two of these roads (Trumpsgreen Road and London Street) already operate or exceed the maximum traffic capacity. New development at DERA site will further increase traffic and have negative impact on air quality in the relevant areas. It is therefore recommended that the applicant evaluates the impact from the traffic generated by the proposed development in the areas mentioned above, with emphasis on Trumpsgreen Road, Sandhills Lane, London Street and Vicarage Road as these are the roads already affected by traffic delays and likely to exhibit (or exhibiting) elevated concentrations of nitrogen dioxide.</p>
Penton Hook Landfill restoration	<p>Jacobs is undertaking the air quality assessment as part of the EIA for the proposed Penton Hook Landfill restoration.</p> <p>The project provides a restoration strategy for the Penton Hook Landfill site over a period of 2 years whilst also enabling the Environment Agency to use the site for a further 8 years to store and recycle gravels removed from the River Thames as part of the Agency's navigation and flood defence duties.</p> <p>The site is currently a disused landfill area, which was formerly used for depositing river dredgings.</p>	<p>In terms of potential air quality impacts, it would be recommended that Jacobs follow the Environment Protection guidance - Development Control: Planning for Air Quality (2010 Update). The number of HGV movements per day that the project will entail (80) remains below the 'roads affected by proposal' threshold of 200 HGV movements per day, which would indicate likely significant effects associated with the project (DMRB, Vol. 11). Still, in view of the project's close proximity to the M25 AQMA, an air quality assessment should be undertaken. It would be appropriate to examine Runnymede's monitoring data to identify long term trends in pollutant levels and use these to predict pollutant concentrations in future years – the rate of reductions assumed by the guidance and incorporated in screening/modelling tools is quite optimistic; therefore the Air Quality Helpdesks recommend using local monitoring data if possible.</p> <p>With regard to dust control, the Environment Protection – GLA Best Practice Guidance on the Control of Dust and Emissions from Construction and Demolition can be used for the purposes of the assessment. The area of the site is large so the impact of the restoration works on the residential properties to the north and east has to be carefully assessed. Parts of the restoration area/works can probably be classified as low risk sites whereas other parts will be high risk sites and relevant mitigation measures should be implemented accordingly. When the gravel material is transported from/to the site, the load should be covered and secured to prevent it from falling or being blown out.</p>
St Peter's Hospital redevelopment	<p>Ashford and St Peter's Hospital NHS Trust and Surrey & Borders Foundation Trust have proposed to redevelop the existing St Peter's Hospital site in Chertsey, with new hospital buildings and improved access.</p>	<p>The site is not within or adjacent to Runnymede's AQMAs. The air quality impact of the redevelopment is deemed to be insignificant.</p> <p>However, there should be a Travel Plan in place as it a redevelopment of an NHS site where public transport should be promoted.</p>

6 Air Quality Planning Policies

Runnymede's Local Development Framework folder is currently under development.

When the Core Strategy is completed, the work will progress to detailed guidance intended to be used in assessing planning applications, which is scheduled to contain an air quality and climate change Supplementary Planning Document(s).

At present, the following planning documents and procedures are used to determine planning applications and control the air quality impacts of proposed developments:

- Local Plan 2001 with Saved Policies (transport policies being the most relevant);
- Planning Policy Statements (Planning Policy Statement 23: Planning and Pollution Control and Planning Policy Statement: Planning and Climate Change - Supplement to Planning Policy Statement 1);
- Planning applications that might have impacts on air quality are forwarded to the Environmental Protection Division for comment.

7 Local Transport Plans and Strategies

The progress towards development of Surrey's third Local Transport Plan has been outlined in **Section 4**.

The Climate Change Strategy of the LTP3 provides a list of measures to reduce CO₂ emissions. These measures largely correspond with the measures proposed by the Air Quality Strategy to mitigate transport related air pollution. It was, therefore, suggested in the consultation process to link the two strategies together. In addition, the approach recommended by the national Air Quality Strategy (2007) was to, where practicable, synergise policies beneficial to both air quality and climate change, quantify trade-offs (if such occur) and adopt optimal solutions.

The preferred options of the draft AQ Strategy (LTP3) to limit negative impacts of transport on air quality include:

- Reduce Emissions at Source: Eco-driving training, No-idling zones, Promotion of hybrid/electric vehicles, Preferential parking, Green vehicle procurement, Green buses/taxis, Low emissions zone, Emission testing.
- Reduce Traffic: Home working, Workplace travel plans, School travel plans, Car clubs, Car sharing, AQ Action Day, Park & Ride, Sustainable transport promotion, Development control/Developer contributions, Public transport hubs.
- Manage traffic: Traffic Management Strategy, Freight Quality Partnership, UTC, Real time information, Road building, Cycle/Pedestrian route building, Capacity enhancements, Speed limits, Traffic calming.
- Education: Raising awareness, Advisory signage, Journey planning.

The most efficient Climate Change mitigation measures of the Climate Strategy (LTP3) list:

- New infrastructure for cycling and electric vehicles,
- Implementation of travel plans,
- Enforcement of speed limits,
- Eco-driving education,
- increasing car parking charges (or introducing where not already in place),
- Reducing the need to travel through landuse planning.

The following suggestions (preconsultation comments) were made with regard to the draft Air Quality Strategy of the LTP3. Firstly, the Strategy collated data on all existing AQMAs across Surrey, in terms of the number of properties affected and reduction in road traffic required. It would be useful to compare these data with the data from other counties to be aware of the scale of Surrey's air pollution issues. As some AQMAs have been declared alongside motorways and A-type roads, it would help if the Highways Agency was engaged with the transport work carried out by the county, which would ensure that air pollution issues are viewed in a more holistic way. Finally, it was noted in the draft Air Quality Strategy that the air quality work will not move forward without funding and joint work between authorities has to involve seeking funding for AQ projects. Therefore, it would be useful if the funding opportunities were explored in more detail. Possibly, funding could be sought for projects rolled out Surrey-wide or in two or more boroughs at the same time and such grant application could be made jointly.

8 Climate Change Strategies

When the consultation for both Climate Change and Air Quality Strategies of Surrey's third local transport plan is completed (please refer to **Sections 4** and **7** for more details), Runnymede Borough Council will proceed to drawing up Runnymede's local strategy, which will preferably integrate measures mitigating both air pollution and climate change.

9 Implementation of Action Plans

Table 9.1 Action Plan Progress

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments
1	Expansion of diffusion tube monitoring programme	Further monitoring of areas adjacent to railway level crossings and congested/busy streets at town centres.	RBC	2009	2010-2012	Annual mean results	N/A		20 tubes installed at relevant locations.	2012	Better awareness of AQ pollution issues in the Borough.
2	Installation of 'Switch off engine' signs at level crossings	Install 'switch-off engine' signs at level crossings in Addlestone and Egham.	RBC	2009	2009-2010	Fewer idling vehicles at level crossings	Below 1%	Only got SCC permission to install 4 signs per crossing. 16 signs in total were deployed at 4 crossings. Did not get permission to install the signs elsewhere (SCC was reviewing its signage policy)	SCC contacted for permission to install the remaining signs.	2010	The project can form basis for potential future 'no idling zones' enforcement.
3	Pollution control	Using the planning	RBC	Ongoing	Ongoing		Difficult to quantify.				

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments
	through planning	system to bring air quality benefits, through imposing planning conditions and through using section 106 agreements.									
4	Behaviour Change Campaign	Campaign to increase air quality awareness via website, posters, newspaper articles and advertising.	RBC	2009	2010-2012	Resident's survey	Below 1%		Improvements to air quality website. Article in Runnymede's Voice.	2012	
5	Further Improvements to website	Further develop the website to include more air quality and energy use advice - including 'What can I do to improve air quality' section and strategies to reduce carbon footprint	RBC	2009	2010-2012	Resident's survey	Below 1%		Website improved to contain information on monitoring and current projects.	2012	
6	SCC transport	Liaison with	SCC/RBC	2009-	2010 -2015/16	LTP3	Not	RBC	LTP3 has	2016	Much

No.	Measure	Focus	Lead authority	Planning phase	Implementation phase	Indicator	Target annual emission reduction in the AQMA	Progress to date	Progress in last 12 months	Estimated completion date	Comments
	measures to tackle the traffic in Addlestone	SCC to introduce transport measures tackling congestion in Addlestone town centre		2010	(LTP3 implementation period)	indicators	quantified yet.	consulted on the Air Quality Strategy of the LTP3.	currently reached a consultation stage and will commence from April 2011 (see Sections 4 and 7)		depends on SCC engagement and funding opportunities.
7	HA transport measures to reduce emissions from the M25	Liaison with HA to introduce transport measures tackling emissions from the M25	HA/RBC	2009-2010	2010-2015	No yet identified.	Not quantified yet.		RBC has engaged with Highways Agency (HA) - Connect Plus Services and Surrey County Council (SCC) to establish the main elements of the AQAP.	2015	Much depends on HA engagement.

Table 9.1 above sets out the mitigation measures of Runnymede's draft Air Quality Action Plan.

Recently submitted Further Assessment of that area agreed with the findings of the 2007 Detailed Assessment, which confirms the original declaration of the AQMA. The modelling confirmed that the highest concentrations of NO₂ occurred at the junction of High Street and Station Road. High NO₂ concentrations were also predicted close to the road centres in High Street (between Simplemarsh Road and Chapel Avenue, where 'street canyon' effects can be expected to occur) and Station Road (in the proximity of the railway station where higher emissions come from stationary traffic backing up behind the railway barriers). NO₂ concentrations at receptors within the AQMA in Station Road (from the old Civic Offices building site to 77 Station Road) complied with the AQS objectives. The monitoring results from site RY1 will be carefully monitored in the following year and, if found to be below the NO₂ objective, that part of the AQMA will be revoked.

The work on the AQAP is still ongoing and the Plan should be completed by September 2010. Once it has been approved by Defra, the Action Plan, along with the supporting Further Assessment of Addlestone town centre (2010) will be sent to the other consultees: the neighbouring authority, county council, the Environment Agency, and highways authority as appropriate. The public, local businesses and other stakeholders will also be engaged in the consultation process. The reports will be accessible via the air quality website and, additionally, paper copies will be available from local libraries.

The focus of the AQAP will be on promoting practices that help to reduce air pollution through dissemination of information and education, thus helping to achieve the aims of the Action Plan. Promotion will entail a campaign to increase air quality awareness: newspaper advertising (posters, articles) and promotional materials to be displayed at Council's offices, leisure centres and libraries and used at promotional events (including the Roadshow programme).

Air quality awareness can be promoted at schools by running an art project that would involve students creating an air quality poster, which would later be displayed at Council-run facilities and events.

It would be helpful to undertake a feasibility study of the AQAP options before the final version of the Plan is produced. Measures considered to have significant impact on air quality will have to be implemented by the key stakeholders – HA and SCC. Feasibility study of these key measures would identify the most realistic and cost effective options. At the same time, local actions should also be assessed in terms of feasibility, acceptability, impacts and cost effectiveness, in order to target the funding and efforts in the best possible way. We plan to survey the residents for their views on what actions they would like to see implemented in the Borough to improve air quality.

Monitoring will be continued to review NO₂ levels at strategic locations and give an indication of how effective the implemented action plan measures are. Royal Holloway University will start portable measurements of CO₂ NO₂, PM₁₀ and collect samples for CO analysis at four, heavily congested, level crossings in the borough – Station Road in Addlestone, Vicarage Road and Station Road in Egham, as well as Prune Hill in Englefield Green (for background data). Obtained data will verify and supplement the results from the Council's diffusion tube programme and will be used for planning development appraisals (Heathrow Airtrack appraisal in the context) and level crossings' emission control.

Depending on needs and funding, further low emission actions can be implemented, including vehicle emission checks and idling vehicles patrols. In addition, further air quality initiatives can be developed (potentially a low emission car club or discounted parking scheme for low emission vehicles).

10 Conclusions and Proposed Actions

10.1 Conclusions/Proposed Actions relating to New Monitoring Data

The NETCEN monitoring programme results showed that there was no case of NO₂ annual mean concentrations exceeding the AQS objective of 40µg/m³ outside of the AQMAs in 2009, nor in the three preceding years.

Within the AQMAs, the sites at Runnymede Civic Centre in Addlestone (RY1) and Sports Centre in Egham (RY3) exceeded the NO₂ objective over the years 2007-2009 (although RY1 showed compliance in 2008).

The records collected from the M25 monitoring sites at Staines for all the other years of monitoring have showed consistent exceedences of the NO₂ objectives. This has been confirmed by the results from the Highways Agency Survey of the areas in the proximity of the M25.

As the data records from the NETCEN monitoring programme have been available for the last decade, they could be used to assess long-term trends in nitrogen dioxide concentrations. The annual mean results from the site RY1 showed large variability; still the trendline indicated small rises in concentrations (8.3%) over the period 1999-2009. Similarly, the concentrations were slightly rising (3.1%) at the site RY6 over the same period of time. The annual mean concentrations at the remaining monitoring sites showed a trend to decline by 10-22%.

The new monitoring programme has indicated that the exceedences of the NO₂ objectives were likely to occur at Addlestone town centre, Woodham Lane in New Haw (in the proximity of the M25), Chertsey town centre, the Bridge Road/Weir Road junction, the Eastworth Road/Chertsey Road junction, the level crossing in Vicarage Road (notably at the site RY26 near the M25), the Egham Hill roundabout and Thorpe Road (near the Causeway roundabout).

After the eight-month mean concentrations have been adjusted for bias and annualised to estimate a full calendar mean, the sites that still exceeded 40 µg/m³ included Addlestone town centre, the Bridge Road/Weir Road junction, the level crossing in Vicarage Road and Thorpe Road (the site near the Causeway roundabout).

As the likely exceedences of the objectives should be assessed in relation to the sites with relevant public exposure, some of the above monitoring sites were screened out by applying the NO₂ with distance calculator to predict the annual mean NO₂ concentrations at receptor points - residential properties nearest to the monitoring sites. The sites exceeding the annual mean objective at the receptor points included Addlestone town centre and the level crossing in Vicarage Road. The sites where the annual mean concentrations at the receptor points were estimated to be within - 10% error margin of 40 µg/m³ included New Haw Road/Woodham Lane roundabout, Chertsey town centre (at the junction with Heriot Road) and the Bridge Road/Weir Road junction.

The above results show that there is a risk of nitrogen dioxide objective being exceeded at a few residential properties in the area adjacent to the Vicarage Road level crossing and the M25. It will be, therefore, necessary to proceed to a Detailed Assessment in this location.

It is recommended that the new monitoring programme is carried out for a full calendar year before a final decision is reached regarding what sites can be screened out from further assessment. It will be useful to continue monitoring for another year at the sites where the estimated annual mean concentrations at the receptor points exceeded 36 µg/m³ - New Haw Road/Woodham Lane roundabout, Chertsey town centre (at the junction with Heriot Road) and the Bridge Road/Weir Road junction.

10.2 Conclusions/Proposed Actions relating to New Local Developments

Runnymede 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.

10.3 Other Conclusions/Proposed Actions

The revised Air Quality and Climate Change strategies of the Surrey's third local transport plan (the Surrey Transport Plan) will form a basis of Runnymede's local strategy, which will preferably integrate measures mitigating both air pollution and climate change.

Runnymede's Local Development Framework folder is currently under development. When the Core Strategy is completed, the work will progress to detailed guidance intended to be used in assessing planning applications, which is scheduled to contain an air quality and climate change Supplementary Planning Document(s).

The planning application to redevelop the former DERA site is expected to have an impact on air quality, particularly in the areas where large increases in traffic flow will be incurred as a result of the development. The roads affected include:

- C10 Trumpsgreen Road
- B389 Sandhills Lane
- B388 Mill House Lane
- C10 Chobham Lane
- C10 Stroude Road
- B375 London Street
- B388 Vicarage Road

The work on the AQAP is still ongoing and the Plan should be completed by September 2010. Once it has been approved by Defra, the Action Plan, along with the supporting Further Assessment of Addlestone town centre (2010) will be sent to the consultees. The reports will be accessible via the air quality website and, additionally, paper copies will be available from local libraries.

The focus of the AQAP will be on promoting practices that help to reduce air pollution through dissemination of information and education and the raising of air quality awareness.

11 References

AEA (2008) *WASP – Annual Performance Criteria for NO₂ Diffusion Tubes used in Local Air Quality Management (LAQM), 2008 onwards, and Summary of Laboratory Performance in Rounds 97-10.*

King's College London (2008) *LAQN Monitoring Sites.* [<http://www.londonair.org.uk/>].

RBC (Runnymede Borough Council) (2001) *Contaminated Land Inspection Strategy.*

RBC (Runnymede Borough Council) (2009) *Preferred Approaches - Core Strategy.*

Surrey CC (Surrey County Council) (2001) 2001 Census: Town/villages in Surrey with population more than 1000.

Appendices

Appendix A: QA/QC Data

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

Due to poor precision of up-to-date results, the bias adjustment factor applied is a combined bias adjustment factor derived from the national database of co-location studies, using R&A Helpdesk Database.

Table A1 below provides the list of correction factors for the years 2000-2009.

Table A1 Diffusion Tube Bias Adjustment Factors, 2000-2009.

Year	Bias Adjustment Factor
2000	0.97
2001	1.09
2002	1.15
2003	1.05
2004	1.19
2005	1.24
2006	1.28
2007	1.07
2008	0.98
2009	1.03

Short-term to Long-term Data adjustment

Short-term NO₂ diffusion tube monitoring data were adjusted to estimate an annual mean concentration using Technical Guidance (09), Box 3.2.

The nearest continuous monitoring site meeting the relevant criteria for the adjustment of short-term monitoring data are shown in **Tables A2, A3, A4** and **A5** below. All sites are part of the LAQN network and the data were derived from the LAQN website [King's College London (2008)].

The eight-month data from the new monitoring data has been annualised in **Table A6**.

Table A2 Adjustment to estimate annual mean NO₂ concentrations, 2005.

2005				
Site	Site Type	Annual Mean	Period Mean	Ratio
Bell Farm, Hersham	Urban Background	27.9	23.2*	1.203
Lower Ashtead, Mole Valley	Suburban	26.9	22.5*	1.196
			Average	1.200
Bell Farm, Hersham	Urban Background	27.9	28.3**	0.986
Lower Ashtead, Mole Valley	Suburban	26.9	27.5**	0.978
			Average	0.982

*Period Mean to adjust site RY1 results: 7 months – Jan, Feb, Mar, Nov and Dec data missing.

**Period Mean to adjust site RY6 results: 10 months – Apr and Aug data missing.

Table A3 Adjustment to estimate annual mean NO₂ concentrations, 2006.

2006				
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Site	Site Type	Annual Mean	Period Mean	Ratio
Bell Farm, Hersham	Urban Background	24.8	24.9*	0.996
Reigate & Banstead – Poles Lane	Rural	19.5	20.1*	0.970
			Average	0.983
Bell Farm, Hersham	Urban Background	24.8	24.6**	1.008
Reigate & Banstead – Poles Lane	Rural	19.5	19.8**	0.984
			Average	0.996

*Period Mean to adjust site RY1/Ry8 results: 10 months – Apr and May data missing

**Period Mean to adjust site RY3 results: 10 months – Mar and May data missing

Table A4 Adjustment to estimate annual mean NO₂ concentrations, 2008.

2008				
Site	Site Type	Annual Mean	Period Mean	Ratio
Bell Farm, Hersham	Urban Background	21.6	20.9*	1.033
Hatton Cross, Hounslow	Urban Background	31.7	30.5*	1.039
Reigate & Banstead – Poles Lane	Rural	18.9	17.9*	1.056
			Average	1.043
Bell Farm, Hersham	Urban Background	21.6	19.0**	1.137
Hatton Cross, Hounslow	Urban Background	31.7	30.8**	1.029
Reigate & Banstead – Poles Lane	Rural	18.9	17.5**	1.080
			Average	1.082

*Period Mean to adjust site RY3/Ry6 results: 10 months – Feb and Jun data missing

**Period Mean to adjust site RY4 results: 9 months – Feb, Oct and Nov data missing

Table A5 Adjustment to estimate annual mean NO₂ concentrations, 2009.

2009				
Site	Site Type	Annual Mean	Period Mean	Ratio
Hatton Cross, Hounslow**	Urban Background	37.3	32.7	1.141
Reigate & Banstead – Poles Lane	Rural	18.3	17.3	1.058
			Average	1.100

*Period Mean to adjust site RY1 results: 10 months – Feb and Mar data missing

** Calculation for the site Hatton Cross, Hounslow, included provisional data. Data after 20 Feb 2009 have not been fully ratified.

Table A6 Adjustment to estimate annual mean NO₂ concentrations – new monitoring programme.

Period	Site		
	Mole Valley – Dorking* (Urban Background)	Reigate & Banstead – Poles Lane** (Rural)	Hatton Cross, Hounslow*** (Urban Background)
August 2009	14.2	11.0	22.5
September 2009	17.9	17.0	31.4
October 2009	25.7	22.6	39.0
November 2009	18.5	11.9	29.2
December 2009	31.4	28.9	46.3
January 2010	31.2	31.8	48.6
February 2010	26.7	25.6	n.d.
March 2010	24.4	20.9	23.9
April 2010	21.8	18.2	41.9
May 2010	20.7	18.7	37.1
June 2010	16.0	16.6	32.8
July 2010	11.2	10.1	21.1
ANNUAL MEAN	21.6	19.4	34.0
PERIOD MEAN 10/2009-05/2010	25.1	22.3	38.0
Ratio	0.864	0.871	0.894
Ratio Average: 0.876			

* Mole Valley - Dorking - Calculation included provisional data. Data after 13 Feb 2009 have not been fully ratified.

** Reigate and Banstead - Poles Lane - Calculation included provisional data. Data after 08 Feb 2010 have not been fully ratified.

*** Hounslow - Hatton Cross - Calculation included provisional data. Data after 20 Feb 2009 have not been fully ratified.

QA/QC of diffusion tube monitoring

'NETCEN' Survey

Lab supplying and analysing the tubes / Preparation method used / Harmonisation Practical Guidance

Runnymede diffusion tubes use 50 % TEA in acetone and are supplied by Lambeth Scientific Services laboratory. Lambeth Laboratory operates in accordance with the Working Group guidance (AEA: Diffusion Tubes for Ambient NO₂ Monitoring: Practical Guidance for Laboratories and Users), a group commissioned by Defra and the Devolved Administrations aimed at harmonising the methodology used in preparing, utilising and analysing diffusion tubes.

Laboratory Performance and WASP scheme

Performance of Lambeth Laboratory in the WASP (Workplace Analysis Scheme for Proficiency) scheme between Apr 2007 and Oct 2008 was assessed as 'Good' which category contains results on average within 13% of the assigned value. According to new tightened criteria, which will come into force from Apr 2009 where 'good' amounts to average within 7.5% of the assigned value, Lambeth lab performance is assessed as 'Acceptable' results on average within 15% of the assigned value [AEA 2008].

Laboratory Precision

The precision results for the individual laboratories as indicated by the Review and Assessment Helpdesk ('Summary of Precision Results for Nitrogen Dioxide Diffusion Tube Collocation Studies, by Laboratory' available from R&A website) show that Lambeth Laboratory has 'poor' precision', which means that the Coefficient of Variation (CV) of triplicate diffusion tubes of four or more periods during the year is greater than 20% and/or the average CV of all monitoring periods is greater than 10%.

Highways Agency Survey

The Highways Agency's Survey is coordinated by RPS. The samples are analysed by Gradko Laboratory, 20% TEA in water. The laboratory has got good precision. The bias factors used by RPS to adjust the results were taken from Review and Assessment Helpdesk website.