



2010 Air Quality Progress Report for Hertsmere Borough Council

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

Submitted January 2012

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Executive Summary

The UK Government published its strategic policy framework for air quality management in 1995 establishing national strategies and policies on air quality, which culminated in the Environment Act, 1995. The Air Quality Strategy provides a framework for air quality control through air quality management and air quality standards. These and other air quality standards and their objectives have been enacted through the Air Quality Regulations in 1997, 2000 and 2002. The Environment Act 1995 requires Local Authorities to undertake air quality reviews. In areas where an air quality objective is not anticipated to be met, Local Authorities are required to establish Air Quality Management Areas (AQMA's) and to implement action plans to improve air quality.

Hertsmere Borough Council has completed the first, second and third round of air quality review and assessments. The Local Authority have now entered the fourth round of review and assessment, in which sources of emissions to air are to be reassessed to identify whether the situation has changed since the third round, and if so, what impact this may have on predicted exceedences of the air quality objectives. The first part of the fourth round of review and assessment, the Updating and Screening Assessment, was completed in April 2009. In late 2009 the recommendations of the USA were implemented.

This Progress Report follows the guidance provided in the Local Air Quality Management (LAQM) PG (09) and the LAQM TG (09). The report provides the latest nitrogen dioxide and PM10 monitoring results for Hertsmere Borough Council and further information that might have an affect on local air quality.

The Progress Report for 2009 concludes that the air quality objectives for benzene, 1,3-butadiene, carbon monoxide, lead, particulates (PM 10) and sulphur dioxide will be met and there is no requirement to undertake a Detailed Assessment for these pollutants.

However, the Progress Report has shown that exceedences of annual mean nitrogen dioxide (NO₂) concentrations continue to occur in Hertsmere's six AQMA's and in the emerging AQMA at The Broadway, Potters Bar. Outside the AQMA's, exceedences of the annual mean NO₂ objective were measured at seven monitoring sites, where there is nearby relevant exposure. Following on from the recommendations of the 2009 USA a Detailed Assessment is already being undertaken in regard to annual mean NO₂ concentrations at these sites.

In conclusion, additional monitoring of NO₂ needs to be continued at High Street, Bushey and at the Watling Street/Aldenharn Road junction. The Detailed Assessment should be completed for NO₂ at Elstree Crossroads, Elstree; Barnet Road/Southgate Road/High Street junction, Potters Bar; High Street/The Causeway junction, Potters Bar; Watling Street/Aldenharn Road junction, Radlett; Watling Street/Park Road junction, Radlett and Hartspring Lane, Bushey where the M1 crosses over.

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1 Introduction

1.1 Description of Local Authority Area

The area of Hertsmere Borough Council is in the south of Hertfordshire and combines attractive countryside with thriving towns and villages. The London Borough of Barnet, The London Borough of Harrow, The London Borough of Enfield, St Albans City and District Council, Welwyn Hatfield Borough Council, Watford Borough Council and Three Rivers District Council border it. Hertsmere covers an area of 39 square miles; the 96,000 people who live in Hertsmere are concentrated in the Borough's four main towns of Borehamwood, Bushey, Potters Bar and Radlett. Hertsmere boasts expansive beautiful Green Belt countryside dotted with attractive villages and wide tracts of unspoilt agricultural landscape.

Hertsmere does not have any Part A1 processes permitted by the Environment Agency. At present it has six declared AQMA's; four motorway related and two local traffic related. The M1, M25 and A1(M) surround Hertsmere, most of Hertsmere's poor air quality is traffic related.

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 milligrams per cubic metre, mg/m^3).

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

Hertsmere Borough Council has completed all rounds of the review and assessment procedure and has now entered the fourth round of reports.

Table 1.2 Previous reports

Year	Round	Report	Outcome
2006	3	Updating and Screening Assessment	No further actions
2007	3	Detailed Assessment	AQMA to be declared at The Broadway, Potters Bar for NO ₂ . This was picked up from a previous report.
2008	3	Progress Report	Joint 2007 and 2008. Catch up on late reports.
2009	4	Updating and Screening Assessment	Recommended that Detailed Assessment for NO ₂ be carried out to determine extension of Elstree Crossroads and Hartspring Lane AQMA's. Also Detailed Assessment at High Street/Southgate Road, Potters Bar; Watling Street/Aldenham Road, Radlett and Watling Street/Park Road, Radlett.
2009	4	Revised Action Plan	Some points concluded, some dropped.
2010	4	Detailed Assessment	Report carried out but to be submitted to Defra.
April 2010	4	Progress Report	To be submitted.

The first report in the fourth round was the Council's Updating and Screening Assessment of May 2009; it concluded that exceedences of annual mean nitrogen dioxide (NO₂) continue to occur in the Hertsmere's six AQMA's (Figure's 1.2 to 1.6) and in the emerging AQMA at The Broadway, Potters Bar.

Proposed actions arising from the Updating and Screening Assessment were as follows:

- Undertake additional monitoring of NO₂ at the relevant receptor locations at High Street, Bushey; Watling Street/Aldenham Road junction, Radlett; and Watling Street/Park Road junction, Radlett.

This additional monitoring was undertaken in 2009.

- Proceed to a Detailed Assessment of annual mean NO₂ at the following locations;

Elstree Crossroads, Elstree (Barnet Lane and High Street)
Barnet Road/Southgate Road/High Street junction, Potters Bar

High Street/The Causeway junction, Potters Bar
Watling Street/Aldenham Road junction, Radlett
Watling Street/Park Road junction, Radlett
M1 Bushey, at Hartspring Lane.

A Detailed Assessment is at present being carried out for the above areas.

Figure 1.1 Hertsmere AQMA 1

An area comprising the domestic properties 23 –27 Dove Lane and the caravan site off the A1000 Barnet Road, near the M25.

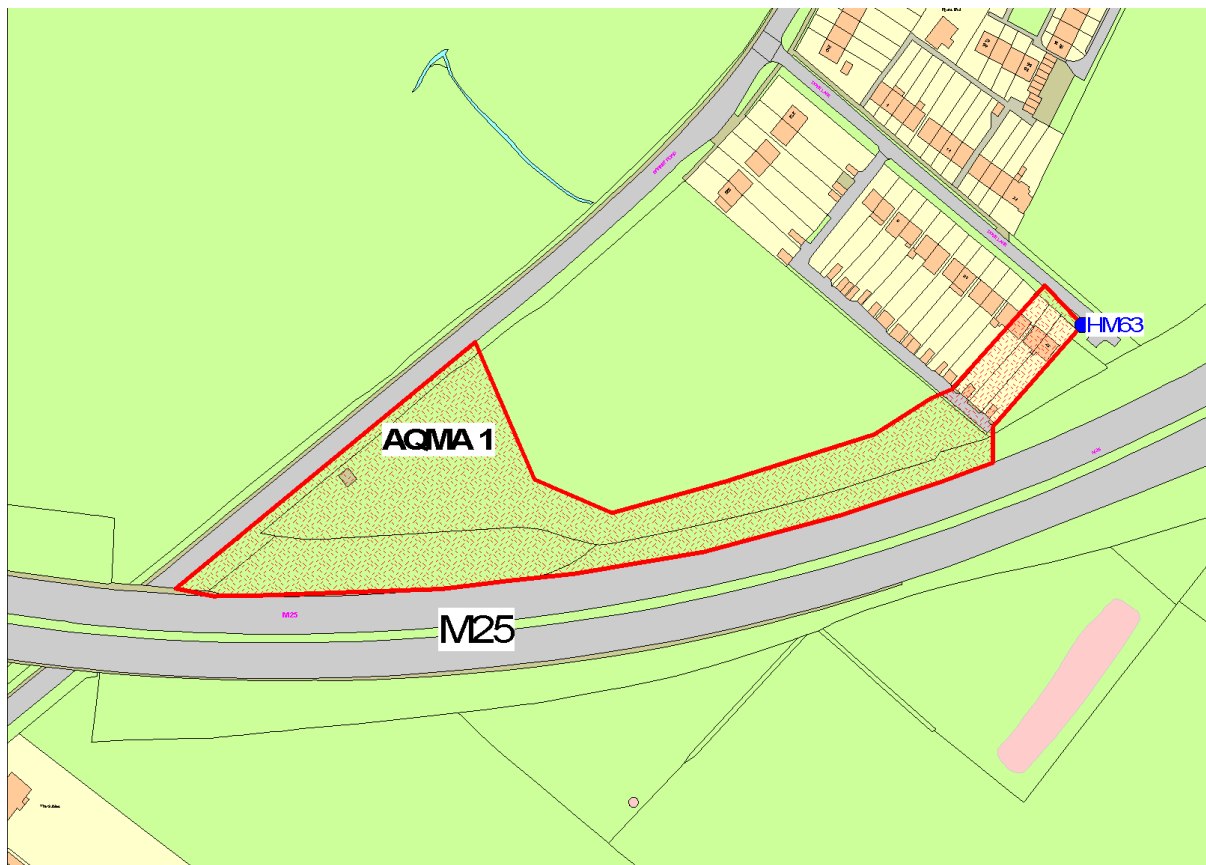


Figure 1.2 Hertsmere AQMA 2

An area comprising the domestic property known as Charleston Paddocks, St Albans Road, South Mimms, Potters Bar, near the M25.

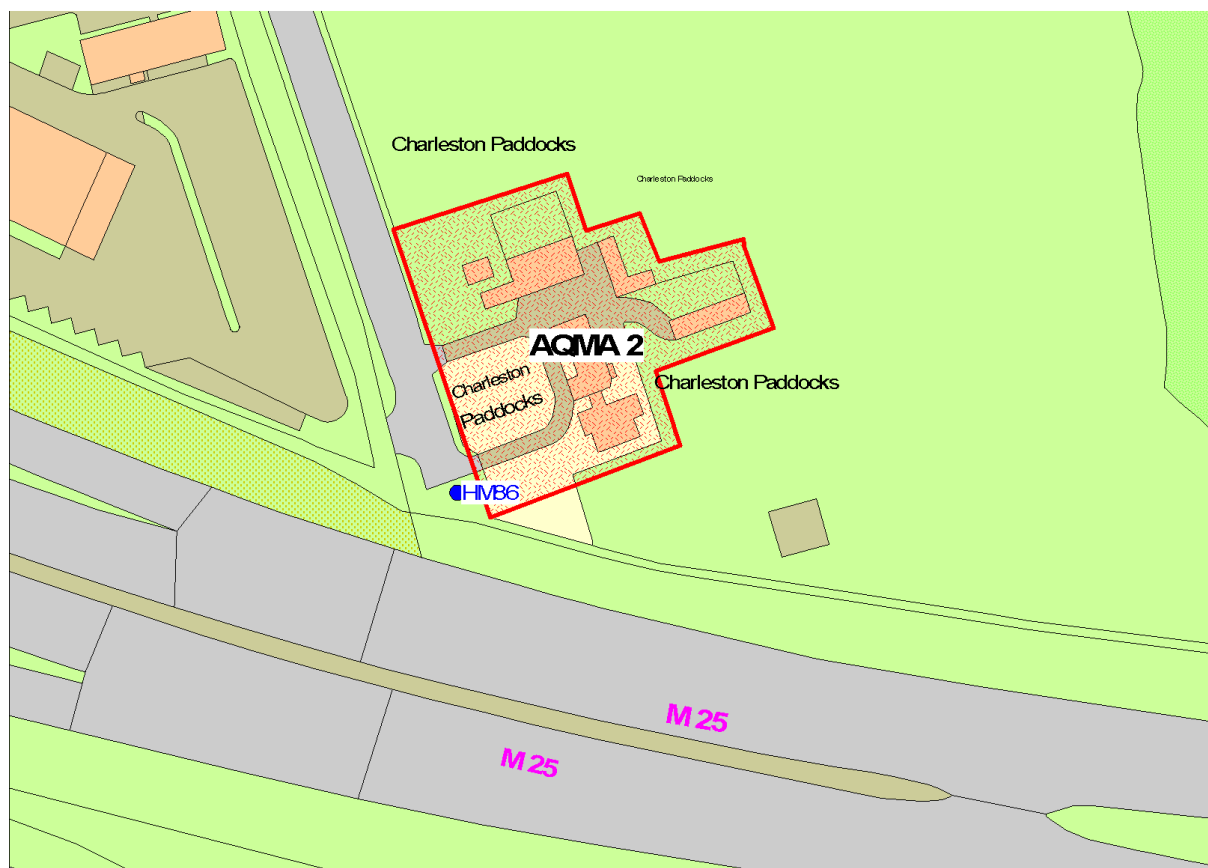


Figure 1.3 Hertsmere AQMA 3

An area comprising properties 31 – 39 Blanche Lane South Mimms near the M25.



Figure 1.4 Hertsmere AQMA 4

An area comprising the domestic properties 12 Grove Place, Hartspring Lane, Aldenham and caravans numbered 1, 2, 3, 4, 7, 8, 55, 56, 57, 58 and 60 within Winfield Caravan site, Hartspring Lane, near the M1 at Bushey.

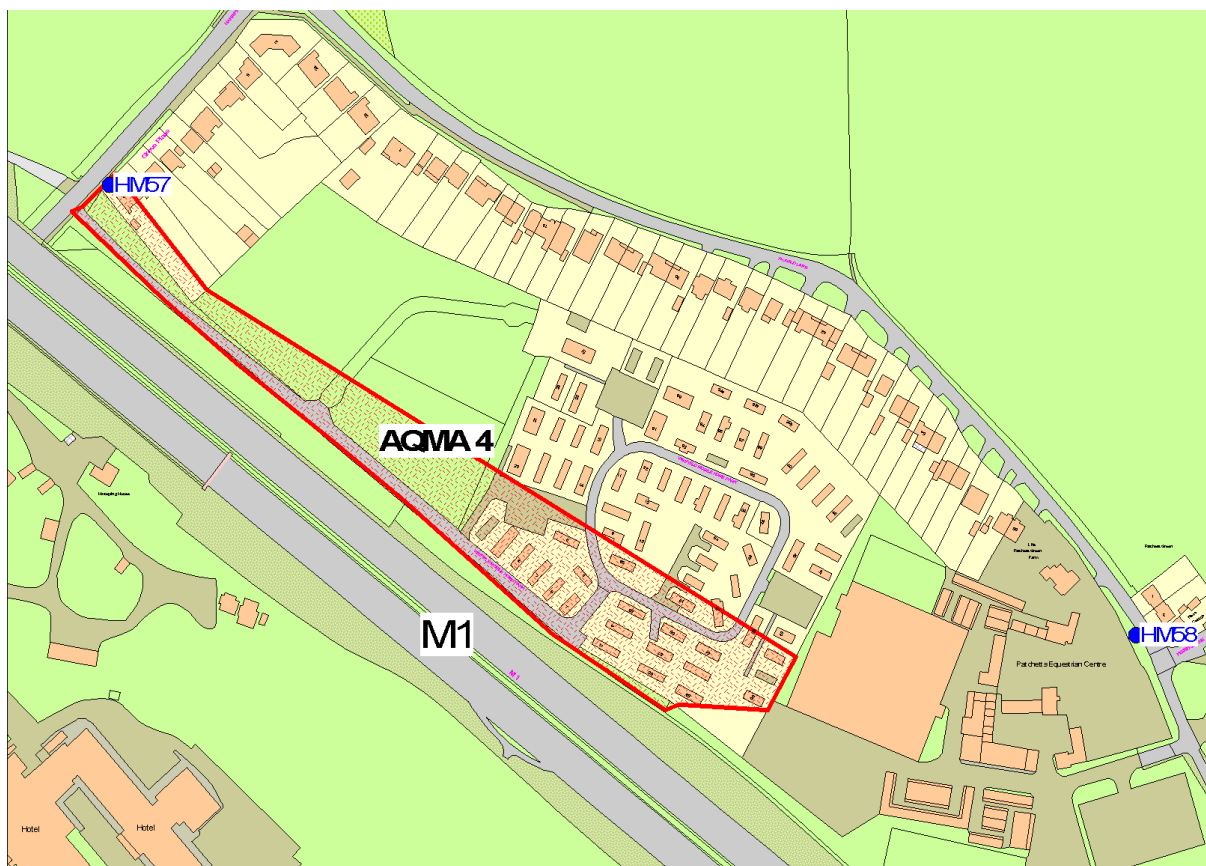


Figure 1.5 Hertsmere AQMA 5

An area comprising domestic dwellings within eight properties on the east side of the A5183 High Street, Elstree either side of the junction with the A411 Barnet Lane.

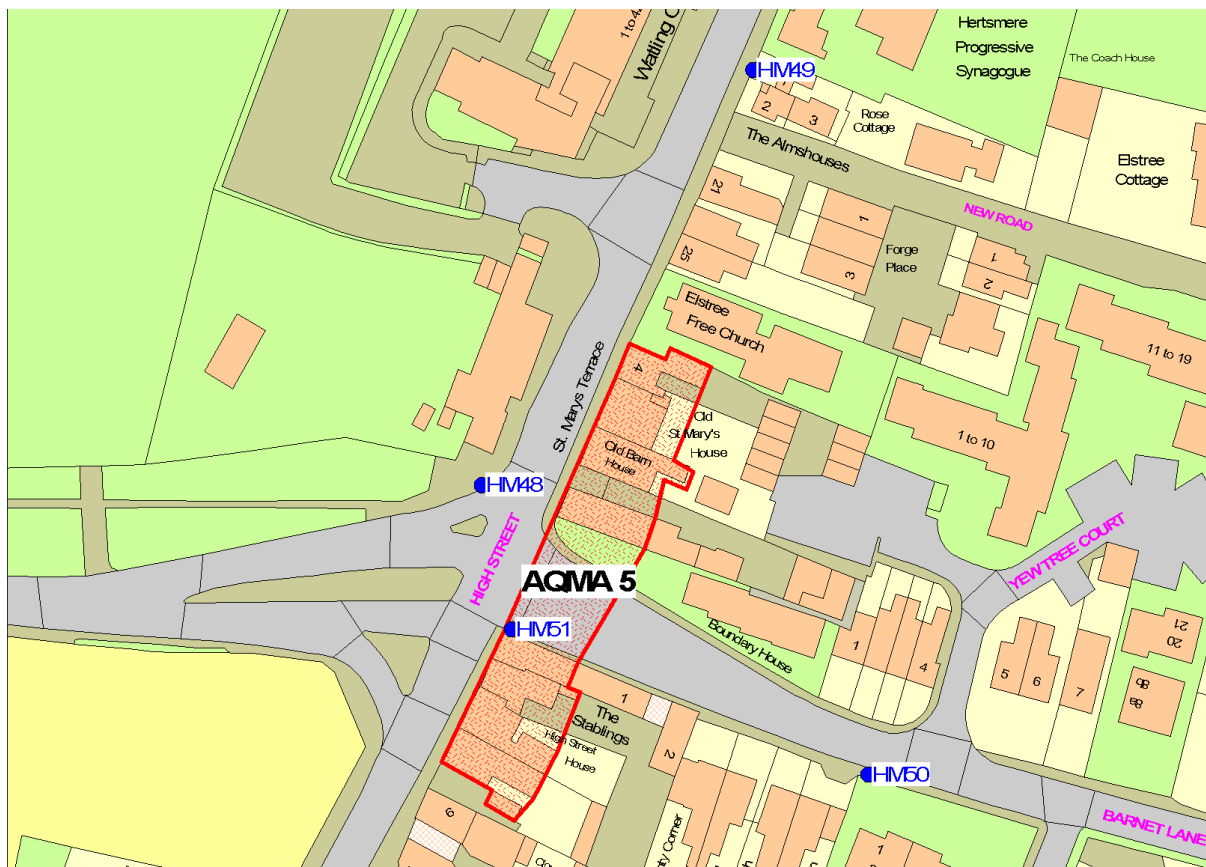


Figure 1.6 Hertsmere AQMA 6

An area comprising domestic dwellings within properties between numbers 133 to 167 High Street on the east side of the High Street opposite the bus station Potters Bar.



2 New Monitoring Data

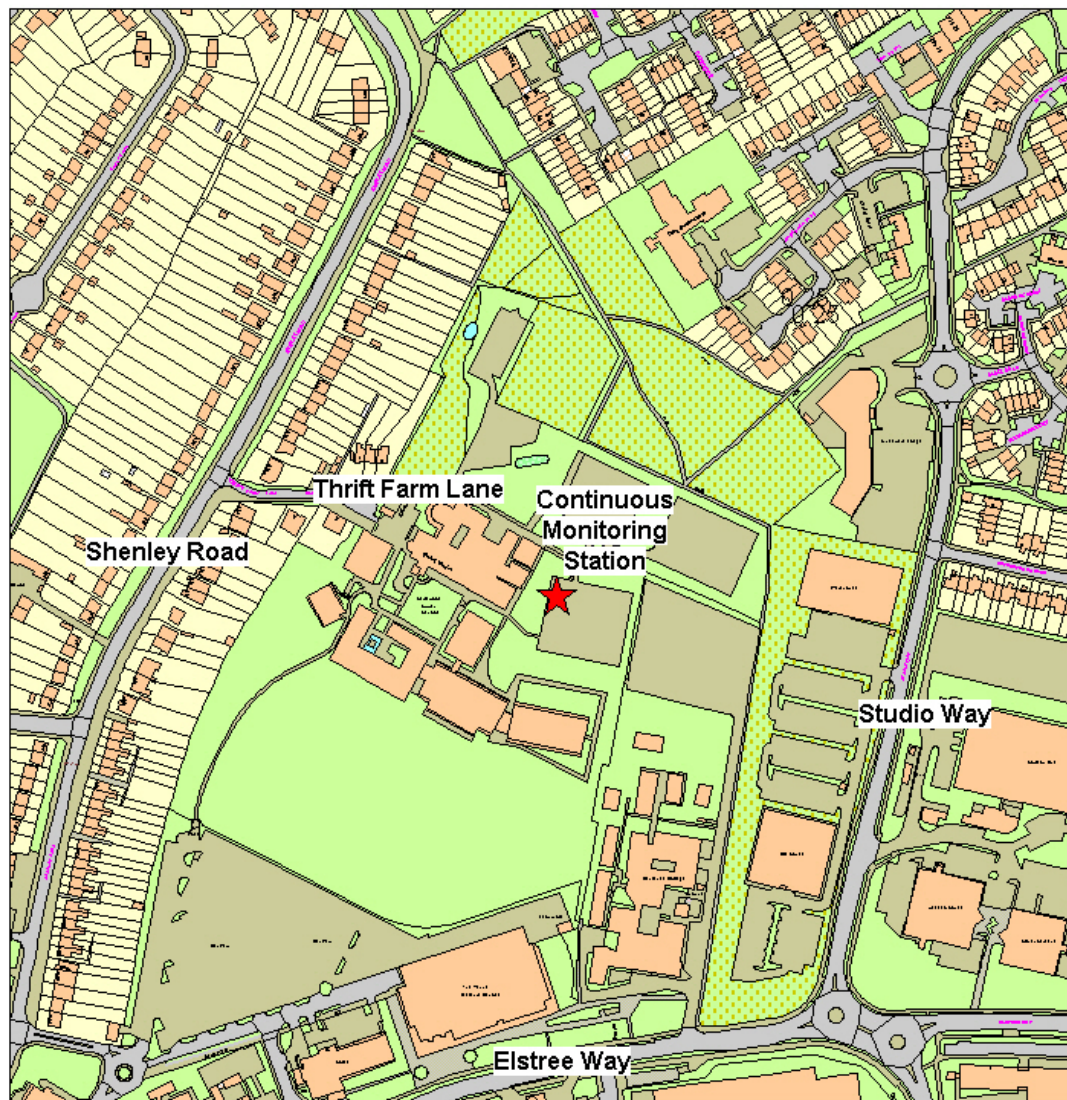
2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Hertsmere Borough Council have one urban background Continuous Monitoring Station located at Hertswood Upper School, Thrift Farm Lane, Borehamwood (Figure 2.1 and Table 2.1). There has been continuous monitoring of nitrogen dioxide, PM₁₀ and ozone concentrations at the Hertswood site since 2006. Previously, from 2001, the Continuous Monitoring Station was based at Furzehill School, Furzehill Road, Borehamwood. A NO_x chemiluminescent analyser and a TEOM PM₁₀ monitor are being used.

Hertsmere Borough Council carries out fortnightly routine calibrations, the results are sent to King's College, London. A six monthly audit is carried out by the National Physics Laboratories. The station is included in the Herts and Beds Air Pollution Monitoring Network, which is operated by the Environmental Research Group at King's College, London. All data are checked and ratified by the operator prior to release. During 2009 data capture was 98% for NO₂, 94% for PM₁₀ and 99% for ozone. Hertsmere Borough Council have the station serviced by contractors Supporting U.

Figure 2.1 Location of Borehamwood Continuous Monitoring Station



0m

250m

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	Monitoring Technique	In AQMA?	Relevant Exposure? Distance?	Distance to kerb of nearest road	Does this location represent worst-case exposure?
Hertswood School, Borehamwood	Urban background	520147E	197357N	PM ₁₀ NOx Ozone	FDMS	N	Y – 0m	N/A	N

2.1.2 Non-Automatic Monitoring

Hertsmere Borough Council undertook monitoring at 40 NO₂ diffusion tube sites for the year 2009. The diffusion tube sites for the Borough are reviewed yearly according to the Action Plan and further sites have been added on recommendation of the Updating and Screening Assessment 2009. The diffusion tubes are supplied and analysed by Gradko utilising 20% Triethanolamine (TEA) in water preparation method. Gradko participate in the Workplace Analysis Scheme for Proficiency (WASP) for NO₂ diffusion tube analysis and the Annual Field Inter-Comparison Exercise. The lab follows the procedures set out by the Harmonisation Practical Guidance.

Hertsmere Borough Council has a co-location study at the Borehamwood background site. The bias adjustment factor for 2009 had been taken from the Review and Assessment Helpdesk spreadsheet of national co-location sites for this laboratory methodology. This is calculated as 0.9 (update 31/03/10) based on 22 studies.

Figure 2.2 Map of Non-Automatic Monitoring Sites

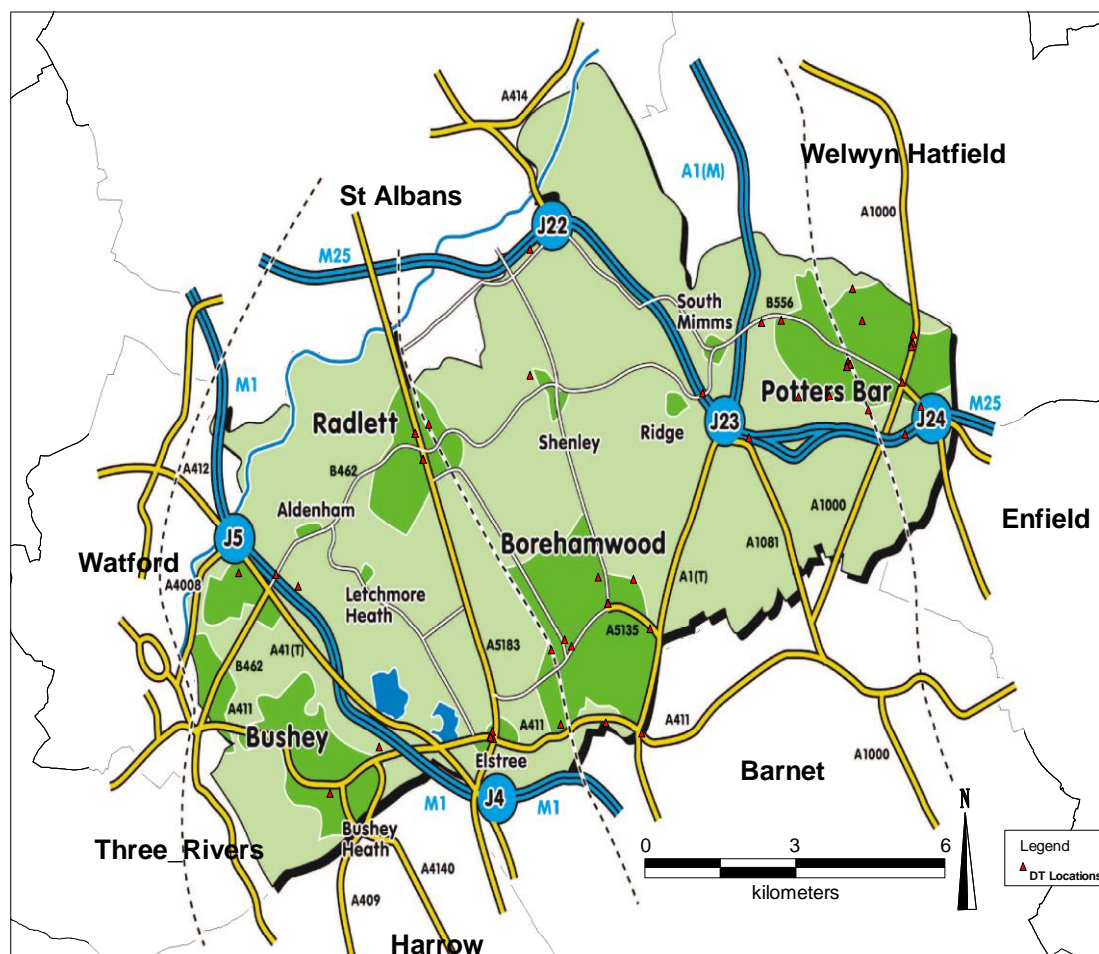


Table 2.2 Details of Non-Automatic Monitoring Sites

Site No.	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?
HM39	Shenley Road, Borehamwood	K	519406	196645	NO ₂	N	Y - 9.7m	<1m	Y
HM40	Essex Road, Borehamwood	K	519200	196800	NO ₂	N	N	<1m	Y
HM41	Boulevard, Borehamwood	K	519021	196619	NO ₂	N	Y - 6.0m	<1m	Y
HM43	Stirling Corner, Borehamwood	K	520800	195300	NO ₂	N	N	<1m	Y
HM45/46/47	AQMS, Borehamwood	B	520147	197357	NO ₂	N	Y - 17.7m	N/A	N
HM48	Elstree Crossroads 1	K	517798	195272	NO ₂	N	N	<1m	Y
HM49	Elstree Crossroads 2	K	517843	195338	NO ₂	N	Y - 4.0m	<1m	Y
HM50	Elstree Crossroads 3	K	517862	195226	NO ₂	N	Y - 6.5m	<1m	Y
HM51/52	Elstree Crossroads 4/5	K	517803	195249	NO ₂	Y	Y - 0.0m	<1m	Y
HM53	Caldecote Lane, Bushey	B	515600	195100	NO ₂	N	Y - 2.9m	N/A	Y
HM54	High Road, Bushey	K	514600	194300	NO ₂	N	Y - 15.9m	<1m	Y
HM55	Highwood Ave Garages, Bushey	B	512600	197800	NO ₂	N	Y - 36.7m	N/A	N
HM57	Hartspring Lane, Bushey	K	513516	197818	NO ₂	Y	Y - 10.0m	<1m	Y

Site No.	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?
HM58	Pegmire Lane, Patchetts Green	K	514000	197400	NO ₂	N	N	<1m	Y
HM59	Aldenham Grove, Shenley	K	516500	200200	NO ₂	N	Y - 8.0m	<1m	Y
HM60	Bell Lane, Shenley	K	518400	202800	NO ₂	N	Y - 6.0m	<1m	Y
HM61	Blanche Lane, South Mimms	K	522100	200700	NO ₂	Y	Y - 32.0m	<1m	Y
HM62	The Broadway 1, Potters Bar	K	524945	201163	NO ₂	N	Y - 7.0m	<1m	Y
HM63	Dove Lane, Potters Bar	K	526100	200000	NO ₂	Y	Y - 12.9m	<1m	Y
HM64	Bus Garage 1, Potters Bar	K	526207	201452	NO ₂	N	N	<1m	Y
HM65	Hatfield Road, Potters Bar	K	526252	201597	NO ₂	N	Y - 5.0m	<1m	Y
HM66	Bus Garage 2, Potters Bar	K	526245	201458	NO ₂	N	Y - 8.4m	<1m	Y
HM67/68	Bus Garage 3 /4, Potters Bar	K	526211	201400	NO ₂	Y	Y - 0.5m	<1m	Y
HM69	Southgate Road, Potters Bar	K	526033	200838	NO ₂	N	Y - 14.0m	<1m	Y
HM70	Park Avenue, Potters Bar	K	526400	200400	NO ₂	N	Y - 7.8m	<1m	Y
HM71/72/73	Park Road, Radlett	R	516295	200035	NO ₂	N	Y - 4.0m	1m	Y
HM74/75/76	301 Watling Street, Radlett	R	516406	199621	NO ₂	N	Y - 10.8m	3m	N
HM77/78	The Broadway, Potters Bar	K	524945	201163	NO ₂	N	Y - 7.0m	<1m	Y

Site No.	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?
HM79/80/81	11 The Broadway, Potters Bar	R	524973	201140	NO ₂	N	Y - 6.0m	4m	N
HM82/83/84	10 Baker Street, Potters Bar	R	524922	201079	NO ₂	N	Y - 9.8m	2.8m	N
HM85	Andrew Close, Shenley	B	518595	200936	NO ₂	N	Y - 4.1m	N/A	N
HM86	Charleston Paddocks, South Mimms	M/way	522997	199991	NO ₂	Y	N	48.2m	N
HM93	103 Baker Street, Potters Bar	R	524557	200638	NO ₂	N	Y - 15.7m	4m	N
HM99/100/101	Bushey High Street 1/2/3	K	513210	195257	NO ₂	N	N	<1m	N
HM102/103/104	Aldenham Road 1/2/3, Radlett	K	516350	199762	NO ₂	N	Y - 9.00m	<1m	N
HM105/106/107	Elstree Park 1/2/3, Borehamwood	R	520738	195272	NO ₂	N	Y - 25.5m	N/A	N
HM108/109/110	Hartspring Lane 1/2/3, Bushey	K	513397	197677	NO ₂	N	N	<1m	N
HM111/112/113	9 Blanche Lane 1/2/3, South Mimms	K	521987	200555	NO ₂	N	N	<1m	N
HM114/115/116	Parkside 1/2/3 Potters Bar	R	526161	201358	NO ₂	N	Y - 21.3m	4m	N
HM117/118/119	44 High Street 1/2/3, Bushey	K	513098	195287	NO ₂	N	N	<1m	N

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

The 2009 data shows the prescribed objectives for the LAQM are being met at the Borehamwood urban background continuous monitoring site.

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

Site ID	Location	Within AQMA?	Data Capture for monitoring period ^a %	Data Capture for full calendar year 2009 ^b %	Annual mean concentrations $\mu\text{g}/\text{m}^3$ (% data capture for year)		
					2007	2008	2009
HM4	Hertswood School, Borehamwood	No	98	98	22 (96)	25 (84)	27 (98)

A trends figure is not included as the site of the Automatic Monitoring Station changed location in 2006 from Furzehill School, Furzehill Road, Borehamwood to it's current location at Hertswood Upper School, Thrift Farm Lane, Borehamwood.

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

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture for full calendar year 2009 %	Number of Exceedences of hourly mean ($200 \mu\text{g}/\text{m}^3$)		
					2007	2008	2009
HM4	Hertswood School, Borehamwood	N	98	98	0	0	0

Diffusion Tube Monitoring Data

The nitrogen dioxide diffusion tube data are summarised in the table below. The full dataset (including unadjusted monthly mean values) are included in Appendix B.

At the beginning of 2009 diffusion tubes at Shenley Road (HM39), Elstree Crossroads 1 (HM48) and Bus Garage 1 (HM64) were moved to more appropriate locations, the Stirling Corner (HM43) site was closed in October 2009 and the Elstree Way BP Garage (HM87) site was closed in December 2008. In August 2009 following the

recommendations of the 2009 USA new monitoring sites were opened at Bushey High Street (HM99/100/101) and at Aldenham Road, Radlett (HM102/103/104). Similarly, in November 2009 new monitoring sites were opened at Hartspring Lane (HM108/109/110); 9 Blanche Lane (HM111/112/113); Parkside, High Street, Potters Bar (HM114/115/116) and 44 High Street Bushey (HM117/118/119).

The 2009 diffusion tube results show nineteen sites exceeding the annual mean NO₂ objective.

Of these, six are within existing AQMA's and a further two are in an area that represents an emerging AQMA (The Broadway, Potters Bar). The remaining eleven sites are roadside sites, which have been considered with respect to relevant exposure and projection from roadside to façade using the LAQM TG (09) NO₂ with distance from roads calculator to assess the risk of exceedence of the annual mean objective.

There were four sites exceeding objectives that are outside AQMA's and **without** nearby relevant exposure, these are:

- HM43 Stirling Corner Borehamwood
- HM64 Bus Garage 1 Potters Bar
- HM99/100/101 Bushey High Street 1/2/3
- HM118 44 High Street 2, Bushey

There were seven sites exceeding objectives that are outside AQMA's and **with** nearby relevant exposure:

- HM39 Shenley Road Borehamwood
- HM49 Elstree Crossroads 2
- HM50 Elstree Crossroads 3
- HM65 Hatfield Road, Potters Bar
- HM69 Southgate Road, Potters Bar
- HM71/72/73 Park Road Junction, Radlett
- HM114/115 Parkside 1/2 Potters Bar

These seven sites along with HM66, Bus Garage 2, Potters Bar are currently being assessed as part of a Detailed Assessment as recommended by the 2009 USA.

Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture for full calendar year 2009 %	Annual mean concentrations (µg/m ³) Bias Adjusted		
					2007 Bias Factor 0.89	2008 Bias Factor 0.9	2009 Bias Factor 0.9
HM39	Shenley Road, Borehamwood	No	91.6	91.6	-	-	52
HM40	Essex Road, Borehamwood	No	100	100	26	29	29
HM41	Boulevard, Borehamwood	No	100	100	36	38	36

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture for full calendar year 2009 %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$) Bias Adjusted		
					2007 Bias Factor 0.89	2008 Bias Factor 0.9	2009 Bias Factor 0.9
HM43	Stirling Corner, Borehamwood	No	100	83.3	51	56	55*
HM45/46/47	AQMS, Borehamwood	No	100	100	27	28	27
HM48	Elstree Crossroads 1	No	100	100	42	41	39
HM49	Elstree Crossroads 2	No	83	83	43	45	42
HM50	Elstree Crossroads 3	No	100	100	54	56	53
HM51/52	Elstree Crossroads 4/5	Yes	100	100	59	58	56/55
HM53	Caldecote Lane, Bushey	No	100	100	23	24	24
HM54	High Road, Bushey	No	100	100	32	33	31
HM55	Highwood Ave Garages	No	92	92	26	24	24
HM57	Hartspring Lane, Bushey	Yes	100	100	43	46	43
HM58	Pegmire Lane, Patchetts Green	No	100	100	34	32	31
HM59	Aldenham Grove, Shenley	No	100	100	22	25	21
HM60	Bell Lane, Shenley	No	100	100	37	35	32
HM61	Blanche Lane, South Mimms	Yes	100	100	53	54	47
HM63	Dove Lane, Potters Bar	Yes	100	100	42	45	43
HM64	Bus Garage 1, Potters Bar	No	100	100	62	62	50
HM65	Hatfield Road, Potters Bar	No	100	100	52	48	47
HM66	Bus Garage 2, Potters Bar	No	92	92	45	45	39
HM67/68	Bus Garage 3/4, Potters Bar	Yes	100	100	43	43	40/38
HM69	Southgate Road, Potters Bar	No	100	100	59	57	47

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture for full calendar year 2009 %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$) Bias Adjusted		
					2007 Bias Factor 0.89	2008 Bias Factor 0.9	2009 Bias Factor 0.9
HM70	Park Avenue, Potters Bar	No	92	92	36	30	36
HM71/72/73	Park Road, Radlett	No	92	92	47	50	49/45/46
HM74/75/76	301 Watling Street, Radlett	No	92/92/83	92/92/83	37	38	36/38/38
HM62/77/78	The Broadway, Potters Bar	Yes	100/100/92	100/100/92	48	48	42/45/44
HM79/80/81	11 The Broadway, Potters Bar	No	100/100/83	100/100/83	-	45	40/ 43 /40
HM82/83/84	10 Baker Street, Potters Bar	No	100	100	40	38	40/39/35
HM85	Andrew Close, Shenley	No	100	100	-	25	25
HM86	Charleston Paddocks, South Mimms	No	100	100	-	55	42
HM93	103 Baker Street, Potters Bar	No	100	42	-	34	36*
HM99/100/101	Bushey High Street 1/2/3	No	60/40/20	25/17/8	-	-	48/45/47*
HM102/103/104	Aldenham Rd 1/2/3, Radlett	No	80	33	-	-	37/37/35*
HM105/106/107	Elstree Park 1/2/3, Borehamwood	No	100	17	-	-	31/32/31*
HM108/109/110	Hartspring Lane 1/2/3, Bushey	No	100	17	-	-	30/33/34*
HM 111/112/113	9 Blanche Lane 1/2/3, South Mimms	No	100	17	-	-	30/27/31*
HM 114/115/116	Parkside 1/2/3 Potters Bar	No	100	17	-	-	41/43/39*
HM117/118/119	44 High Street 1/2/3, Bushey	No	50/100/50	8/17/8	-	-	39/ 44 /25*

Means were "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.

* denotes annualised means

Where there have been four or five years of valid data trend graphs have been included in this report.

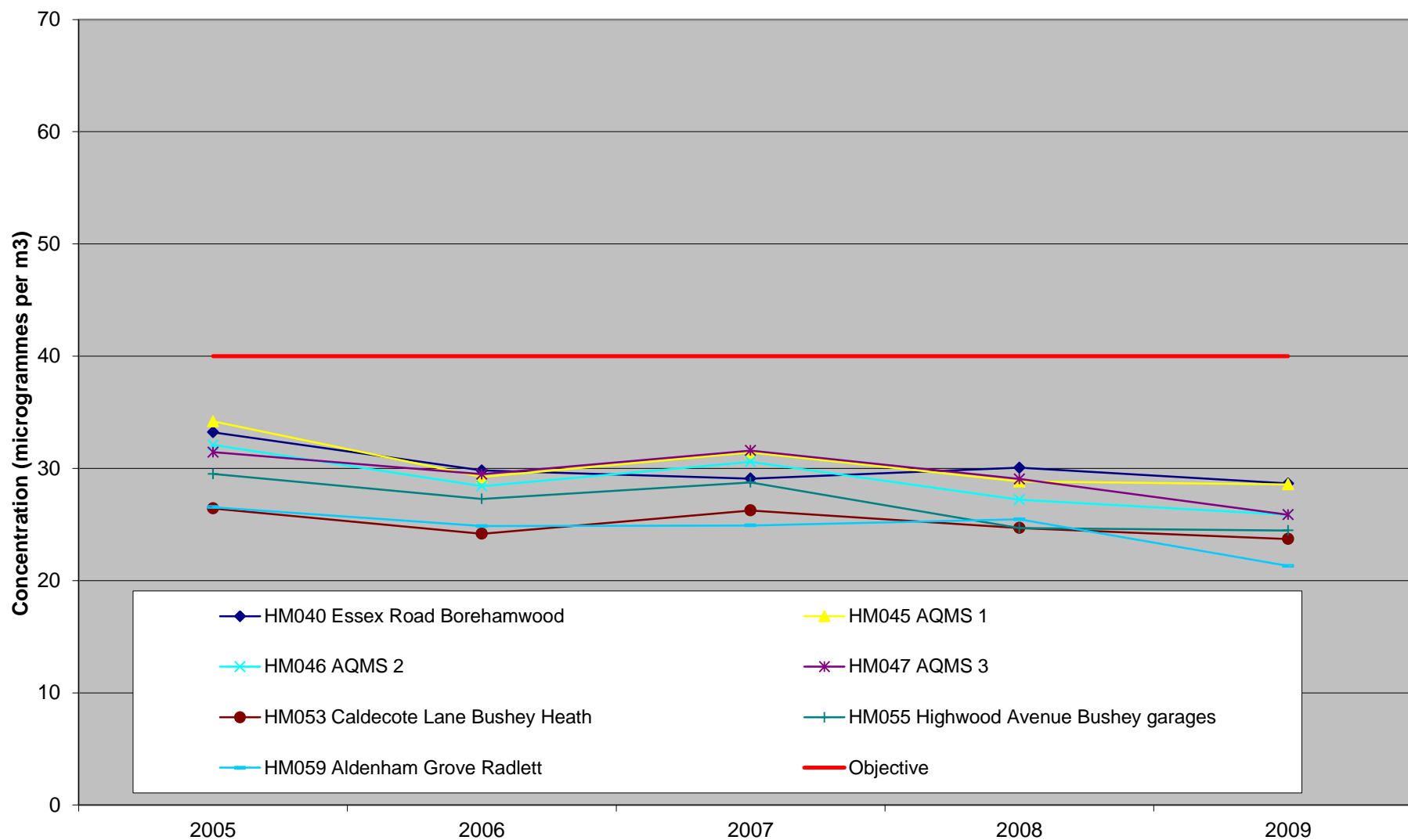
Figure 2.4a Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Background Diffusion Tube Monitoring Sites.

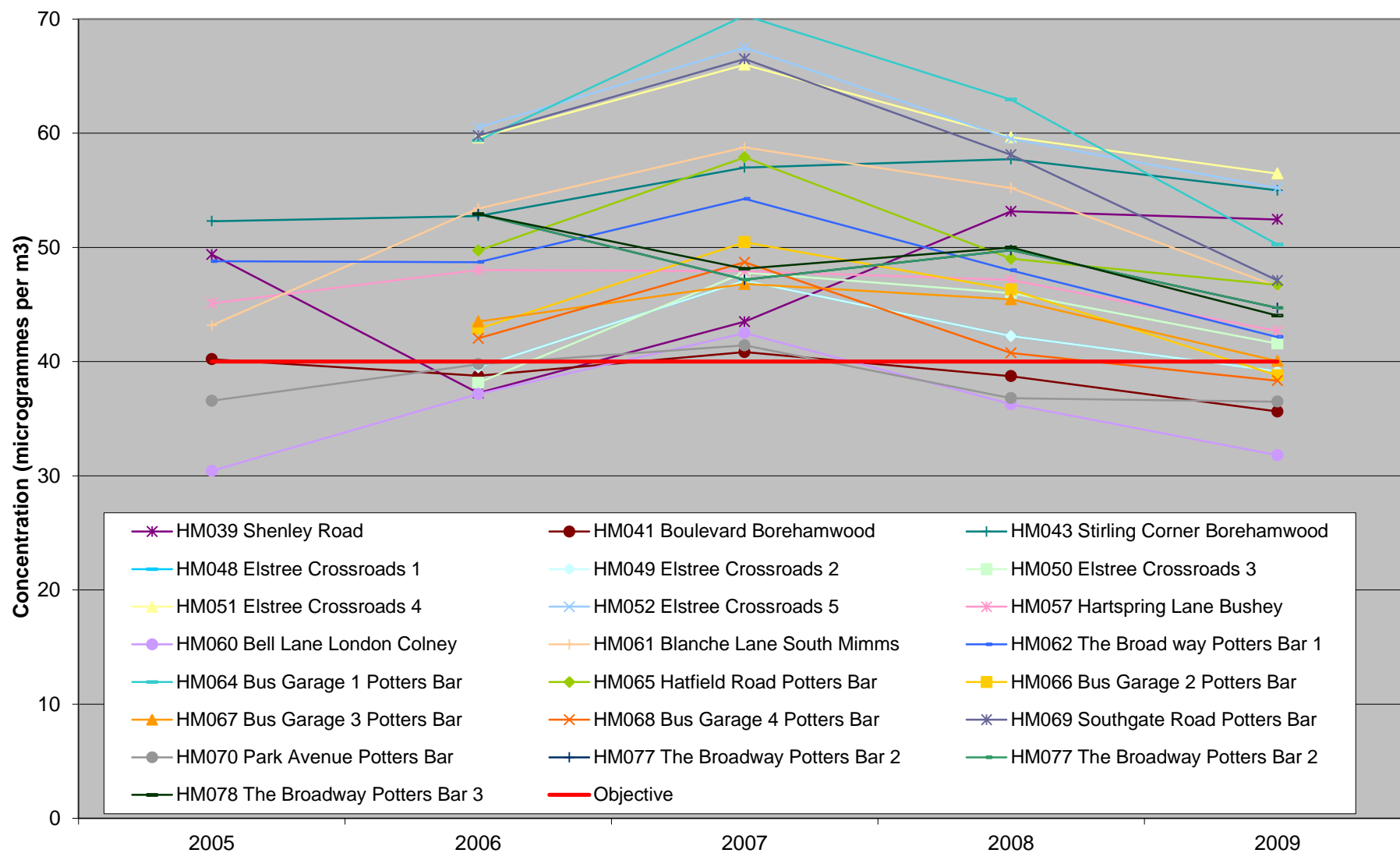
Figure 2.4b Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Kerbside Diffusion Tube Monitoring Sites

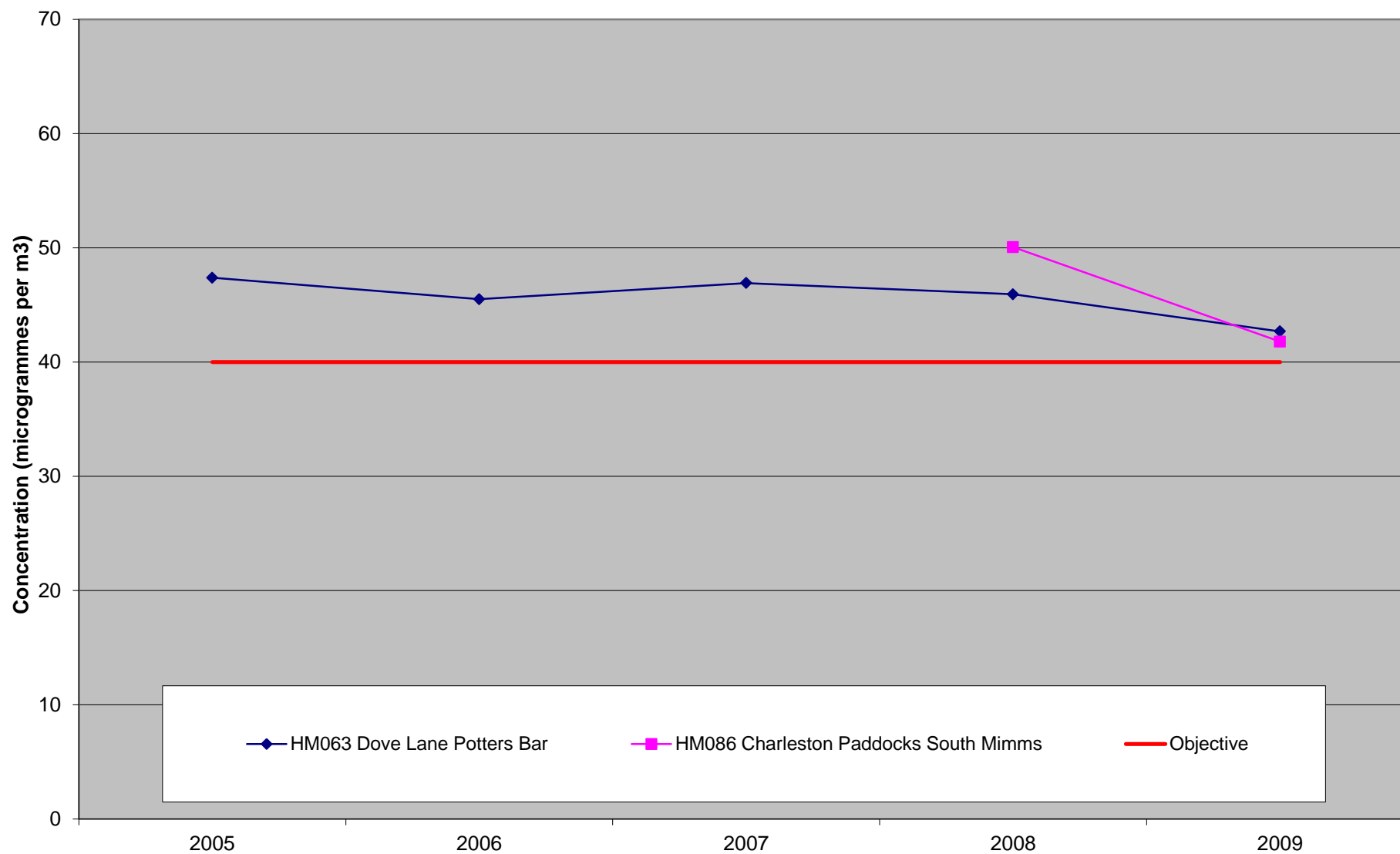
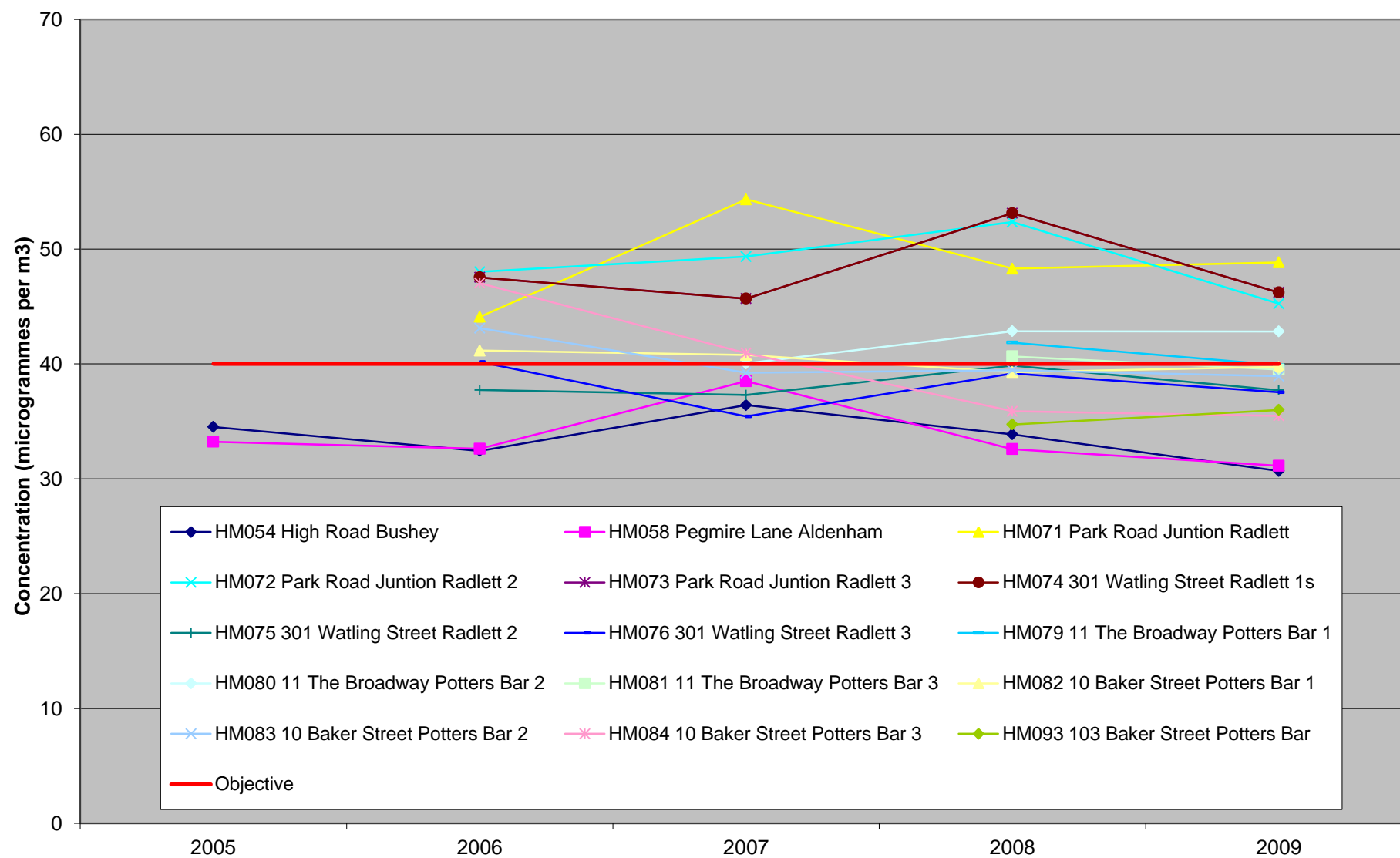
Figure 2.4c Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Motorway Diffusion Tube Monitoring Sites

Figure 2.4d Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Roadside Diffusion Tube Monitoring Sites

2.2.2 PM₁₀

PM₁₀ is monitored at the Automatic Monitoring Station at Hertswood School, Borehamwood. The 2009 results in tables 2.5a and 2.5b show that the PM₁₀ objectives are continuing to be met at this background site. Data for the years has been fully ratified. Data for previous years is shown for comparison purposes.

Table 2.5a Results of PM₁₀ Automatic Monitoring: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture for full calendar year 2009 %	Annual mean concentrations (µg/m ³)		
					2007	2008	2009
HM4	Hertswood School, Borehamwood	No	94	94	18 (87% data capture)	17 (82% data capture)	18

Table 2.5b Results of PM₁₀ Automatic Monitoring: Comparison with 24-hour Mean Objective (50 µg/m³)

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture 2009 %	Number of Exceedences of daily mean objective (90 th percentile of daily mean PM ₁₀ concentration if data capture <90%)		
					2007	2008	2009
HM4	Hertswood School, Background	No	94	94	8 (34.6)	4 (30.3)	3

2.2.3 Sulphur Dioxide

Hertsmere Borough Council does not monitor sulphur dioxide.

2.2.4 Benzene

Hertsmere Borough Council does not monitor benzene.

2.2.5 Other pollutants monitored

Continuous monitoring of ozone is under taken at Hertswood Upper School site. AQS objectives for ozone were exceeded in 2009. There were 16 days where maximum rolling 8hr mean was greater than 100ug/m³.

Odour and dust complaints are handled by the Environmental Health Pollution Team as reactive complaints.

2.2.6 Summary of Compliance with AQS Objectives

Hertsmere Borough Council has measured concentrations of NO₂ above the annual mean objective at relevant locations and **will need to proceed to a Detailed Assessment**, for:

1. Elstree Crossroads, Elstree (Barnet Lane and High Street)
2. Potters Bar - junction of Barnet Road/ Southgate Road/High Street
the High Street near the bus station
junction of the High Street and The Causeway
3. Radlett - junctions of Watling Street and Aldenham Road
junction of Watling Street and Park Road
4. M1 Bushey, at Hartspring Lane

The Detailed Assessment is currently being undertaken.

3 New Local Developments

3.1 Road Traffic Sources

Future changes in traffic flows are expected from proposed development in the area including the widening of the M25. However, The air quality impact assessment for the M25 widening predicts no significant impact on air quality within the Borough.

Hertsmere Borough Council confirm that there are no new or newly identified road traffic sources which may have an impact on air quality within the Local Authority Area since the 2009 USA.

3.2 Other Transport Sources

Hertsmere Borough Council confirm that there are no new or newly identified other transport sources which may have an impact on air quality within the Local Authority Area since the 2009 USA.

3.3 Industrial Sources

Hertsmere Borough Council confirm that there are no new or newly identified industrial sources which may have an impact on air quality within the Local Authority Area since the 2009 USA.

3.4 Commercial and Domestic Sources

Hertsmere Borough Council confirm that there are no new or newly identified commercial or domestic sources which may have an impact on air quality within the Local Authority Area since the 2009 USA.

3.5 New Developments with Fugitive or Uncontrolled Sources

Hertsmere Borough Council confirms that there are no new or newly identified local

developments with fugitive sources that may have an impact on air quality within the Local Authority Area since the 2009 USA.

4 Local / Regional Air Quality Strategy

Hertsmere Borough Council does not have a Local / Regional Air Quality Strategy.

5 Planning Applications

There has been one major planning application approved in the Hertsmere area between April 2009 and March 2010. This is detailed below:

Location:	Oaklands College, Borehamwood Campus, Elstree Way, Borehamwood, WD6 1JZ
Proposal:	125 dwellings comprising 9 x 1 bed and 91 x 2 bed flats in 3 blocks and 16 x 3 bed and 9 x 4 bed townhouses in 6 blocks; 1500m ² 3/4 storey college building; associated open space, access, car parking and landscaping; following demolition of all existing buildings.

This development was allowed by appeal in February 2010. The development site is just off the main road, Elstree Way, leading into Borehamwood from the A1(M). The air quality in the area is not presently monitored. Elstree Way is prone to congestion at rush hour. The College site had a large number of parking spaces and it is expected the same number of spaces or a fewer number will be allocated to dwellings within the development. There is also a good public transport system in the area.

6 Local Transport Plans and Strategies

Hertfordshire County Council Local Transport Plan

Hertfordshire County Council has developed a plan to improve transport across the county. Their current plan is Local Transport Plan 2 (LTP2) and they are undergoing consultation for their future plan, Local Transport Plan 3 (LTP3).

Hertsmere Borough Council is committed to supporting Hertfordshire County Council in developing and delivering the LTP3. In terms of air quality the LTP3 proposes Challenge 3.2 to “Improve the health of individuals by encouraging and enabling more physically active travel and access for recreational areas and through improving areas of poor air quality which can affect health.”

The progress report for the LTP2 reports on the M25 widening. Work on the sections of the M25 widening in the Hertsmere area are due to start in late 2010 and early 2011. It is believed that a fourth lane on the M25 should prevent congestion and help to improve air quality in Hertsmere especially in AQMA1 Dove Lane, Potters Bar; AQMA2 Charleston Paddocks; and AQMA3 Blanche Lane, South Mimms.

Hertsmere Urban Transport Plan

This plan was published in 2007 and is proposed for renewal in 2012.

7 Climate Change Strategies

Hertsmere Borough Council is currently compiling a Climate Change Strategy.

8 Implementation of Action Plans

Hertsmere's Air Quality Action Plan from 2003 was reviewed in 2009 and is not included in this Progress Report, as it will be reviewed at a later date when a further AQMA is declared.

9 Conclusions and Proposed Actions

9.1 Conclusions from New Monitoring Data

The Progress Report shows exceedences of the NO₂ objective continue to occur within Hertsmere's six AQMA's and the emerging AQMA at The Broadway, Potters Bar. Similarly exceedences have continued to occur at seven sites with nearby relevant exposure outside of AQMA's. These sites are being currently being considered as part of a Detailed Assessment.

Following the conclusions of the 2009 USA a number of new monitoring sites were opened in late 2009. Although these sites are showing initial exceedences the data capture period is not yet large enough to confirm these. Modelling in the 2009 USA suggested that figures for High Street, Bushey will not exceed 37ugm³ – however, annualised mean results from the two new monitoring sites are exceeding this. Similarly, new monitoring at Aldenham Road also indicated concentrations above the annual mean objective for NO₂.

The Elstree Crossroads junction has already been declared as an AQMA. However, further monitoring outside the AQMA indicates that the AQMA may need to be extended to incorporate a larger area of relevant exposure. This is being considered as part of the current Detailed Assessment.

9.2 Conclusions relating to New Local Developments

At present the Oakland College development has been approved. There is no monitoring taking place at the site at the present time, as there has never been the relevant exposure. It will be relevant to start some monitoring of NO₂ when the site is occupied. This will be considered in the next Progress Report in 2011 if the site is occupied.

9.3 Proposed Actions

Proposed actions arising from the Progress Report are as follows:

- Continue additional monitoring of NO₂ at relevant receptor locations at High Street Bushey and Watling Street/Aldenham Road junction Radlett

Complete the Detailed Assessment of annual mean NO₂ at the following locations:

- Elstree Crossroads, Elstree (Barnet Lane and High Street) possible extension of AQMA.
- Potters Bar, including the junction of Barnet Road /Southgate Road /High Street and the High Street near the bus station and the junction of the High Street with The Causeway.

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- Radlett, including the junctions of Watling Street/Aldenham Road and Watling Street/Park Road.
- M1 Bushey at Hartspring Lane

Proceed to a Progress Report in April 2011 to review 2010 monitoring data.

10 References

- Local Air Quality Management Technical Guidance LAQM.TG(09) February 2009. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and the Department of the Environment Northern Ireland
- Local Air Quality Management Policy Guidance LAQM.PG(09) February 2009. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and the Department of Environment Northern Ireland
- Hertsmere Borough Council Action Plan 2009
- Hertsmere Borough Council Updating and Screening Assessment 2009
- Hertsmere Borough Council 2008 Local Air Quality Management Annual Progress Report
- Hertsmere Borough Council 2007 Local Air Quality Management Annual Progress Report

Appendices

Appendix A: QA/QC Data

Appendix B: Diffusion Tube Data 2009

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

Hertsmere Borough Council uses Gradko for the supply and analysis of NO₂ diffusion tubes. The tube preparation used is the utilising 20% Triethanolamine (TEA) in water preparation method.

The National bias adjustment factor for 2009 taken from the Review and Assessment Helpdesk spreadsheet of national co-location sites for this laboratory methodology is 0.9 (updated 31/03/10 based on 22 studies).

Factor from Local Co-location Studies

Hertsmere Borough Council has a co-location study at the Borehamwood background site. In 2009 the data capture was 98% for NO₂. Data from this site is submitted to the R&A Helpdesk Database.

Discussion of Choice of Factor to Use

Hertsmere Borough Council uses the national bias adjustment factor. Although a local bias adjustment factor could be calculated in this instance it is not thought to be any more representative than the national bias adjustment factor, especially as in 2007 and 2008 there was less than 90% data capture.

PM Monitoring Adjustment

Results from the TEOM PM10 analyser are converted to reference equivalent using the volatile correction method.

Short-term to Long-term Data adjustment

Six long term background sites were selected to calculate ratios to adjust short term means to annualised means. Details of calculations are shown below.

Site	Annual Mean	Period Mean Aug - Dec	Ratio
HM040	31.833	31.000	1.027
HM045	31.750	31.600	1.005
HM053	26.333	26.800	0.983
HM085	28.000	26.400	1.061
HM059	23.667	24.400	0.970
HM055	24.917	27.000	0.923
		Mean Ratio	0.995

Site	Annual Mean	Period Mean Nov - Dec	Ratio
HM040	31.833	37.000	0.860
HM045	31.750	38.000	0.836
HM053	26.333	31.000	0.849
HM085	28.000	30.000	0.933
HM059	23.667	29.000	0.816
HM055	24.917	29.000	0.859
		Mean Ratio	0.859

Site	Annual Mean	Period Mean Jan - Oct	Ratio
HM040	31.833	30.800	1.034
HM045	31.750	30.500	1.041
HM053	26.333	25.400	1.037
HM085	28.000	27.600	1.014
HM059	23.667	22.600	1.047
HM055	24.917	24.100	1.034
		Mean Ratio	1.034

QA/QC of Automatic Monitoring

Hertsmere Borough Council carries out fortnightly routine calibrations, the results are sent to King's College, London. A six monthly audit is carried out by the National Physics Laboratories. Hertsmere Borough Council have the station serviced by contractors Supporting U.

QA/QC of diffusion tube monitoring

Gradko participate in the Workplace Analysis Scheme for Proficiency (WASP) for NO₂ diffusion tube analysis and the Annual Field Inter-Comparison Exercise. The lab follows the procedures set out by the Harmonisation Practical Guidance.

The precision of diffusion tubes was calculated using data from tubes HM045/HM046/HM047, which are triplicate tubes. The precision was found to be 'good' as the coefficient of variation (CV) of the tubes for eight or more periods was less than 20%, and the average CV of all monitoring periods was less than 10% (8.6%).

Appendix B: Diffusion Tube Data 2009

Means are not annualised or bias adjusted

Code	Site	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Mean
HM039	Shenley Road	78	72	65	53		42	28	53	51	67	65	67	58
HM040	Essex Road Borehamwood	58	43	32	36	21	24	13	24	21	36	35	39	32
HM041	Boulevard Borehamwood	64	38	43	43	35	37	17	32	30	52	38	46	40
HM043	Stirling Corner Borehamwood	98	50	51	72	67	46	35	57	47	69			59
HM045	AQMS 1	62	36	32	34	24	22	13	21	20	41	38	38	32
HM046	AQMS 2	63	26	26	30	21	22	12	23	18	36	33	35	29
HM047	AQMS 3	58	24	29	30	19	24	14	23	20	37	35	32	29
HM048	Elstree Crossroads 1	70	39	36	52	35	38	11	40	39	59	53	50	44
HM049	Elstree Crossroads 2	75		8	57	42	51	28		42	58	46	55	46
HM050	Elstree Crossroads 3	88	72	63	60	56	59	25	26	57	72	62	63	59
HM051	Elstree Crossroads 4	95	63	56	90	58	64	30	34	50	81	65	67	63
HM052	Elstree Crossroads 5	100	58	57	69	63	57	42	32	54	78	66	60	61
HM053	Caldecote Lane Bushey Heath	46	26	25	30	18	26	11	17	21	34	30	32	26
HM054	High Road Bushey	56	41	37	34	24	36	16	22	29	42	34	38	34
HM055	Highwood Avenue Bushey garages	45	29	19	32		28	11	19	25	33	24	34	27
HM057	Hartspring Lane Aldenham Bushey	76	42	52	52	46	50	26	24	44	60	47	50	47
HM058	Pegmire Lane Aldenham	57	32	35	29	25	30	17	29	28	38	56	39	35
HM059	Aldenham Grove Radlett	44	19	30	22	17	20	10	18	20	26	30	28	24
HM060	Bell Lane London Colney	49	49	44	34	30	35	16	29	36	35	29	38	35
HM061	Blanche Lane South Mimms	74	53	61	59	58	45	48	28	42	48	54	51	52
HM062	The Broad way Potters Bar 1	79	48	48	48	45	46	22	22	48	54	46	56	47
HM063	Dove Lane Potters Bar	76	23	50	51	51	42	44	48	31	55	51	47	47
HM064	Bus Garage 1 Potters Bar	96	53	68	53	42	51	34	25	62	58	72	56	56
HM065	Hatfield Road Potters Bar	74	64	52	65	55	44	29	22	49	65	45	59	52
HM066	Bus Garage 2 Potters Bar	60	45	50	39		36	18	36	42	50	46	52	43

Code	Site	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Mean
HM067	Bus Garage 3 Potters Bar	77	52	43	39	40	38	19	44	44	40	46	52	45
HM068	Bus Garage 4 Potters Bar	70	42	41	38	37	37	27	35	43	49	42	50	43
HM069	Southgate Road Potters Bar	82	48	61	53	54	48	30	26	57	60	47	62	52
HM070	Park Avenue Potters Bar	70	52	46		32	30	25	31	25	42	46	47	41
HM071	Park Road junction Radlett	91	55	61	51	43	55	27		47	59	51	57	54
HM072	Park Road junction Radlett 2	78	43	54	57	45	45	27		47	58	48	51	50
HM073	Park Road junctions Radlett 3	95	42	61	51	49	50	22		44	55	44	52	51
HM074	301 Watling Street Radlett 1	68	34	42	50	36		14	30	40	42	38	45	40
HM075	301 Watling Street Radlett 2	63	46	39	47	33	43	19		39	48	38	46	42
HM076	301 Watling Street Radlett 3	58	46	41	42	40	38	14			50	42	46	42
HM077	The Broadway Potters Bar 2	79	52	53	66	41	42	42	20	51	51	46	53	50
HM078	The Broadway Potters Bar 3	76		57	50	42	46	28	42	47	50	44	56	49
HM079	11 The Broadway Potters Bar 1	68	49	51	46	38	51	17	29	33	47	62	41	44
HM080	11 The Broadway Potters Bar 2	75	54	48	55	44	43	26	31	34	49	71	41	48
HM081	11 The Broadway Potters Bar 3	62	43		46	41	39	13		41	50	61	43	44
HM082	10 Baker Street Potters Bar 1	62	48	45	49	34	41	30	35	39	46	50	51	44
HM083	10 Baker Street Potters Bar 2	63	42	49	41	32	37	30	35	43	47	53	47	43
HM084	10 Baker Street Potters Bar 3	61	30	40	43	31	36	22	35	44	39	43	49	39
HM085	Andrew Close Shenley	51	34	33	28	19	24	15	19	23	30	29	31	28
HM086	Charleston Paddocks South Mimms	79	45	43	55	59	44	37	24	46	29	40	56	46
HM093	103 Baker Street Potters Bar								34	24	40	60	42	40

Code	Site	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Mean
HM099	Bushey High Street 1									48		47	65	53
HM100	Bushey High Street 3									45		56		51
HM101	Bushey High Street 2											52		52
HM102	Aldenham Road 1 Radlett									36	44	42	45	42
HM103	Aldenham Road 2 Radlett									38	35	47	47	42
HM104	Aldenham Road 3 Radlett									38	46	27	45	39
HM105	Elstree Park Borehamwood 1											37	43	40
HM106	Elstree Park Borehamwood 2											38	44	41
HM107	Elstree Park Borehamwood 3											41	39	40
HM108	Hartspring Lane PH 1											33	44	39
HM109	Hartspring Lane PH 2											31	55	43
HM110	Hartspring Lane PH 3											30	58	44
HM111	9 Blanche Lane 1											54	35	45
HM112	9 Blanche Lane 2											51	20	36
HM113	9 Blanche Lane 3											44	36	40
HM114	Parkside High Street 1											56	50	53
HM115	Parkside High Street 2											65	47	56
HM116	Parkside High Street 3											52	49	51
HM117	44 High Street Bushey 4											50		50
HM118	44 High Street Bushey 5											55	58	57
HM119	44 High Street Bushey 6											32		32