2011 Air Quality Progress Report for Hertsmere Borough Council

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

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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.

Each Local Authority must produce a Progress Report by the end of April 2011 covering monitoring data for the 2010 calendar year. 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 PM 10 monitoring results for Hertsmere Borough Council and further information that might have an affect on local air quality.

The Progress Report for 2010 concludes that the air quality objectives for benzene, 1,3-butadiene, carbon monoxide, lead, particulates (PM 10) and sulphur dioxide will be met. 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 (NO_2) 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 NO_2 objective were measured at nine monitoring sites, where there is nearby relevant exposure. All but one of these sites apart from HM39 (Shenley Road, Borehamwood) underwent Detailed Assessment in 2010. The Progress Report has not identified any further areas that need to undergo Detailed Assessment. HM39 Shenley Road has been highlighted as a site requiring further consideration as part of the 2012 USA and therefore a site that may need to undergo Detailed Assessment in future.

Actions of the Progress Report include reviewing the necessity of declaring an AQMA at the Broadway, Potters Bar and implementing the recommendations of the 2010 Detailed Assessment.

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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 100,000 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 $\mu g/m^3$ (for carbon monoxide the units used are milligrammes 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 $\mu g/m^3$	Running annual mean	31.12.2003
	5.00 $\mu g/m^3$	Annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu g/m^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Maximum daily running 8-hour mean	31.12.2003
Lead	0.5 $\mu g/m^3$	Annual mean	31.12.2004
	0.25 $\mu g/m^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu g/m^3$	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 $\mu g/m^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu g/m^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu g/m^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu g/m^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu g/m^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

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 N02. 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 NO2 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.
2010	4	2009 Progress Report	To be submitted.
2011	4	2010 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 (NO_2) 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. Actions arising from the 2009 USA were implemented during 2009 and are discussed in the 2010 Progress Report.

The 2010 Progress Report then generated the following actions;

- Continue additional monitoring of NO_2 at relevant receptor locations at High Street Bushey and Watling Street/Aldenham Road junction Radlett
- Implement the conclusions of the 2010 Detailed Assessment of annual mean NO_2 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.
    - Radlett, including the junctions of Watling Street/ Aldenham Road and Watling Street/ Park Road.

- M1 Bushey at Hartspring Lane

The 2010 Detailed Assessment conclusions and recommendations were:

- The AQMA at High Street/Potters Bar Bus Station should be amended as exceedences of the annual mean NO_2 objective are only being found adjacent to the existing AQMA and not within in. Further monitoring is needed at 169-183 High Street, Potters Bar. It was also recommended that investigation was undertaken to find out whether there were any relevant receptors at the Hall and Police Station near the High Street/Hatfield Road Junction.
- Monitoring at the High Street/Southgate Road junction, Potters Bar should be continued.
- The AQMA at Elstree Crossroads should be expanded as the modelling predicted widespread exceedances of the annual mean NO_2 objective outside the AQMA. Monitoring at 1-3 Elstree Hill North should be undertaken to assess compliance with annual mean objective.
- An AQMA should be declared at Watling Street/Park Road junction, Radlett and along Watling Street towards Aldenham Road junction because of the exceedences predicted.
- The AQMA at Hartspring Lane should be expanded as the modelling predicted exceedances of the annual mean NO_2 objective.

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.

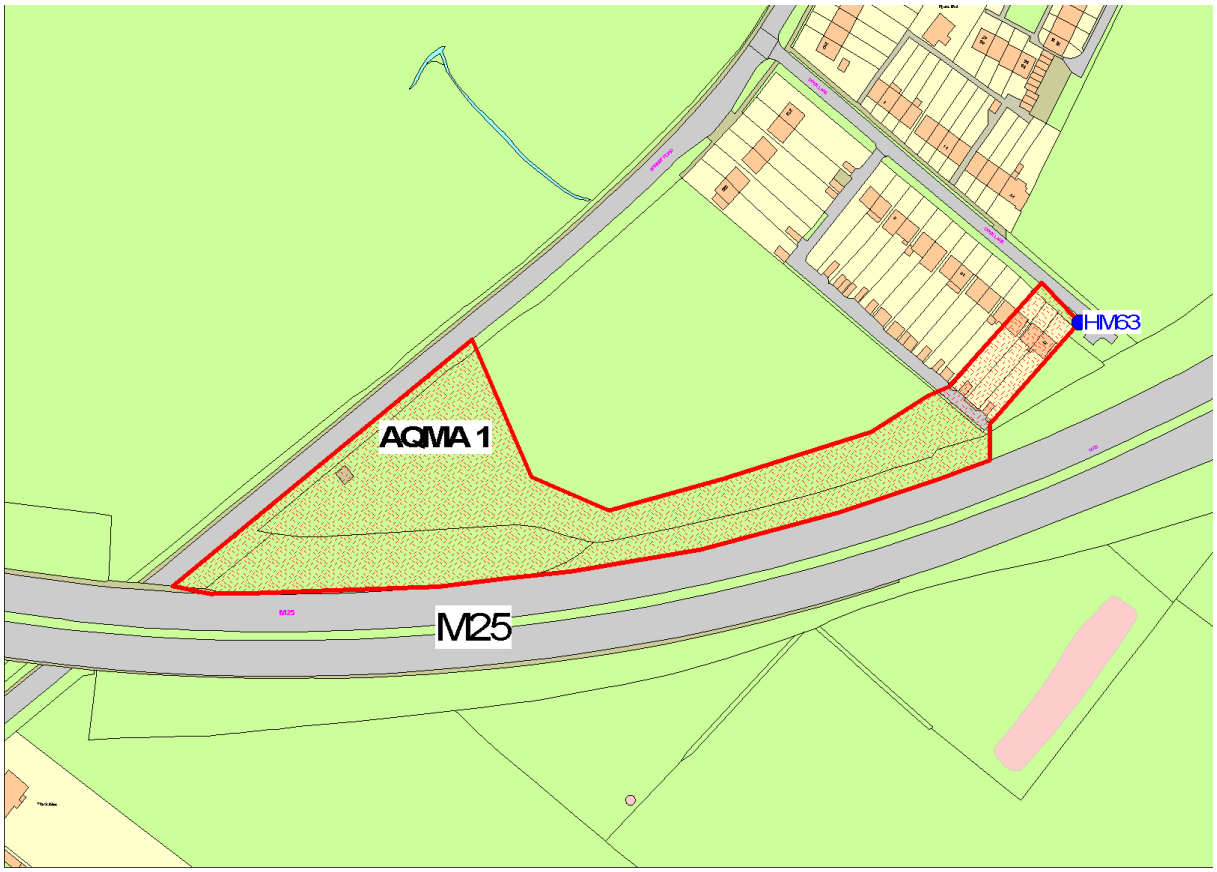


Figure 1.2 Hertsmere AQMA 2

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

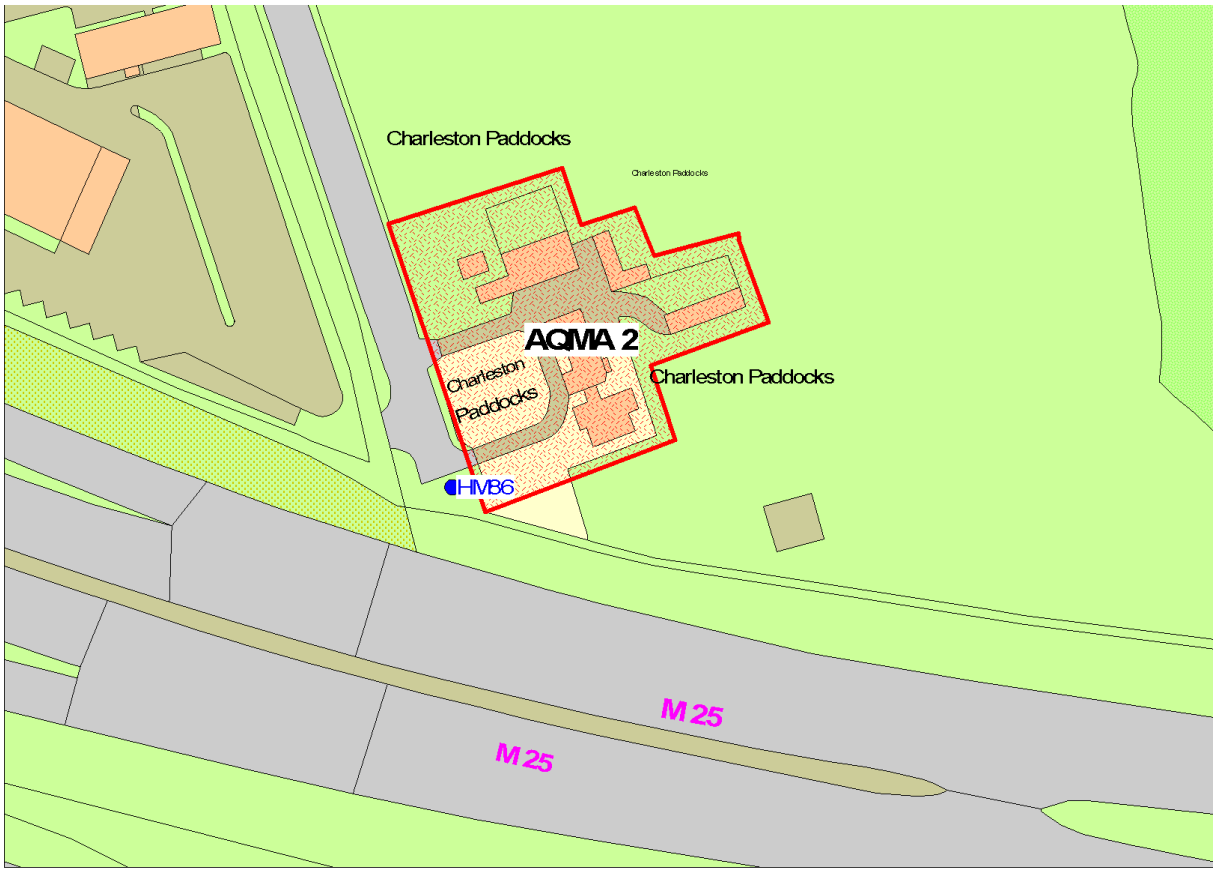


Figure 1.3 Hertsmere AQMA 3

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

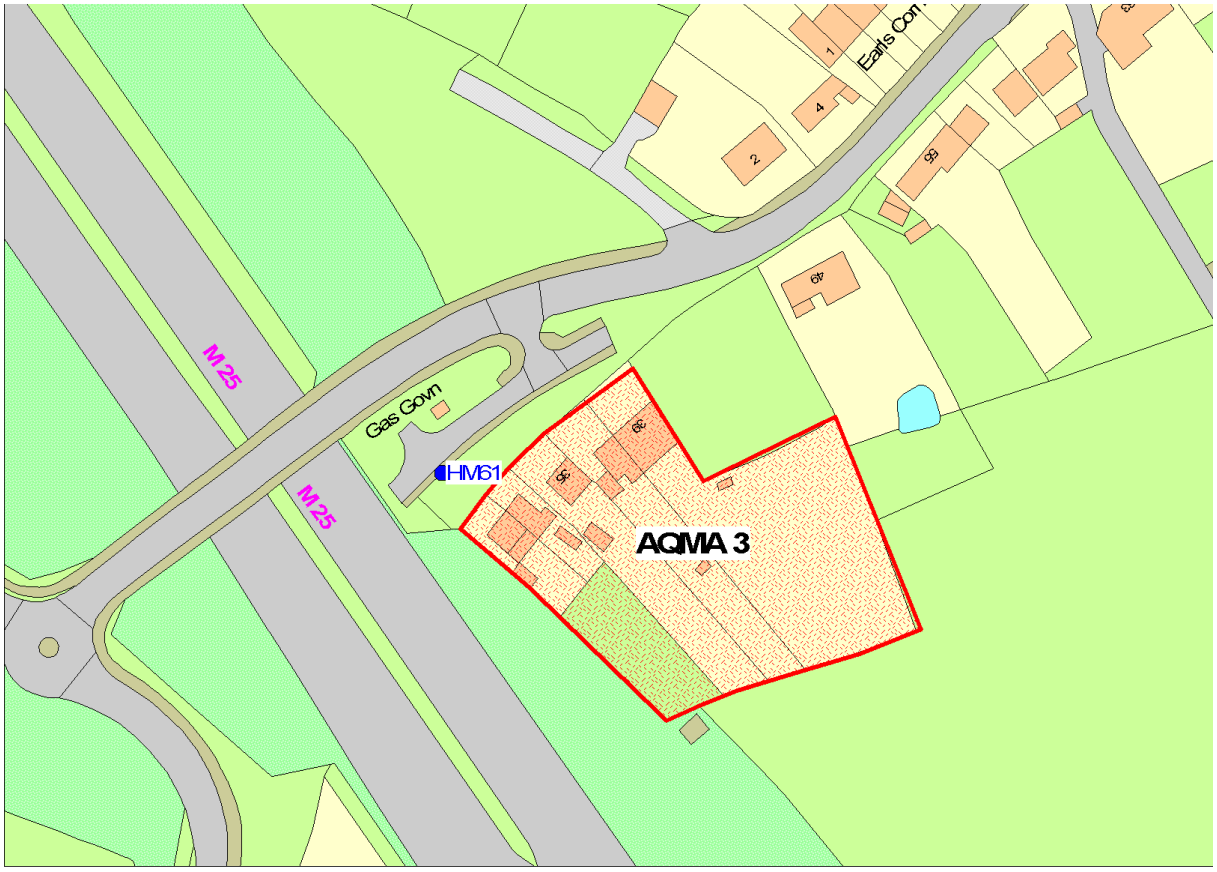


Figure 1.4 Hertsmere AQMA 4

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.

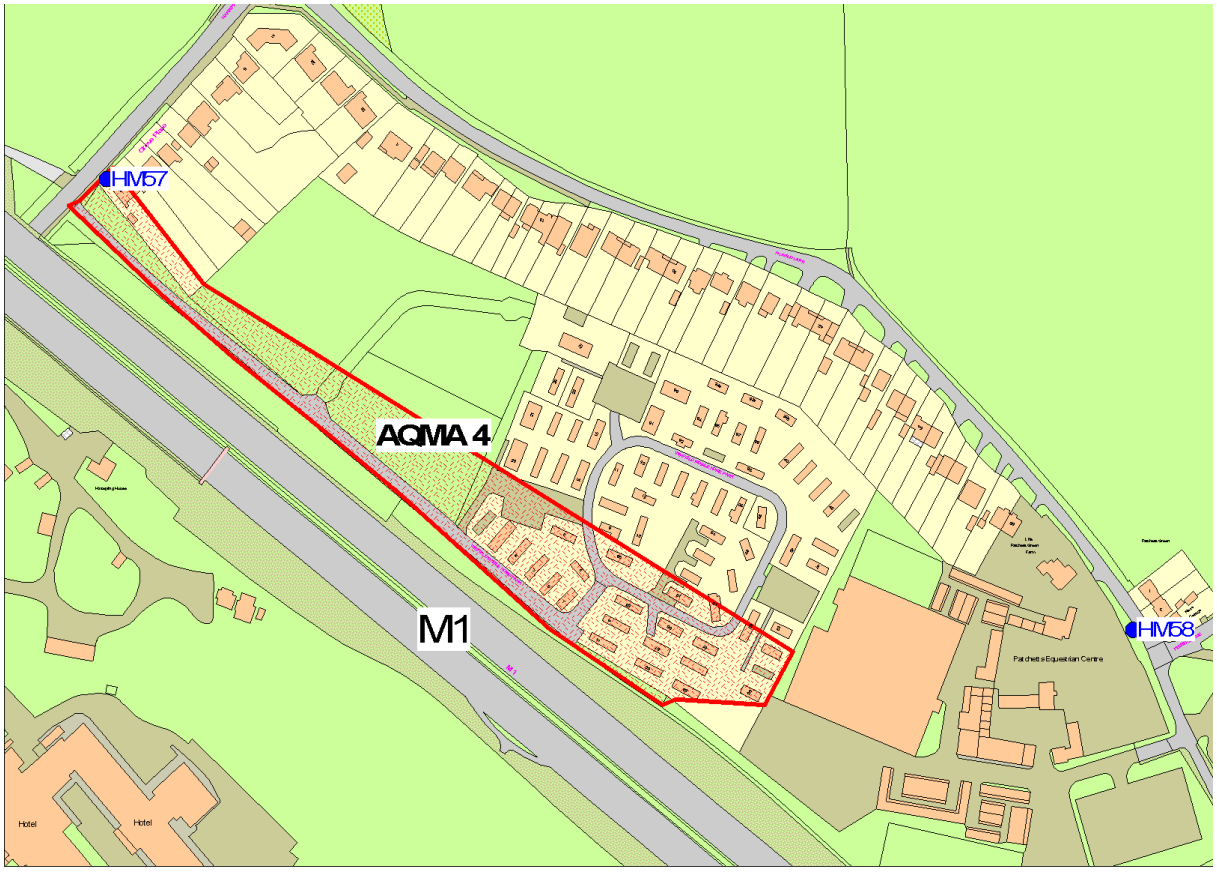


Figure 1.5 Hertsmere AQMA 5

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.

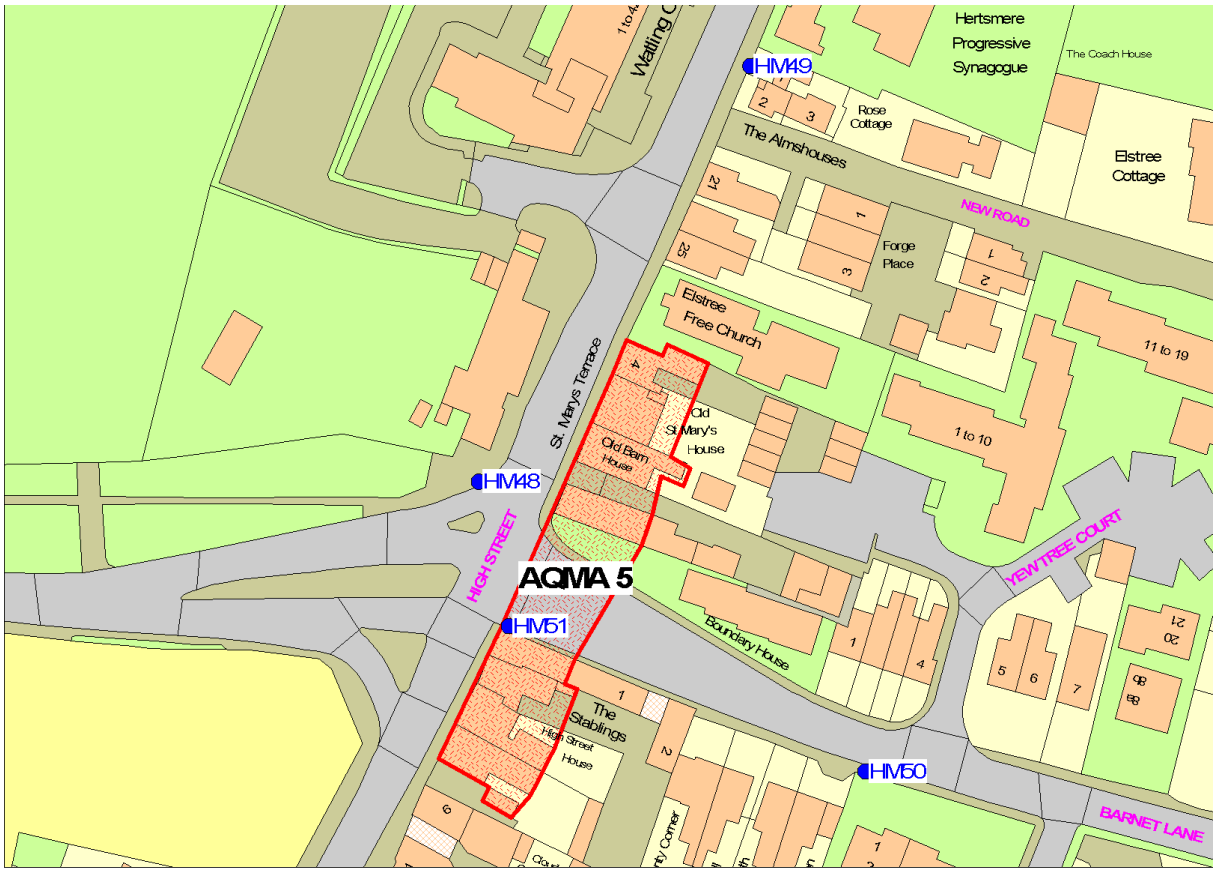
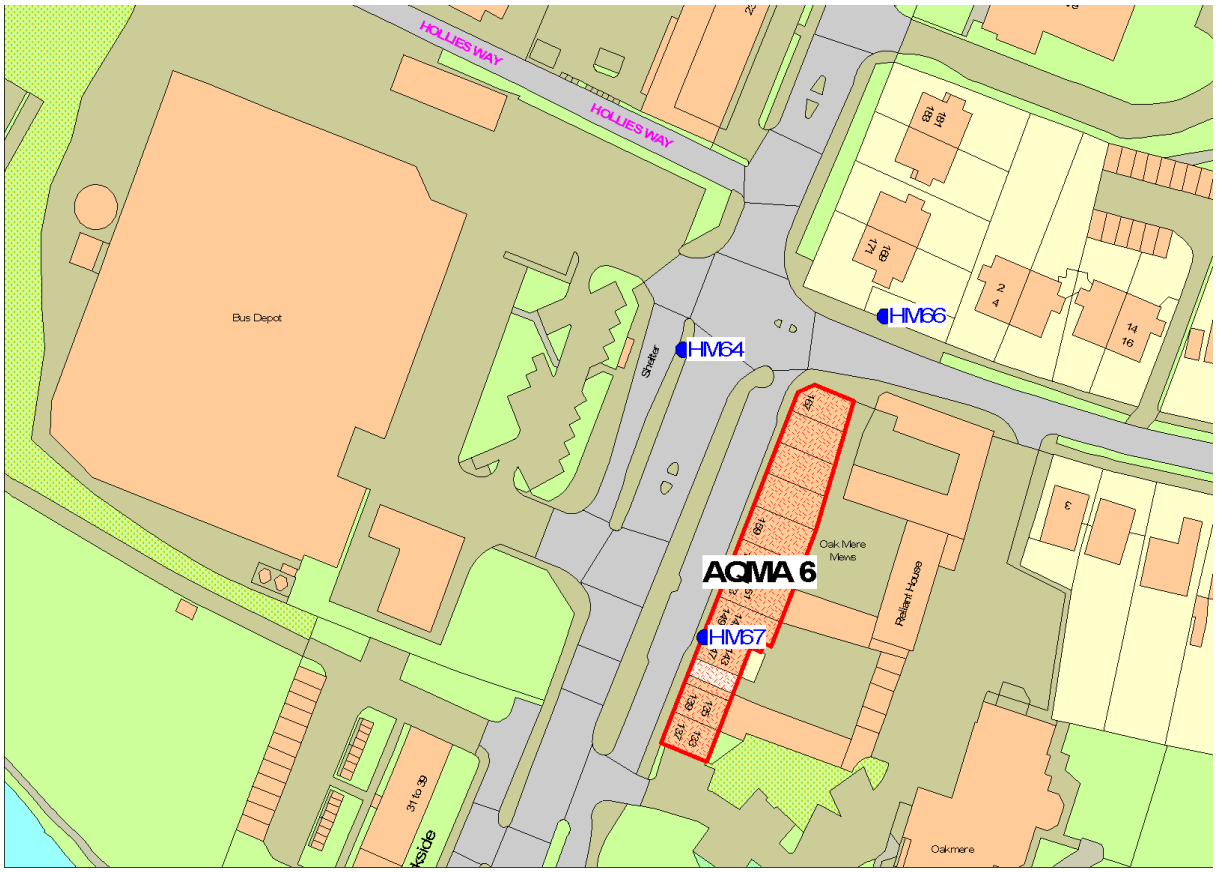


Figure 1.6 Hertsmere AQMA 6

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, PM_{10} and ozone concentrations at the Hertswood site since 2006. Previously, from 2001, the Continuous Monitoring Station has been based at Furzehill School, Furzehill Road, Borehamwood. A NOx chemiluminescent analyser and a TEOM PM_{10} 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 2010 data capture was 97% for NO_2 (data for NO_2 ratified until 11 February 2010 so calculation includes provisional data), 54% for PM_{10} and 98% for ozone. Hertsmere Borough Council have the station serviced by contractors Supporting U.

Figure 2.1 Location of Borehamwood Continuous Monitoring Station

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 Sites

Hertsmere Borough Council undertook monitoring at 40 NO_2 diffusion tube sites for the year 2010. 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 NO_2 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 2010 had been taken from the Review and Assessment Helpdesk spreadsheet of national co-location sites for this laboratory methodology. This is calculated as 0.92 (update April 2011) based on 41 studies.

Figure 2.2 Map of Non-Automatic Monitoring Sites

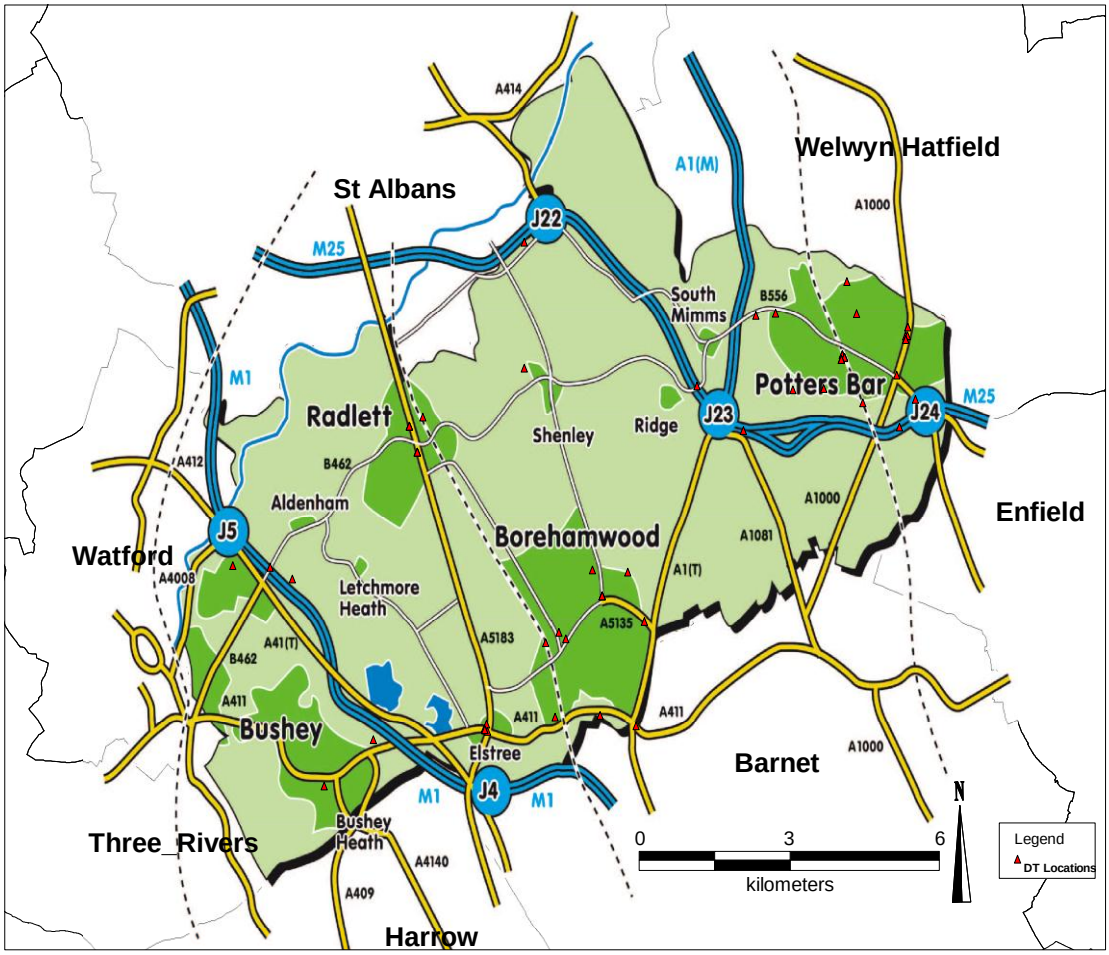


Table 2.2 Details of Non- Automatic Monitoring Sites

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 2010 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 ?	Relevant public exposure ?	Data Capture for monitoring period %	Data Capture for full calendar year 2010 %	Annual mean concentrations (μg/m^3) (% data capture for year)		
						2008	2009	2010
HM 4	Hertswood School Borehamwood	No	Yes	97%	97%	25 (84)	27 (98)	25 (97)

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?	Relevant public exposure?	Data Capture for monitoring period	Data Capture for full calendar year 2010	Number of Exceedences of hourly mean (200 μg/m^3)		
						2008	2009	2010
HM4	Hertswood School, Borehamwood	No	Yes	97%	97%	0	0	0

There were no exceedences of the hourly mean objective at the Borehamwood automatic monitoring site.

Diffusion Tube Monitoring Data
The nitrogen dioxide diffusion tube data are summarised in the table below. The full dataset (monthly mean values) are included in Appendix B.

The 2010 diffusion tube results show twenty-two sites exceeding the annual mean NO_2 Objective.

Of these, six are within the existing AQMA's and a further two are within an area (The Broadway, Potters Bar) that represents an emerging AQMA.

The remaining fourteen sites are roadside or kerbside sites, which have been considered with respect to relevant exposure and projection from roadside to façade using the LAQM TG (09) NO_2 with distance from roads calculator to assess the risk of exceedence of the annual mean objective.

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

- HM48* Elstree Crossroads 1
- HM64* Bus Garage 1 Potters Bar
- HM99/100/101 Bushey High Street 1/2/3
- HM108/109/110 Hartspring Lane PH, Bushey
- HM117/118/119 44 High Street 2, Bushey

There were nine 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
- HM66* Bus Garage 2, Potters Bar
- HM69* Southgate Road, Potters Bar
- HM71/72/73* Park Road Junction, Radlett
- HM103* Aldenham Road 2, Radlett
- HM115* Parkside 2, Potters Bar

A number of these sites (with asterix) were included in the 2010 Detailed Assessment that was recommended by the 2009 USA. The recommendations from the Detailed Assessment are summarised Section 1 and still need to be fully implemented.

HM39, Shenley Road, has not previously met the requirements for Detailed Assessment but is currently exceeding the annual mean objective for NO_2. Shenley Road was identified as a narrow congested in the 2009 USA and although the DMRB predicted there would not be exceedences of the NO_2 objectives the non-automatic monitoring carried out conflicts this. It is proposed to highlight this area for further consideration in the 2012 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)		
					2008 Bias Factor 0.9	**2009** Bias Factor 0.9	**2010** Bias Factor 0.92
HM39	Shenley Road, Borehamwood	No	91.6	91.6	-	**52**	**57**
HM40	Essex Road, Borehamwood	No	100	100	29	29	28
HM41	Boulevard, Borehamwood	No	100	100	38	36	36
HM45/46/47	AQMS, Borehamwood	No	100	100	28	27	26/26/26
HM48	Elstree Crossroads 1	No	100	100	**41**	39	**45**
HM49	Elstree Crossroads 2	No	83	83	**45**	**42**	**48**
HM50	Elstree Crossroads 3	No	100	100	**56**	**53**	**55**
HM51/52	Elstree Crossroads 4/5	Yes	100	100	**58**	**56/55**	**57/55**
HM53	Caldecote Lane, Bushey	No	100	100	24	24	25
HM54	High Road, Bushey	No	100	100	33	31	32
HM55	Highwood Ave Garages	No	92	92	24	24	26
HM57	Hartspring Lane, Bushey	Yes	100	100	**46**	**43**	**47**
HM58	Pegmire Lane, Patchetts Green	No	100	100	32	31	29
HM59	Aldenham Grove, Shenley	No	100	100	25	21	21
HM60	Bell Lane, Shenley	No	100	100	35	32	35
HM61	Blanche Lane, South Mimms	Yes	100	100	**54**	**47**	**49**
HM63	Dove Lane, Potters Bar	Yes	100	100	**45**	**43**	**41**
HM64	Bus Garage 1, Potters Bar	No	100	100	**62**	**50**	**49**
HM65	Hatfield Road, Potters Bar	No	100	100	**48**	**47**	**47**
HM66	Bus Garage 2, Potters Bar	No	92	92	**45**	39	**41**

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture for full calendar year 2009 %	Annual mean concentrations (μg/m^3)		
					2008 Bias Factor 0.9	**2009** Bias Factor 0.9	**2010** Bias Factor 0.92
HM67/68	Bus Garage 3/4, Potters Bar	Yes	100	100	**43**	40/38	**43/43**
HM69	Southgate Road, Potters Bar	No	100	100	**57**	**47**	**55**
HM70	Park Avenue, Potters Bar	No	92	92	30	36	34
HM71/72/73	Park Road, Radlett	No	92	92	**50**	**49/45/46**	**50/48/49**
HM74/75/76	301 Watling Street, Radlett	No	92/92/83	92/92/83	38	36/38/38	38/40/40
HM62/77/78	The Broadway, Potters Bar	Yes	100/100/92	100/100/92	**48**	**42/45/44**	**46/46/47**
HM79/80/81	11 The Broadway, Potters Bar	No	100/100/83	100/100/83	**45**	40/**43**/40	40/**45/42**
HM82/83/84	10 Baker Street, Potters Bar	No	100	100	38	40/39/35	39/39/40
HM85	Andrew Close, Shenley	No	100	100	25	25	27
HM86	Charleston Paddocks, South Mimms	No	100	100	**55**	**42**	**52**
HM93	103 Baker Street, Potters Bar	No	100	42	34	36	30
HM99/100/101	Bushey High Street 1/2/3	No	60/40/20	25/17/8	-	**48/45/47**	**48/49/50**
HM102/103/104	Aldenham Rd 1/2/3, Radlett	No	80	33	-	37/37/35	40/41/40
HM105/106/107	Elstree Park 1/2/3, Borehamwood	No	100	17	-	31/32/31	32/34/32
HM108/109/110	Hartspring Lane 1/2/3, Bushey	No	100	17	-	30/33/34	44/45/44
HM 111/112/113	9 Blanche Lane 1/2/3, South Mimms	No	100	17	-	30/27/31	35/35/34
HM 114/115/116	Parkside 1/2/3 Potters Bar	No	100	17	-	**41/43/**39	40/39**/44**

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture for full calendar year 2009 %	Annual mean concentrations (μg/m^3)		
					2008 Bias Factor 0.9	**2009** Bias Factor 0.9	**2010** Bias Factor 0.92
HM117/118/119	44 High Street 1/2/3, Bushey	No	50/100/50	8/17/8	-	39/**44/**25	**44/47/44**

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 Site

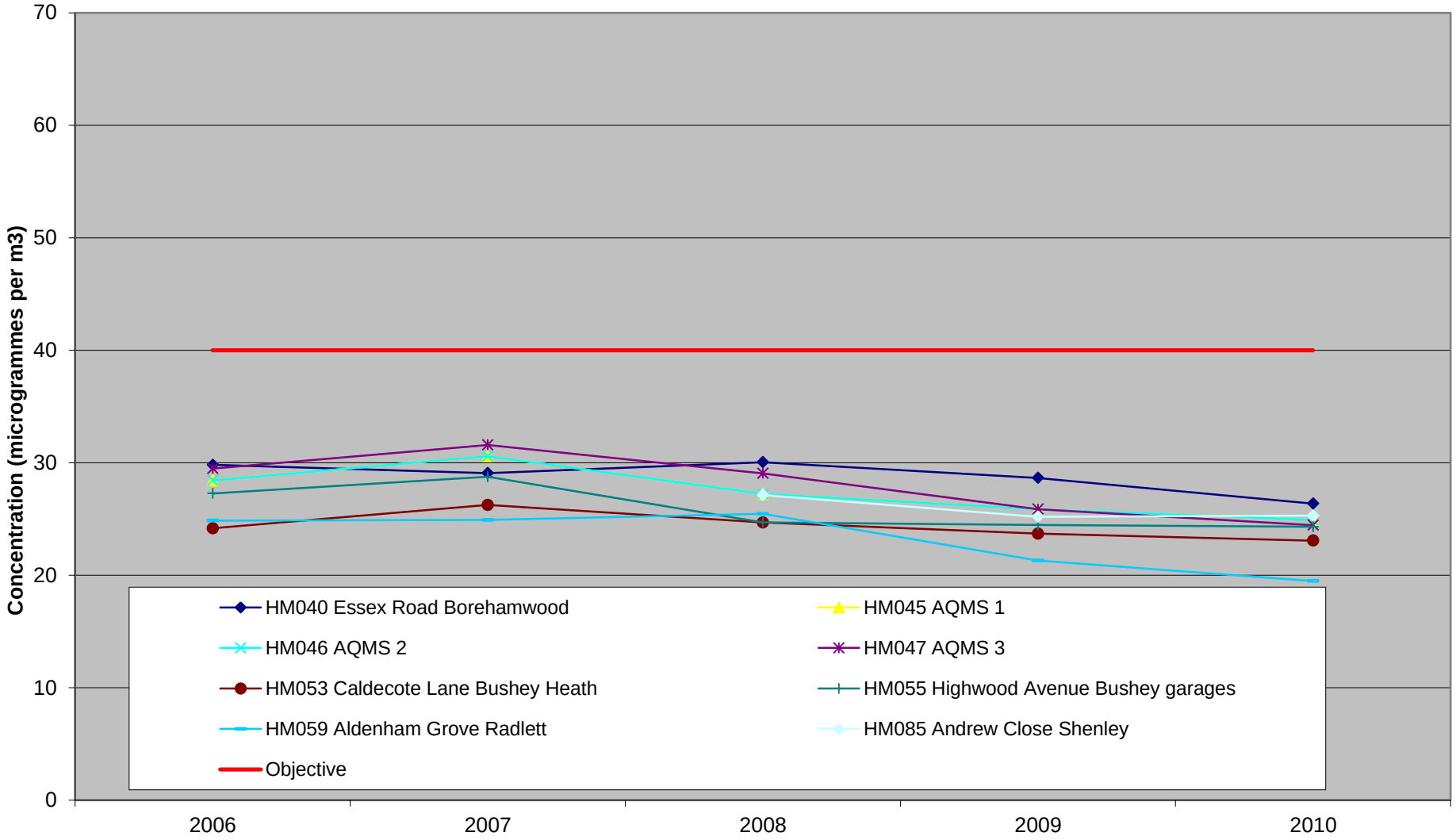


Figure 2.4b Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Kerbside Diffusion Tube Monitoring Sites

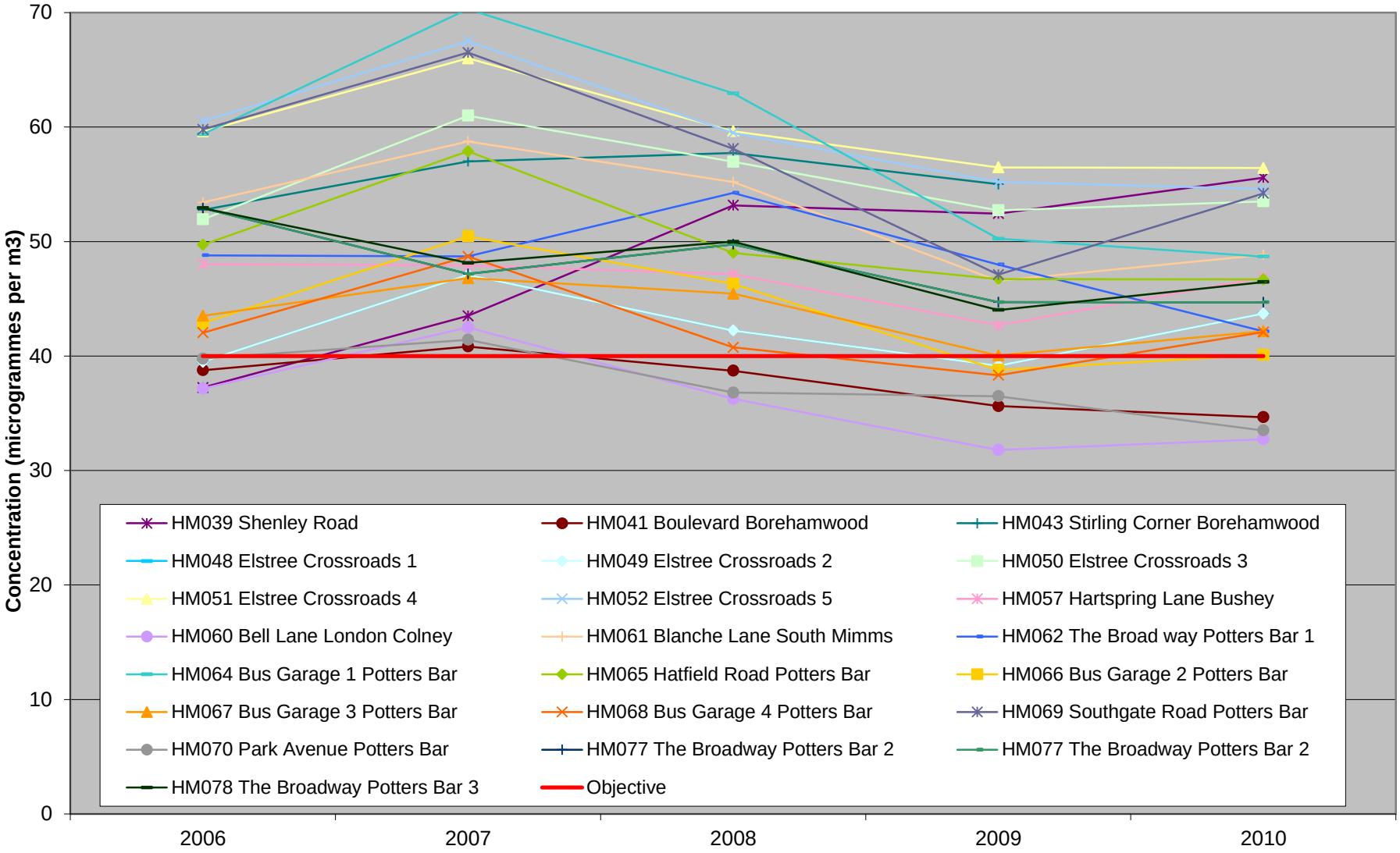


Figure 2.4c Trends in Annual Mean Nitrogen Dioxide Concentrations Measured at Motorway Diffusion Tube Monitoring Sites

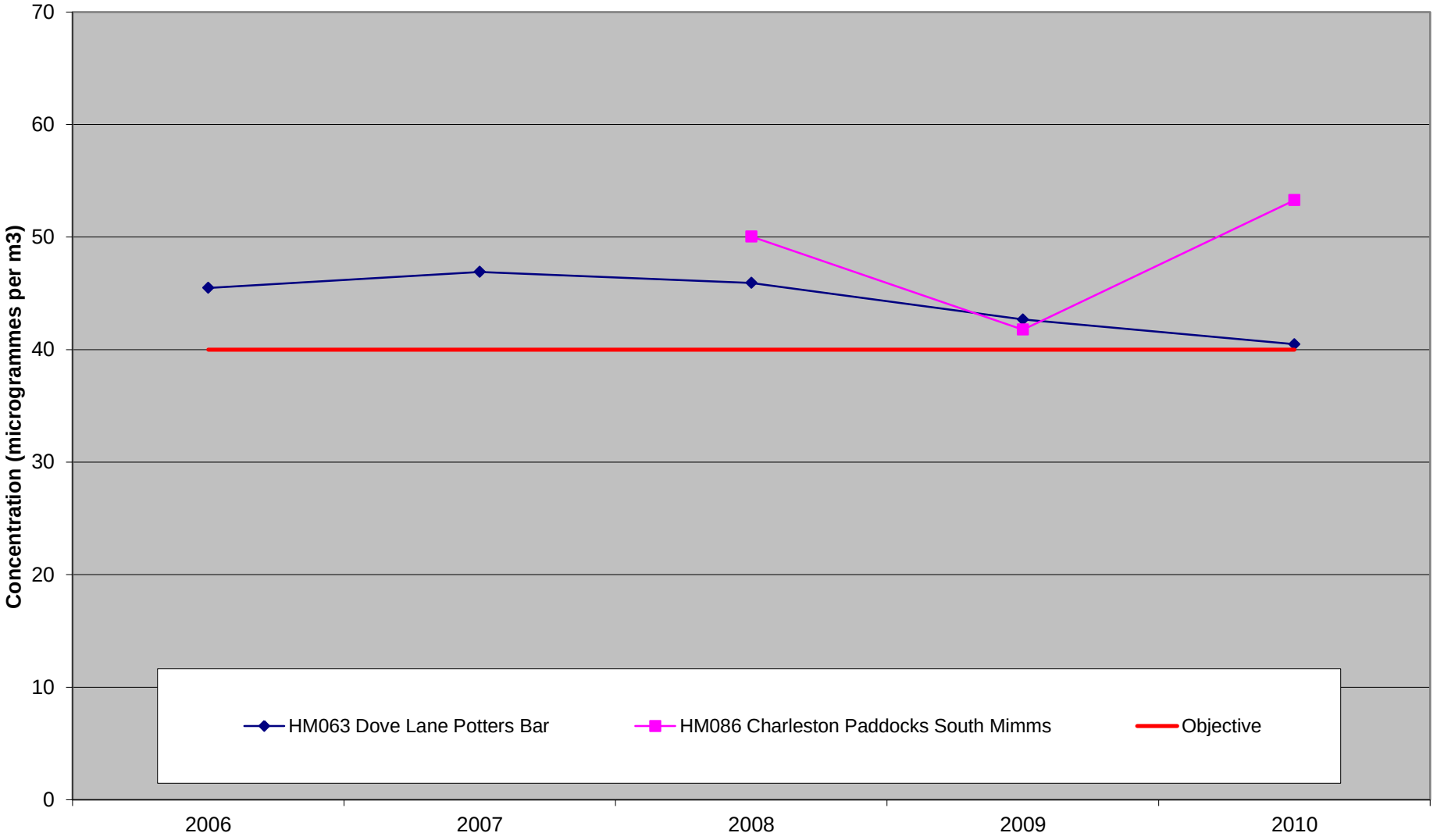
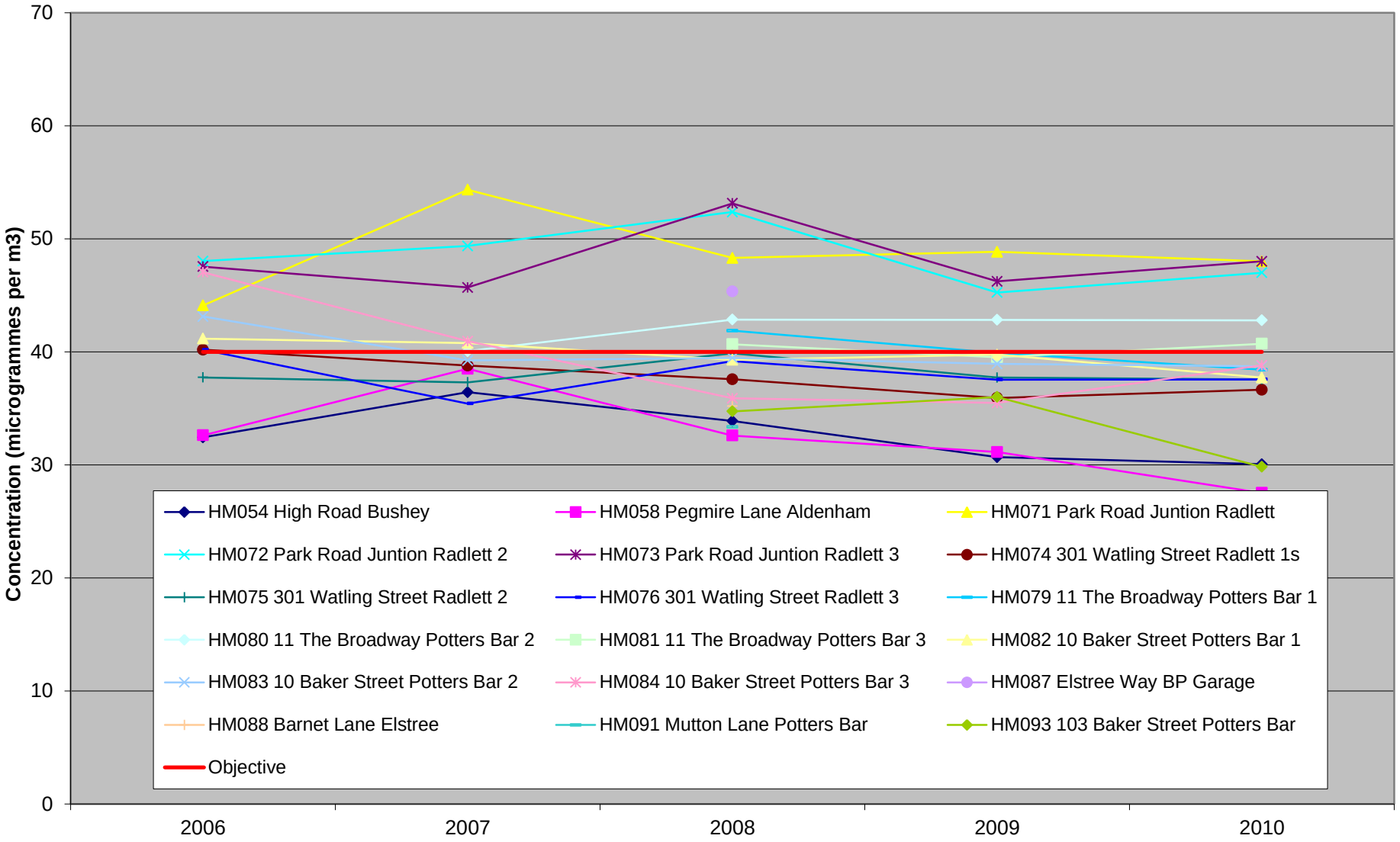


Figure 2.4d Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Roadside Diffusion Tube Monitoring Sites



2.2.2 PM_{10}

PM10 is monitored at the Automatic Monitoring Station at Hertswood School, Borehamwood. The 2010 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 year has been fully ratified. Data for previous years is shown for comparison purposes.

Table 2.5a Results of PM_{10} Automatic Monitoring: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture for full calendar year 2010 %	Annual mean concentrations ($\mu g/m^3$)		
					2008	2009	2010
HM4	Hertswood School, Borehamwood	No	54%	54%	17 (82% data capture)	18 (94% data capture)	19

Table 2.5b Results of PM_{10} Automatic Monitoring: Comparison with 24-hour Mean Objective (50 $\mu g/m^3$)

Site ID	Location	Within AQMA?	Data Capture for monitoring period %	Data Capture 2010 %	Number of Exceedences of daily mean objective (90^{th} percentile of daily mean PM10 concentration if data capture <90%)		
					2008	2009	2010
HM4	Hertswood School, Background	No	54%	54%	4 (30.3)	3	1 (29.7)

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 2010. There were 20 days where maximum rolling 8hr mean was greater than 100ug/m^3.

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 examined the results from monitoring in the Hertsmere area. Concentrations outside of the AQMA are below the objectives at most relevant locations. Areas that underwent Detailed Assessment in 2010 are still exceeding the annual mean objectives. There is one other relevant location (HM39) that is exceeding annual mean objectives, the 2012 USA will be used to assess whether this area needs to undergo Detailed Assessment in future.

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 confirms that there are no new or newly identified road traffic sources which may have an impact on air quality within the Local Authority Area.

3.2 Other Transport Sources

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

3.3 Industrial Sources

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

3.4 Commercial and Domestic Sources

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

3.5 New Developments with Fugitive or Uncontrolled Sources

Hertsmere Borough Council confirms that there are no new or newly identified new developments with fugitive or uncontrolled sources which may have an impact on air quality within the Local Authority Area.

Hertsmere 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.

Hertsmere Borough Council confirms that all the following have been considered –

- **Road traffic sources**
- **Other transport sources**
- **Industrial sources**
- **Commercial and domestic sources**
- **New developments with fugitive or uncontrolled sources.**

4 Local / Regional Air Quality Strategy

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

5 Planning Applications

There have been four major planning application approved in the Hertsmere area between April 2010 and March 2011. These are detailed below:

Application Number: **TP/10/0138**
Location: Studio Plaza, Elstree Way, Borehamwood, WD6 1JN
Proposal: Demolition of existing office building and the erection of 85 residential units comprising:- (16 x 1 bed flats, 42 x 2 bed flats, 6 x 2 bed houses, 17 x 3 bed houses and 4 x 4 bed houses) with associated car parking, landscaping, bin storage and cycle storage. Retention of existing commercial building and associated car parking on the northern side of the site. Removal of 4 No. trees on the western boundary of the site (with Oaklands College) (Amended plans received 23/9/2010).

Permission was granted subject to Section 106 Agreement in December 2010. The location of the development site is close to another major development site approved in February 2010. The development site is just off the main road leading into Borehamwood from the A1(M). The air quality in the area is not presently monitored but when the site is occupied monitoring may need to take place as Elstree Way is prone to congestion at rush hour.

Application Number: **TP/10/0996**
Location: 2a Windmill Lane and 164-168, High Road, Bushey Heath
Proposal: Demolition of 164 High Road and erection of replacement 2 storey detached dwelling with detached single garage, associated car parking and landscaping. Demolition of 166 High Road, 2A & 2B Windmill Lane and erection of single, three and four storey block comprising 39 one bedroom warden assisted flats for the blind and/or disabled, 2 one bed warden flats, warden office and associated car parking and landscaping.

Permission was granted subject to Section 106 Agreement in September 2010. The main development of warden assisted flats are set back from the roadside and bordered to the rear by parkland so it is unlikely any future air quality monitoring will be needed here.

Application Number: **TP/10/0826**
Location: Colney Fields, Barnet Road, London Colney, St Albans
Proposal: 86 bedroom hotel with ancillary employee accommodation (5 bedrooms), restaurant, meeting rooms, offices and associated car parking and landscaping (amended scheme following permission TP/05/1501).

Permission was granted subject to Section 106 Agreement in July 2010. Ancillary employee accommodation will create a small number of new receptors because of the sites close proximity to the M25. It is possible that in future if the development is completed air quality monitoring will be needed here.

Application Number:	**TP/10/1559**
Location:	2 Shenley Hill, Radlett, WD7 7BA
Proposal:	Demolition and replacement of existing house with 12 no. 2 and 3 bedroom flats, formation of a new vehicular access, underground car park and ancillary works (Amended scheme TP/09/1367).

Permission was granted subject to Section 106 Agreement in November 2010. This site is close to the railway line and the Watling Street/Aldenham Road Junction so may need to be monitored in future.

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 AQMA 1 Dove Lane, Potters Bar; AQMA 2 Charleston Paddocks and AQMA 3 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

Air quality objectives for benzene, 1,3-butadiene, carbon monoxide, lead, particulates (PM 10) and sulphur dioxide will be met. There is no requirement to undertake a detailed assessment for these pollutants.

However, exceedences of the annual mean NO_2 objective were identified at twenty-two non-automatic monitoring sites across the Hertsmere Borough Council area. Of these, six are within existing AQMA's and a further two are within an area (The Broadway, Potters Bar) that represents an emerging AQMA. The remaining sites were predominately those that had exceeded objectives in the past and had recently undergone a Detailed Assessment. It is notable that the two new monitoring sites on Bushey High Street (a narrow congested street) exceeded the annual mean NO_2 objective as did HM39, Shenley Road, also a narrow congested street. The Bushey High Street sites do not have any nearby relevant exposure whereas the Shenley Road site does. This site will be specifically considered in the 2012 USA to determine the requirement for Detailed Assessment. In regard to the automatic monitoring site there does not appear to be any upward or downward trend in NO_2 concentrations over the past four years.

9.2 Conclusions relating to New Local Developments

At present four significant local developments have been approved. There is no monitoring taking place at any of the sites at the present time, as there is not any relevant exposure. It may be relevant to start some monitoring of NO_2 when the sites are occupied.

The Oaklands College development site that was identified in the 2010 Progress Report is not yet occupied and therefore no monitoring has been undertaken.

9.3 Proposed Actions

Review the necessity to declare an AQMA at the Broadway, Potters Bar following the recommendations of the 2007 Detailed Assessment.

The recommendations of 2010 Detailed Assessment still need to be implemented so it becomes an action of this report to implement them. This includes changes to the AQMA6 at High Street/Potters Bus Garage, AQMA5 at Elstree Crossroads and AQMA4 at Hartspring Lane, Bushey. The recommendations also include declaring a new AQMA at the Watling Street/Park Road junction, Radlett.

The new monitoring data has not yet identified an immediate need to proceed to a Detailed Assessment for any pollutant. However, HM39, Shenley Road may need to undergo a Detailed Assessment after the 2012 USA.

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 2010 Local Air Quality Management Annual Progress Report
- 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 2010

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors
Hertsmere Borough Council uses Gradko for the supply and analysis of NO_2 diffusion tubes. The tube preparation used is the utilising 20% Triethanolamine (TEA) in water preparation method.

The National bias adjustment factor for 2010 taken from the Review and Assessment Helpdesk spreadsheet of national co-location sites for this laboratory methodology is 0.92 (updated April 2011).

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 97% for NO_2. 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
No adjustment was necessary.

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 NO_2 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% (4.8%).

Appendix B: Diffusion Tube Data 2010

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	69	57	76	59	62	52	50	51	61	66	72	65	**62**
HM040	Essex Road Borehamwood	42	43	35	31	23	22	18	21	29	32	30	45	**31**
HM041	Boulevard Borehamwood	52	45	41	36	35	31	32	29	40	42	37	50	**39**
HM045	AQMS 1	38	39		26	20	18	18	19	26	32	40	39	**29**
HM046	AQMS 2	41	38	34	26	19	18	19	18	28	28	37	38	**29**
HM047	AQMS 3	39	36	30	23	19	19	19	17	28	33	37	38	**28**
HM048	Elstree Crossroads 1	55	53	51	43	46	37	36	52	61	44	56	53	**49**
HM049	Elstree Crossroads 2	58	58	58	49	44		37	33	56	51	66	69	**53**
HM050	Elstree Crossroads 3	62	73	59	51	53	51	55	54	73	46	66	74	**60**
HM051	Elstree Crossroads 4	67	76	80	59	64	60	57	45	44	62	65	59	**62**
HM052	Elstree Crossroads 5	67	79	76	71	62	49	56	31	46	73	46	56	**59**
HM053	Caldecote Lane Bushey Heath	36	36	29	27	22	19	14	17	25	24	38	35	**27**
HM054	High Road Bushey	45	46	37	34	28	30	22	24	32	33	39	45	**35**
HM055	Highwood Avenue Bushey garages	37	34	27	30	26	24	17	19	27	29	30	39	**28**
HM057	Hartspring Lane Aldenham Bushey	55	55	65	45	41	35	52	44	56	57	54	52	**51**
HM058	Pegmire Lane Aldenham	46		37	30	21	23	26	22	30	32	36	39	**31**
HM059	Aldenham Grove Radlett	34	29	24		12	15	16	15	22	24	26	31	**23**
HM060	Bell Lane London Colney	50	42	40	41	34	31	27	28	29	38	40	52	**38**
HM061	Blanche Lane South Mimms	57	52	67	54	44	40	55	46	61	63	43	54	**53**
HM062	The Broad way Potters Bar 1	71	60	52	52	48	42	39	33	39	46	59	58	**50**
HM063	Dove Lane Potters Bar	49	47	55	44	35	36	46	31	49	46	44	47	**44**
HM064	Bus Garage 1 Potters Bar	63	58	69	37	26	45	57	49	52	63	59	57	**53**
HM065	Hatfield Road Potters Bar	52	66	54	46	52	44	49	41	54	46	56	48	**51**
HM066	Bus Garage 2 Potters Bar	52	51	55	38	38	34	40	42	41	45	47	51	**45**
HM067	Bus Garage 3 Potters Bar	52	55	59	42	37	38	42	35	50	57	41	50	**47**
HM068	Bus Garage 4 Potters Bar	55	68	54	40	40	37	37	35	45	51	50	50	**47**

Code	Site	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Mean
HM069	Southgate Road Potters Bar	60	66	72	57	47	49	61	51	60	62	61	68	**60**
HM070	Park Avenue Potters Bar	42	42	46	35	21	28	32	31	43	42	43	43	**37**
HM071	Park Road junction Radlett	63	63	64	54	45	40	43	38	52	65	56	68	**54**
HM072	Park Road junction Radlett 2	60	53	66	52	45	45	45	40	50	59	53	63	**53**
HM073	Park Road junctions Radlett 3	64	64	64	60	52	46	42	38	46	58	50	59	**54**
HM074	301 Watling Street Radlett 1	50	47	42	47	42	36	31	30	38		44	53	**42**
HM075	301 Watling Street Radlett 2	58	48	53	45	41	37	30	28	39		40	55	**43**
HM076	301 Watling Street Radlett 3	52	48	53	42	41	33	26	30	45		53	52	**43**
HM077	The Broadway Potters Bar 2	64	63	63	51	48	41	37	40	46	50	43	59	**50**
HM078	The Broadway Potters Bar 3	62	59	56	54	47	49	41	36	52	56	53	49	**51**
HM079	11 The Broadway Potters Bar 1	48	60	52	52	35	33	32	28	36	43	50	52	**43**
HM080	11 The Broadway Potters Bar 2	54	63	63	51	36	32	31	29	57	55	56	55	**49**
HM081	11 The Broadway Potters Bar 3	53	59	56	54	37	36	30	31	40	53	52	48	**46**
HM082	10 Baker Street Potters Bar 1	46	49	37	44	39	40	32	34	48	47	44	55	**43**
HM083	10 Baker Street Potters Bar 2	54	54	42	42	39	37	36	36	41	42	46	38	**42**
HM084	10 Baker Street Potters Bar 3	57	53	43	44	40	44	35	33	43	36	43	52	**44**
HM085	Andrew Close Shenley	41	38	31	29	22	21	17	19	27	29	39	45	**30**
HM086	Charleston Paddocks South Mimms		118	57	47	44	44	60	49	57	52	49	49	**57**
HM093	103 Baker Street Potters Bar	37	45	40	32	29	26	29	22	33	33	36	47	**34**
HM099	Bushey High Street 1	67	57	63	50	10	44	48		51	65	56	63	**52**
HM100	Bushey High Street 3	68	67		58	12	54	50	44	52	48	73	59	**53**
HM101	Bushey High Street 2	66	63	56	50	54	64	46	7	55	61	68	63	**54**

Code	Site	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Mean
HM102	Aldenham Road 1 Radlett		56	47	42	39		43	34	45	42	42		**43**
HM103	Aldenham Road 2 Radlett	50	44	50	39	47	38	43	33	54	46	43		**44**
HM104	Aldenham Road 3 Radlett	45	47	49	46	41	42	42	32	44	38	47	44	**43**
HM105	Elstree Park Borehamwood 1	43	41	42	36	27	28	24	24	33	29	42	50	**35**
HM106	Elstree Park Borehamwood 2	50	43	43	36	31	28	22	24	38	48	34	48	**37**
HM107	Elstree Park Borehamwood 3	50	34	41	35	24	29	23	22	31	33	41	55	**35**
HM108	Hartspring Lane PH 1	54	52	51	44	42	43	36	37	45	48	56	64	**48**
HM109	Hartspring Lane PH 2	64	59	57	48	43	43	40	36	41	49	50	58	**49**
HM110	Hartspring Lane PH 3	51	58	51	48	45	37	39	38	47	49	56	59	**48**
HM111	9 Blanche Lane 1	47	40	39	44	35	32	21		34	38	38	50	**38**
HM112	9 Blanche Lane 2	48	50	39	41	36	34	20		35	33	41	41	**38**
HM113	9 Blanche Lane 3	48	41	38	41	31	32	22		34	34	42	47	**37**
HM114	Parkside High Street 1	42	49	45	46	42	34		37	39	40	47	53	**43**
HM115	Parkside High Street 2	51	50	46		44	36		32	44	41	44	50	**44**
HM116	Parkside High Street 3	44	46	52	38	38	40	28	34	44	46	41	53	**42**
HM117	44 High Street Bushey 4		61	49	47	46	42	35	39	57	49	44	61	**48**
HM118	44 High Street Bushey 5		61	58	50	46	46	36	39	51	60	50	62	**51**
HM119	44 High Street Bushey 6		63	56	50	45	44	39	36	48	49	53		**48**