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2015 Updating and Screening Assessment for London Borough of Camden

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

April 2015

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Executive Summary

The conclusion from this report is that Camden's Air Quality Management Area (AQMA) for NO_2 and PM_{10} should be retained.

While there is a declining trend in NO_2 levels across the AQMA, the majority of recorded levels exceed the annual mean targets, while one site continues to exceed the hourly mean target. Therefore the AQMA for this pollutant should be retained.

PM_{10} levels remain within the annual and 24 hour mean limits; however levels continue to exceed World Health Organisation (WHO) limits, and remain a public health concern. Therefore the AQMA for this pollutant should be retained.

Where monitored, Camden meets all other targets for relevant pollutants, including Sulphur Dioxide, Carbon Monoxide, and $PM_{2.5}$. Camden is projected to meet the 2020 target for annual mean urban background $PM_{2.5}$ by 2016.

Camden's Air Quality Action Plan has been updated since the last USA submission; details of new activities can be found in Appendix C.

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1 Introduction

1.1 Description of Local Authority Area

The London Borough of Camden is an urban area located in central London. It is approximately 22km^2 in size and is situated north of the River Thames. The main sources of air pollution are road transport, in particular heavy goods vehicle (HGV) and buses, and gas boilers with lesser contributions from diesel trains and small industrial processes. A large proportion of emissions which contribute to poor air quality arise from sources outside of Camden including the heavily trafficked road network surrounding the borough, and from sources much further afield including continental Europe. The south of the borough experiences the highest volumes of traffic and congestion and most intense levels of development. The north of the borough, in contrast, is generally less congested, and there are more open spaces and parks, of which particular areas have been designated as Sites of Special Scientific Interest (SSSI). Air pollution in these open areas is generally lower. However a number of busy roads which dissect through the north of the borough are associated with high levels of traffic, especially HGVs, and therefore experience elevated air pollution levels.

1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where exceedances are considered likely, the local authority must then declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

The objective of this Updating and Screening Assessment is to identify any matters that have changed which may lead to risk of an air quality objective being exceeded.

A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment. The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM in England are set out in the Air Quality (England) Regulations 2000 (SI 928), The Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre μg/m^3 (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedances in each year that are permitted (where applicable).

Table 1.1 Air Quality Objectives included in Regulations for the purpose of LAQM in England

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 μg/m^3	Running annual mean	31.12.2003
	5.00 μg/m^3	Running annual mean	31.12.2010
1,3-Butadiene	2.25 μg/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 μg/m^3	Annual mean	31.12.2004
	0.25 μg/m^3	Annual mean	31.12.2008
Nitrogen dioxide	200 μg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 μg/m^3	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 μg/m^3, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 μg/m^3	Annual mean	31.12.2004
Sulphur dioxide	350 μg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 μg/m^3, not to be	24-hour mean	31.12.2004

	exceeded more than 3 times a year		
	266 µg/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

Between 1998 and 2000, the London Borough of Camden undertook its first round of review and assessment of air quality (the 'First Round'), including Stages 1, 2 and 3, which concluded that it was necessary to declare the whole borough as an Air Quality Management Area (AQMA) for the long term objective for nitrogen dioxide (NO_2) and the short and long term objectives for particulate matter (PM_{10}).

The second, third, fourth and fifth rounds of review and assessment, the Updating and Screening Assessment (USA), were completed in 2003, 2006, 2009 and 2012. Each assessment provided an update with respect to air quality issues within Camden. The second, third, fourth and fifth rounds concluded that no 'Detailed Assessment' was required for Camden with respect to air quality.

In years where Updating and Screening Assessments were not required, Camden has undertaken annual progress reports. The 2014 Progress Report concluded concentrations within the AQMA still exceed the objectives for NO_2 at all Camden's automatic monitoring sites and the vast majority of nitrogen dioxide diffusion tube sites. Camden continues to meet objectives for all of the pollutants monitored with the exception of NO_2.

As the whole of the borough has been designated an Air Quality Management Area the 2014 Progress Report concluded there was no need to carry out a Detailed Assessment at that time, and that Camden should proceed to this 2015 Updating and Screening Assessment.

Table 1.2 Overview of previous Review and Assessments

Review and Assessment	Date
Fifth Round: Updating and Screening Assessment	2012
Fourth Round: Updating and Screening Assessment	2009
Third Round: Updating and Screening Assessment	2006
Second Round: Updating and Screening Assessment	2003
Review and Assessments: Stage IV	2002
Review and Assessment: Stage III	2000
Review and Assessment: Stages I & II	1998

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Camden currently operates four automatic monitoring sites. Details of these sites are presented in Table 2.1 below and the locations of these sites are outlined in Figure 2.1 below. Camden has not opened or closed any sites since the Fifth Round of Updating and Screening Assessments in 2012.

Routine calibrations are carried out on a fortnightly basis by operators from King's College London. These operators are trained to AURN standards and for those operating Swiss cottage have been audited for the AURN.

Audits for the AURN affiliated equipment at Swiss Cottage are carried out every 6 months by AEA-Ricardo on behalf of Defra as part of the affiliation. All other equipment is audited as part of the LAQN by the National Physical Laboratory (NPL).

King's College follow validation procedures which conform to the requirements of the AURN and exceed the requirements of LAQM TG(09). The data ratification procedures also exceed the requirements of TG(09).

Figure 2.1 Map of Automatic Monitoring Sites

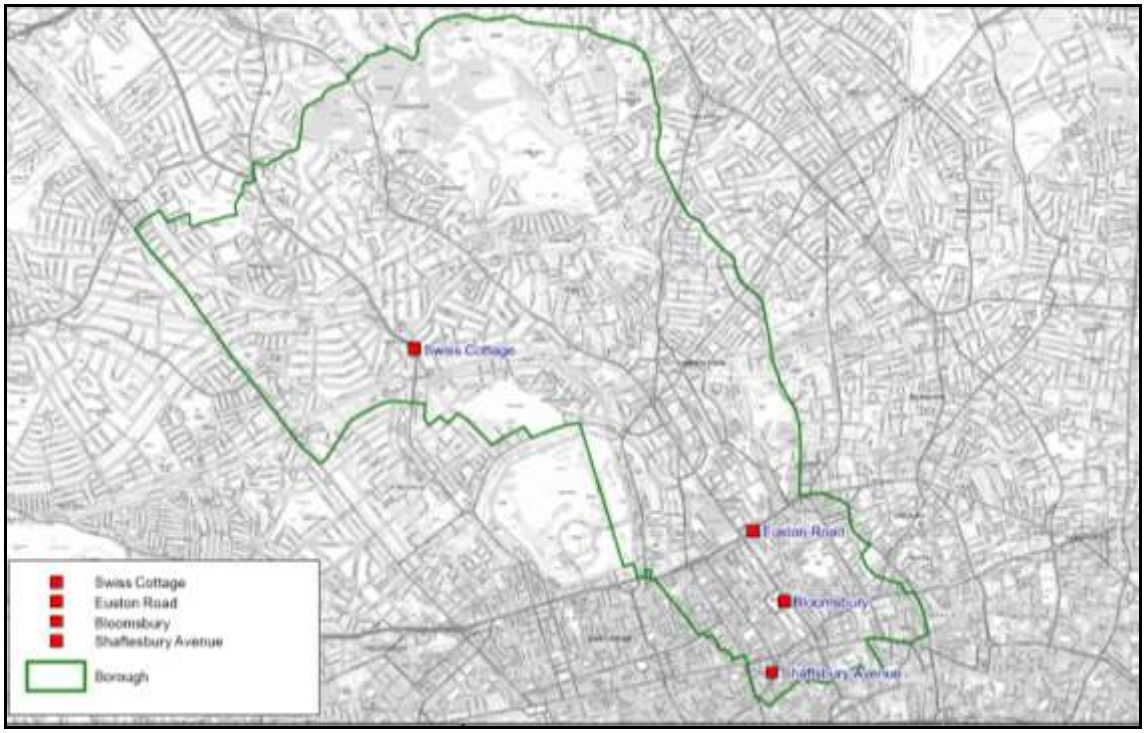


Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
LB: London Bloomsbury	Urban background	X 530120	Y 182034	NO_2, PM_{10}, $PM_{2.5}$, SO_2, CO, O_3	Y	FDMS, API Nox, TEOM	Y (40m)	27m	Y
CD1: Swiss Cottage	Kerbside	X 526633	Y 184392	NO_2, PM_{10}, $PM_{2.5}$,	Y	FDMS, AC31 Nox	Y (7m)	1.5m	Y
CD3: Shaftesbury Avenue	Roadside	X 530060	Y 181290	NO_2, PM_{10},	Y	TEOM, API Nox	Y (1m)	<1m	Y
CD9: Euston Road	Roadside	X 529878	Y 182648	NO_2, PM_{10}, $PM_{2.5}$	Y	API Nox, FDMS	Y (1m)	0.5m	Y

2.1.2 Non-Automatic Monitoring Sites

Diffusion tubes are deployed across the borough to monitor nitrogen dioxide concentrations. The 2014 programme consisted of fourteen sites chosen as they were considered the most important locations for monitoring purposes. The location of these sites can be seen in Figure 2.2. Details of all of the non-automatic monitoring sites are presented in Table 2.2.

The diffusion tube results have been bias corrected on the basis of triplicate tubes co-located with a chemi-luminescent analyser at Swiss Cottage. The bias adjustment factor was calculated using a combined bias adjustment factor, based on the result of many co-location studies using the same laboratory and tube preparation method compiled by DEFRA. Bias adjustment factors can be found for each year in Section 2.2.1 below.

Gradko Environmental supplies, prepares (50% TEA and acetone method) and analyses Camden's diffusion tubes. This laboratory participates in the UK National Diffusion Tube Network and the Workplace Analysis Scheme for Efficiency. Gradko currently holds UKAS accreditation for analysis of diffusion tubes and participates in the Health and Safety Laboratory's Workplace Analysis Scheme for Proficiency (WASP).

Details of Gradko's UKAS accreditation and WASP scheme scoring can be found in Appendix 1.

Figure 2.2 Map of Non-Automatic Monitoring Sites

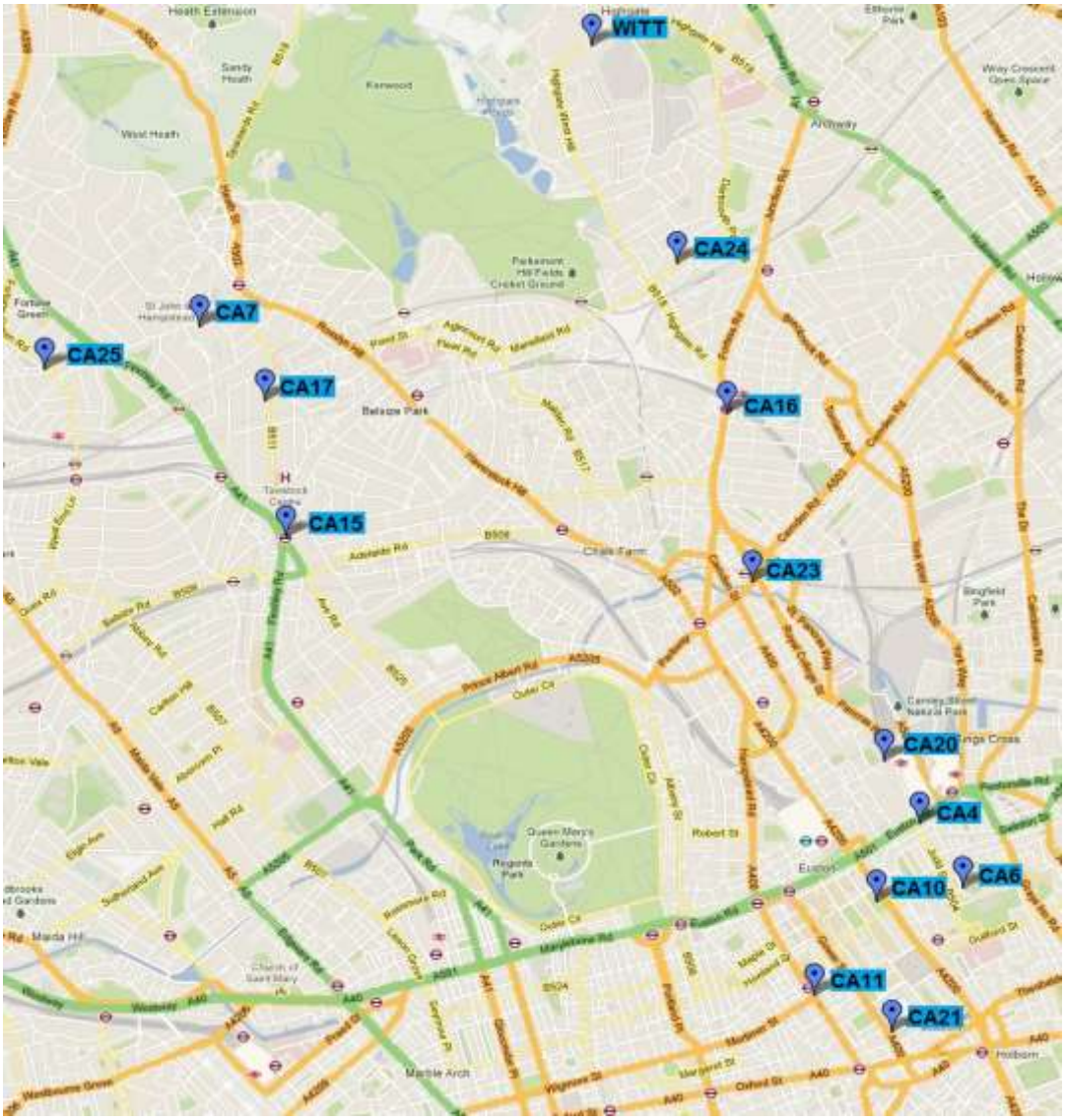


Table 2.2 Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
CA4	Euston Road	Roadside	X 530110	Y 182795	NO_2	Y	N	Y (1m)	5m	Y
CA6	Wakefield Gardens	Urban background	X 530430	Y 182430	NO_2	Y	N	Y (18m)	30m	Y
CA7	Frognal Way	Urban background	X 526213	Y 185519	NO_2	Y	N	Y (6m)	30m	Y
CA10	Tavistock Gardens	Urban background	X 529880	Y 182334	NO_2	Y	N	Y (35m)	25m	Y
CA11	Tottenham Court Road	Kerbside	X 529568	Y 181728	NO_2	Y	N	Y (4m)	<1m	Y
CA15	Swiss Cottage	Kerbside	X 526633	Y 184392	NO_2	Y	Y	Y (7m)	<1m	Y
CA16	Kentish Town Road	Roadside	X 529013	Y 185102	NO_2	Y	N	Y (1m)	1m	Y
CA17	47 Fitzjohn's Road	Roadside	X 526547	Y 185125	NO_2	Y	N	Y (5m)	5m	Y
CA20	Brill Place	Roadside	X 529914	Y 183147	NO_2	Y	N	Y (9m)	<5m	Y
CA21	Bloomsbury Street	Roadside	X 529962	Y 181620	NO_2	Y	N	Y (4m)	<1m	Y
CA23	Camden Road	Roadside	X 529173	Y 184129	NO_2	Y	N	Y (5m)	<1m	Y
CA24	Chetwynd Road	Roadside	X 528722	Y 185950	NO_2	Y	N	Y (2m)	1m	Y
CA25	Emmanuel Primary	Roadside	X 525325	Y 185255	NO_2	Y	N	Y (3m)	1m	Y
WITT	Wittanhurst Lane	Roadside	X 528213	Y 187203	NO_2	Y	N	Y (3m)	1.5m	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

Table 2.3 Summary of automatic sites against headline AQ objectives

Pollutant	Site	AQ objective result
NO_2	LB London Bloomsbury	**Annual mean 45 µg/m^3** 0 exceedances of hourly mean
	CD1 Swiss Cottage	**Annual mean 66 µg/m^3** 13 exceedances of hourly mean
	CD3 Shaftesbury Avenue	**Annual mean 70 µg/m^3** 1 exceedance of hourly mean
	CD9 Euston Road	**Annual mean 98 µg/m^3** **170 exceedances of hourly mean**
PM_{10}	LB London Bloomsbury	Annual mean 20 µg/m^3 11 exceedances of 24 hour mean
	CD1 Swiss Cottage	Annual mean 22 µg/m^3 12 exceedances of 24 hour mean
	CD3 Shaftesbury Avenue	Annual mean 25 µg/m^3 16 exceedances of 24 hour mean
	CD9 Euston Road	Annual mean 29 µg/m^3 5 exceedances of 24 hour mean

In the summary table above all exceedances of objectives are shown in bold. Table 2.3 shows results for NO_2 and PM_{10}; full details on other pollutants monitored at these sites can be found in the relevant sections below.

Full details of monitoring results and trends can be found in the relevant sections 2.2.1 through 2.2.5.

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

Nitrogen dioxide is monitored at four automatic stations in Camden: two roadside, one kerbside and one urban background. All locations are relevant for public exposure. Annual mean limits for NO_2 continue to be exceeded at all sites.

Table 2.4 Results of Automatic Monitoring of Nitrogen Dioxide: Comparison with Annual Mean Objective

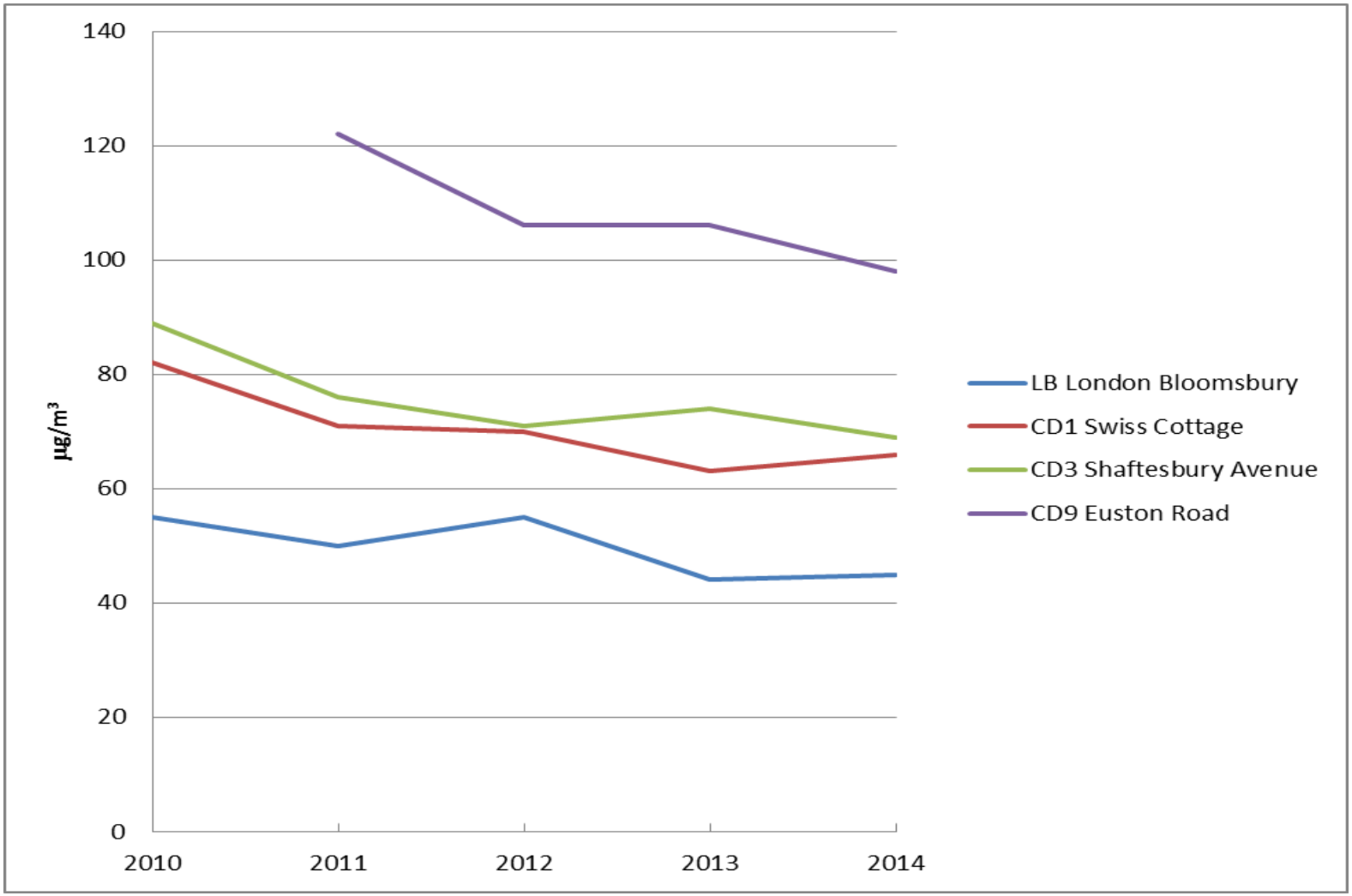
Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring %[a]	Valid Data Capture 2014 % [b]	Annual Mean Concentration μg/m^3				
					2010* [c]	2011* [c]	2012* [c]	2013* [c]	2014 [c]
LB	Urban background	Y	98	98	55	50	**55**	**44**	**45**
CD1	Kerbside	Y	99	99	82	71	**70**	**63**	**66**
CD3	Roadside	Y	42	42	89	76	**71**	**74**	**69***
CD9	Roadside	Y	90	90	-	122*	**106**	**106**	**98**

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).
[c] Means should be "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.
*Annual mean concentrations for previous years are optional.

*Data for CD3 was only available for March 2013 – August 2013. As per TG(09) Box 3.2, the adjustment to estimate annual mean was taken from Camden's three other automatic monitoring stations. Calculations for this can be found in Appendix B.

Recorded data for the available period for CD3 was70μg/m^3. Therefore annualising the data using the average ratio from table B.1 above gives a final annual mean concentration figure of 69.32 μg/m^3.

Figure 2.3 Trends in Annual Mean Nitrogen Dioxide Concentrations measures at Automatic Monitoring Sites



Annual mean concentration levels of NO_2 at all four automatic monitoring stations exceed the relevant objective of 40 μg/m^3.

Annual mean NO2 levels have shown a uniform decrease from 2010 (or 2011 for CD9 Euston Road) to 2014. CD3 Shaftesbury Avenue has seen the greatest decrease 2010-14 of 29.0%, with even the monitoring site with the smallest decrease (LB London Bloomsbury) recording 22.2% lower NO_2 levels in 2014 compared to 2010. Comparing the last two years' data, CD3 Shaftesbury Avenue and CD9 Euston Road recorded decreased NO_2 levels, while LB London Bloomsbury and CD1 Swiss Cottage recorded increased levels.

Table 2.5 Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring %[a]	Valid Data Capture 2014 % [b]	Number of Exceedences of Hourly Mean (200 μg/m^3)				
					2010* [c]	2011* [c]	2012* [c]	2013* [c]	2014 [c]
LB	Urban background	Y	98	98	1	0	1	0	0
CD1	Kerbside	Y	99	99	**128**	**79**	**43**	**28**	13
CD3	Roadside	Y	42	42	21	15	12	6	1 (140.4)[c]
CD9	Roadside	Y	90	90	-	**726**	**295**	**296**	**170**

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).
[c] If the period of valid data is less than 90%, include the 99.8th percentile of hourly means in brackets
*Number of exceedences for previous years are optional.

Diffusion Tube Monitoring Data

Diffusion tube monitoring of this pollutant is carried out at 14 locations in Camden, with a 3 tube co-location study located at the CD1 kerbside automatic monitoring site at Swiss Cottage. Annual mean concentration levels continue to be exceeded at the majority of Camden sites.

Table 2.6 Results of Nitrogen Dioxide Diffusion Tubes in 2014

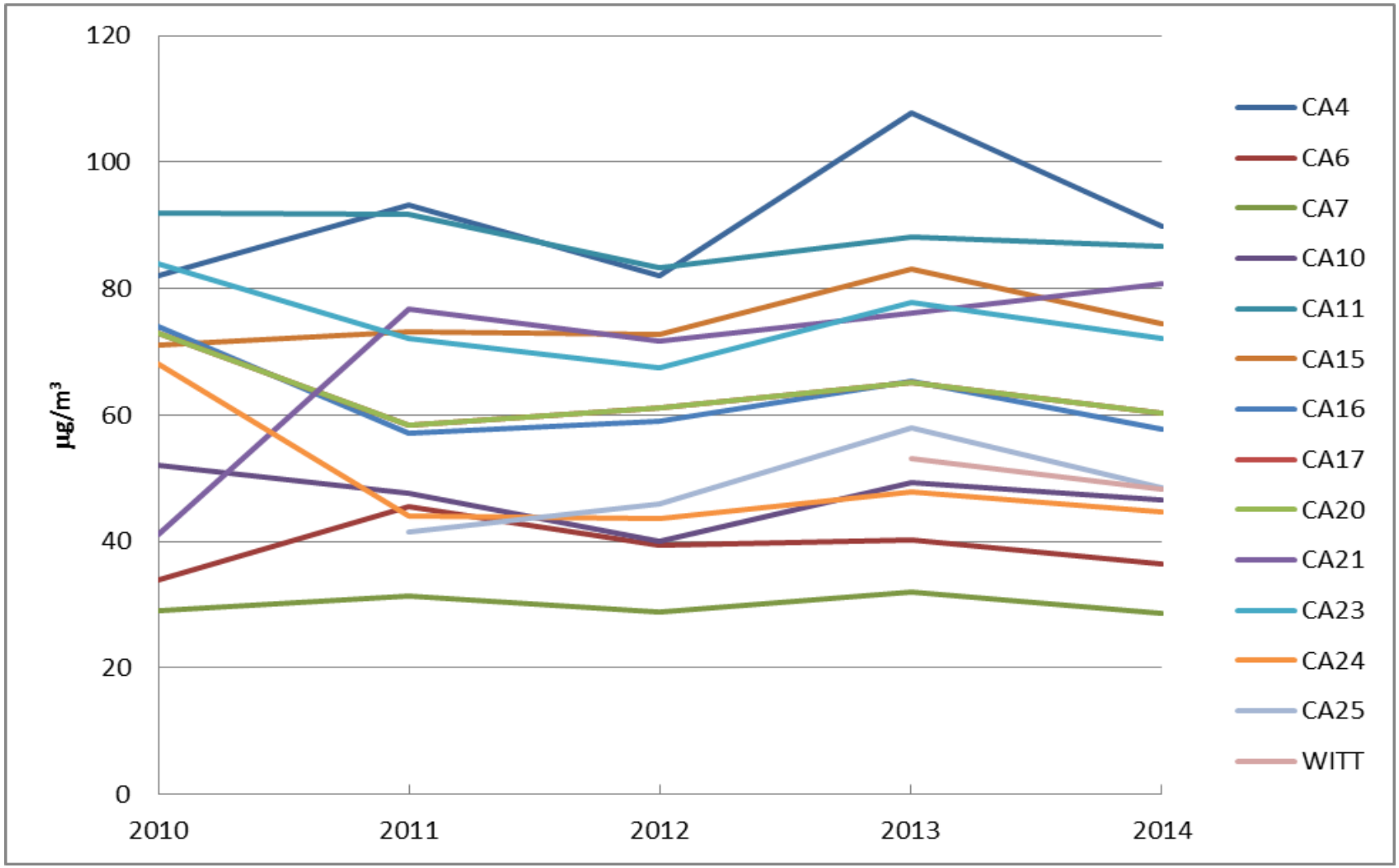
Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2014 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 0.97) 2014 (μg/m3)
CA4	Euston Road	Roadside	Y	N	12	n/a	N	**89.74**
CA6	Wakefield Gardens	Urban background	Y	N	12	n/a	N	36.44
CA7	Frognal Way	Urban background	Y	N	12	n/a	N	28.55
CA10	Tavistock Gardens	Urban background	Y	N	12	n/a	N	**46.50**
CA11	Tottenham Court Road	Kerbside	Y	N	12	n/a	N	**86.75**
CA15	Swiss Cottage	Kerbside	Y	Triplicate and Co-located	12	n/a	N	**74.34**
CA16	Kentish Town Road	Roadside	Y	N	11	n/a	N	**57.83**
CA17	47 Fitzjohn's Road	Roadside	Y	N	12	n/a	N	**60.30**
CA20	Brill Place	Roadside	Y	N	12	n/a	N	**52.34**
CA21	Bloomsbury Street	Roadside	Y	N	12	n/a	N	**80.82**
CA23	Camden Road	Roadside	Y	N	12	n/a	N	**72.21**
CA24	Chetwynd Road	Roadside	Y	N	12	n/a	N	**44.76**
CA25	Emmanuel Primary	Roadside	Y	N	11	n/a	N	**48.36**
WITT	Wittanhurst Lane	Roadside	Y	N	12	n/a	N	**48.26**

Table 2.7 Results of Nitrogen Dioxide Diffusion Tubes (2010 to 2014)

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) μg/m^3				
			2010* (Bias Adjustment Factor = XX)	2011* (Bias Adjustment Factor = 0.95)	2012* (Bias Adjustment Factor = 0.95)	2013* (Bias Adjustment Factor = 1.00)	2014 (Bias Adjustment Factor = 0.97)
CA4	Roadside	Y	**82**	**93.12**	**82.05**	**107.75**	**89.74**
CA6	Urban background	Y	34	**45.61**	39.29	**40.32**	36.44
CA7	Urban background	Y	29	31.46	28.89	31.95	28.55
CA10	Urban background	Y	**52**	**47.56**	**40.12**	**49.37**	**46.50**
CA11	Kerbside	Y	**92**	**91.67**	**83.30**	**88.09**	**86.75**
CA15	Kerbside	Y	**71**	**73.17**	**72.66**	**83.08**	**74.34**
CA16	Roadside	Y	**74**	**57.19**	**58.97**	**65.32**	**57.83**
CA17	Roadside	Y	**73**	**58.39**	**61.20**	**65.24**	**60.30**
CA20	Roadside	Y	**54**	**50.79**	**50.00**	**49.37**	**52.34**
CA21	Roadside	Y	**41**	**76.73**	**71.66**	**76.08**	**80.82**
CA23	Roadside	Y	**84**	**72.21**	**67.40**	**77.85**	**72.21**
CA24	Roadside	Y	**68**	**44.12**	**43.67**	**47.75**	**44.76**
CA25	Roadside	Y	**-**	**41.5**	**45.94**	**57.91**	**48.36**
WITT	Roadside	Y	**-**	**-**	**-**	**53.10**	**48.26**

*Optional

Figure 2.4 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube Monitoring Sites



Annual mean concentration levels of NO_2 at the majority of non-automatic sites continue to exceed objectives. In 2014 12 out of 14 sites exceeded the annual mean objective.

The general trend since 2010 (or first available data for CA25 and WITT) is that of decreasing NO_2 levels. Of the 14 sites nine have seen percentage decreases between 2010 and 2014. Comparing the last two years' data, only two sites reported increases between 2013 and 2014. The biggest decrease in NO_2 since 2010 is 52% at CA24 (Chetwynd Road), while the biggest increase over the same time period is 49% at CA21 (Bloomsbury Street).

2.2.2 PM_{10}

All objectives for this pollutant remain met. However measured concentrations remain above WHO guidelines and therefore the AQMA with respect to PM10 will be retained until levels are further reduced.

Table 2.8 Results of Automatic Monitoring of PM_{10}: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2014 %[b]	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration μg/m^3				
						2010*[c]	2011*[c]	2012*[c]	2013*[c]	2014[c]
LB	Urban background	Y	96	96	Y	18	22	19	18	20
CD1	Kerbside	Y	76	76	Y	26	27	23	21	22
CD3	Roadside	Y	94	94	Y	29	32	29	29	25
CD9	Roadside	Y	24	24	Y	-	-	-	-	29

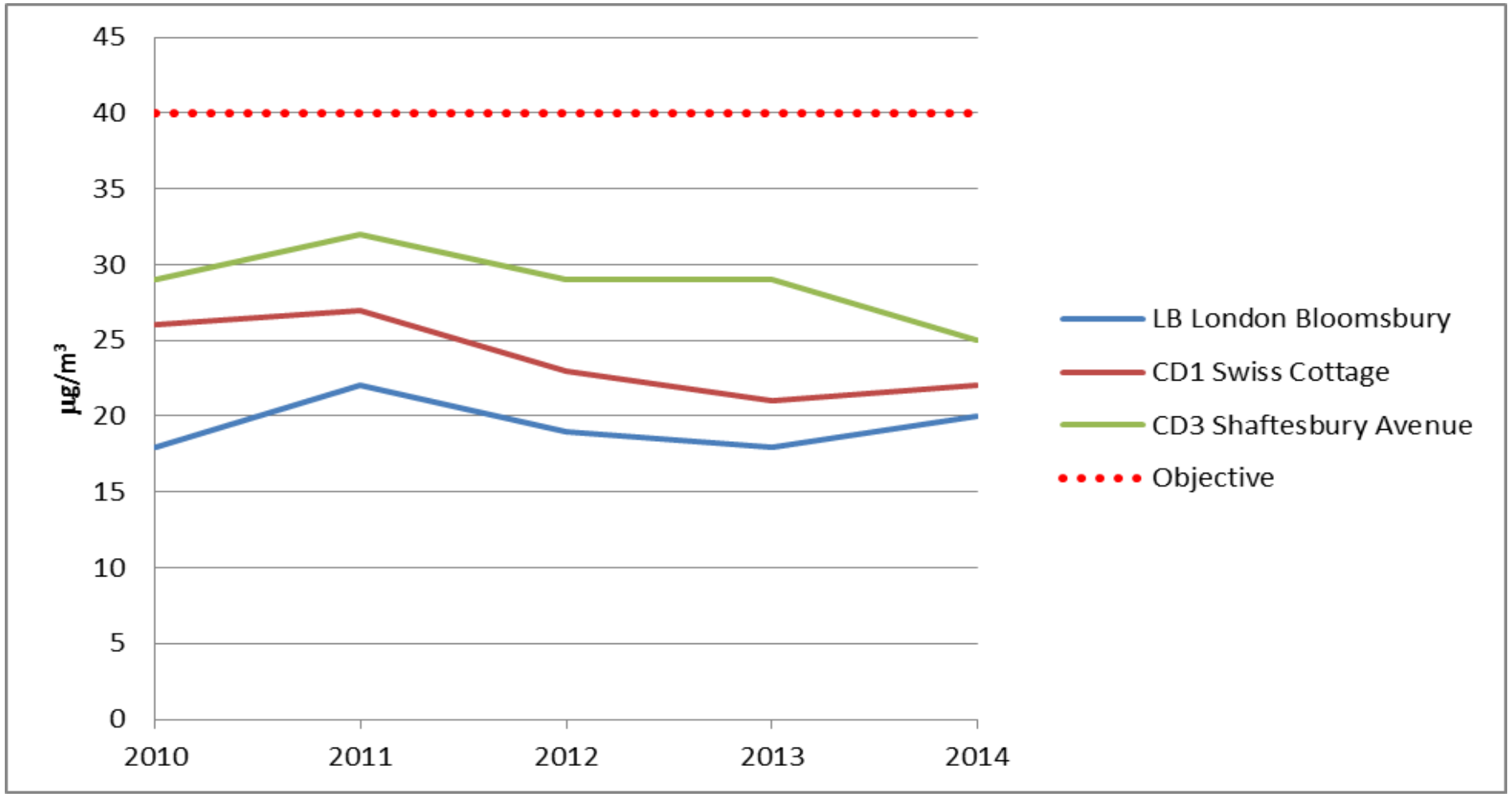
[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).
[c] Means should be "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.
* Optional

Table 2.9 Results of Automatic Monitoring for PM_{10}: Comparison with 24-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2014 %[b]	Confirm Gravimetric Equivalent	Number of Exceedences of 24-Hour Mean (50 μg/m^3)				
						2010*[c]	2011*[c]	2012*[c]	2013*[c]	2014[c]
LB	Urban background	Y	96	96	Y	2	17	10	4	11
CD1	Kerbside	Y	76	76	Y	26	31	21	8	12 (40.8[c])
CD3	Roadside	Y	94	94	Y	29	27	18	17	16
CD9	Roadside	Y	24	24	Y	-	-	-	-	5 (44.1[c])

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).
[c] if data capture is less than 90%, include the 90th percentile of 24-hour means in brackets
* Optional

Figure 2.5 Trends in Annual Mean PM_{10} Concentrations



Trends in annual mean PM10 concentrations show a decrease from 2010 at two sites but a slight increase in levels at London Bloomsbury. Levels at all three sites remain well under the objective for this pollutant.

Results from CD9 are not included in the figure above due to 2014 being the first year data was collected at this site.

2.2.3 Sulphur Dioxide

Sulphur dioxide is monitored at the automatic monitoring site at Bloomsbury. Levels of this pollutant have been traditionally very low in Camden, and there have been no exceedances of any SO_2 objectives over the past fifteen years, as shown in Tables 2.9 and 2.10 below. The trend shows the concentrations of SO_2 continue to fall in the borough, as presented in Figure 2.6.

Table 2.10 Annual SO_2 monitoring data

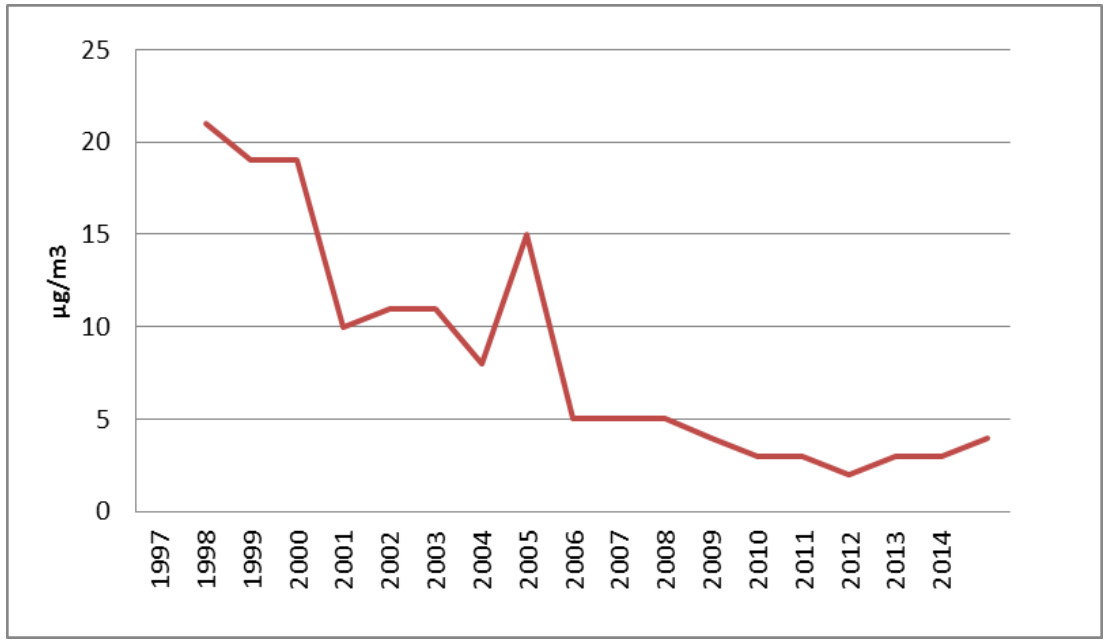
Year	Data Capture (%)	Exceedances of the 15 minute mean	Exceedances of the 1hr mean	Exceedances of the 24hr mean	Annual mean
1997	94	0	0	0	21
1998	96	0	0	0	19
1999	96	0	0	1	19
2000	97	0	0	0	10
2001	92	0	0	0	11
2002	90	0	0	0	11
2003	94	0	0	0	8
2004	98	0	0	0	15
2005	94	0	0	0	5
2006	95	0	0	0	5
2007	82	0	0	0	5
2008	99	0	0	0	4
2009	99	0	0	0	3
2010	99	0	0	0	3
2011	99	0	0	0	2
2012	99	0	0	0	3
2013	86	14	3	0	3
2014	93	3	0	0	4

Table 2.11 Results of Automatic Monitoring of SO_2: Comparison with Annual Mean Objectives

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2014 %[b]	Number of Exceedences (percentile in bracket μg/m³)[c]		
					15-minute Objective (266 μg/m³)	1-hour Objective (350 μg/m³)	24-hour Objective (125 μg/m³)
LB	Urban Background	Y	93	93	3	0	0

[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
[b] i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).
[c] if data capture is less than 90%, include the relevant percentile in brackets

Figure 2.6 Trends in SO_2 Concentrations



Sulpur dioxide levels in Camden have fallen since 1997, with annual means at or under 5 µg/m^3 from 2006 onwards.

2.2.4 Benzene

Benzene is not currently monitored in Camden as historic monitoring in Camden and London has revealed benzene levels to be well below the air quality objective for this pollutant.

2.2.5 Other pollutants monitored

Ozone

Ozone levels are only monitored at the automatic monitoring site at Bloomsbury. Concentrations have been gradually rising since monitoring began in 1997. Before 2008, the 8 hour mean objective of 100 µg/m^3 was exceeded twice, once in 2003 and then again in 2006. Since 2008, this objective has been exceeded at least once a year.

Table 2.12 Summary of ozone levels monitored

Year	Data Capture (%)	Annual Mean	Exceedances of the 8hr mean
1993	96	18	0
1994	96	22	0
1995	93	20	0
1996	98	18	0
1997	96	20	0
1998	96	20	0
1999	98	24	0
2000	97	22	0
2001	97	24	0
2002	89	22	0
2003	82	30	6
2004	97	24	0
2005	91	23	0
2006	96	29	5
2007	85	24	0
2008	98	28	1
2009	99	26	1
2010	93	23	1
2011	99	27	3

2012	99	26	7
2013	98	26	1
2014	98	29	1

Carbon Monoxide

Carbon monoxide is only monitored at the automatic monitoring site at Bloomsbury. The air quality objective for carbon monoxide has been achieved since monitoring began in 1993. Annual mean CO concentrations display a downward trend over the last twelve years with concentrations stabilising to their lowest long term concentration between 2007 and 2011. Issues with data capture mean data is unavailable for 2013 and 2014; given long term trends it is extremely unlikely that data for this time period would reveal concerns.

Table 2.13 Summary of carbon monoxide levels monitored

Year	Data Capture (%)	Annual Mean	Exceedances of the rolling 8hr mean
1993	82	0.6	0
1994	97	0.6	0
1995	90	0.7	0
1996	94	0.7	0
1997	96	0.7	0
1998	96	0.7	0
1999	85	0.6	0
2000	95	0.6	0
2001	94	0.6	0
2002	88	0.3	0
2003	93	0.4	0
2004	97	0.3	0
2005	92	0.5	0
2006	95	0.4	0
2007	84	0.3	0
2008	99	0.3	0
2009	91	0.3	0
2010	97	0.2	0
2011	99	0.2	0
2012	99	0.2	0

$PM_{2.5}$

$PM_{2.5}$ is monitored by three of Camden's automatic monitoring sites: Bloomsbury (LB), Swiss Cottage (CD1) and Euston Road (CD9), with data available dependant on the installation of PM2.5 monitors on site. The objective for annual mean $PM_{2.5}$ is 25 µg/m^3. In addition, there is a target of 15% reduction in average urban background concentrations against a 2010 baseline by 2020, using a 3 year running average mean. Camden meets the objective for annual mean $PM_{2.5}$ at all sites for all years where data has been recorded. Camden's urban background monitoring site (Bloomsbury) has shown a 14% reduction in 3 year running average mean since the 2010 baseline, which is well on track to achieve the objective of a 15% reduction by 2020.

Table 2.14 Annual PM2.5 levels

		Annual PM2.5 µg/m^3						
Site ID	**Site**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
LB	Bloomsbury	17.1	16.3	16.1	17.4	16.2	11.6	14.6
CD1	Swiss Cottage	-	17.4	16.5	16	13.3	15.8	15
CD9	Euston Road	-	-	-	-	-	-	20.5

Table 2.15 3 year running annual urban background PM2.5

		3 year running annual PM2.5 µg/m^3				
Site ID	**Site**	**2010**	**2011**	**2012**	**2013**	**2014**
LB	Bloomsbury	16.5	16.6	16.6	15.1	14.1

2.2.6 Summary of Compliance with AQS Objectives

Camden meets the annual mean objective for $PM_{2.5}$ at all sites. Camden is also projected to comply with the 15% reduction in average urban background concentrations against a 2010 baseline by 2020, using a 3 year running average mean objective.

LB Camden has examined the results from monitoring in the borough. Concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

As the entirety of the borough is an AQMA in respect to the annual mean objective for NO2, there is no requirement to proceed to a Detailed Assessment.

LB Camden confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic

As the entirety of the borough is an AQMA in respect to the annual mean objective for NO2, there is no requirement to proceed to a Detailed Assessment.

LB Camden confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

3.3 Roads with a High Flow of Buses and/or HGVs.

LB Camden confirms that there are no new/newly identified roads with high flows of buses/HDVs.

3.4 Junctions

LB Camden confirms that there are no new/newly identified busy junctions/busy roads.

3.5 New Roads Constructed or Proposed Since the Last Round of Review and Assessment

LB Camden has assessed new/proposed roads meeting the criteria in Section A.5 of Box 5.3 in TG(09), and concluded that it will not be necessary to proceed to a Detailed Assessment.

3.6 Roads with Significantly Changed Traffic Flows

There are no roads with significantly changed traffic flows that do not fall under the auspices of sections 3.1-3.5 above, as per instructions in Box A6 of TG(09).

LB Camden confirms that there are no new/newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

LB Camden confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

LB Camden confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

While Camden has three major railway termini (Euston, King's Cross, and St Pancras), Camden does not fall under the list of rail lines with heavy traffic of diesel passenger trains, as per Paragraph 5.4 and Table 5.1 of TG(09).

4.2.1 Stationary Trains

LB Camden confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

4.2.2 Moving Trains

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

4.3 Ports (Shipping)

LB Camden confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

5 Industrial Sources

5.1 Industrial Installations

Industrial sources are controlled by the Environment Agency (EA), and by local authorities under the Pollution Prevention and Control regulations. Camden has no such sources falling under scope of this section.

5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

LB Camden confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been Introduced

LB Camden confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment

LB Camden confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

5.2 Major Fuel (Petrol) Storage Depots

There are no major fuel (petrol) storage depots within the Local Authority area.

5.3 Petrol Stations

All petrol stations within LB Camden have been covered by previous Review and Assessment reports.

LB Camden confirms that there are no petrol stations meeting the specified criteria**.**

5.4 Poultry Farms

LB Camden confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

LB Camden Development Policies 2010-15 (CS13) highlights the use of biomass as the borough's least preferred option for the provision of renewable energy. Since 2005 only one application for a major development has reference to biomass boilers in s106 agreements. Camden planning does not record sustainability plans with reference to biomass boilers unless they are identified as a specific clause or obligation, however anecdotally the number of in-use biomass boilers in the borough is likely to be minimal; therefore it is not necessary to proceed to a Detailed Assessment.

LB Camden has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.2 Biomass Combustion – Combined Impacts

LB Camden has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.3 Domestic Solid-Fuel Burning

LB Camden confirms that there are no areas of significant domestic fuel use in the Local Authority area.

7 Fugitive or Uncontrolled Sources

Of the sources set out in 5.92 of TG(09), emissions major construction works are relevant to LB Camden. Where relevant, assessments have been carried out as per planning requirements.

LB Camden confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

Camden continues to exceed annual mean air quality objectives for NO_2. All four automatic monitoring stations and 12 of 14 diffusion tube sites recorded NO_2 above the required limit in 2014.

While there is a general trend towards decreasing NO_2 levels, (of Camden's 14 diffusion tube sites nine have seen percentage decreases between 2010 and 2014, while all four automatic monitoring sites are showing uniform reductions), NO_2 levels remain a key area of concern.

One hour mean objectives for NO_2 also continue to be exceeded at one site (Euston Road CD9).

The vast majority of other objectives continue to be met, as per previous Progress Reports and USAs. The one exception to this is the $PM_{2.5}$ target of a15% reduction in average urban background concentrations against a 2010 baseline by 2020, using a 3 year running average mean. Camden has made excellent progress against this target and if current trends continue will meet this reduction target in 2016, well ahead of the 2020 deadline. While almost all PM targets are being met, it remains a public health concern as either levels remain above WHO guidelines, are that there are no safe levels.

As such Camden proposes no changes to the existing AQMA at this time.

8.2 Conclusions from Assessment of Sources

There are no new or changes to existing sources that have contributed significantly to local concentrations of either NO2 or PM10. Contributions from biomass burning are considered to be insignificant. As the entirety of the borough is AQMA, the

majority of changes since the last Assessment do not require subsequent Detailed Assessments.

Where major developments will impact on local AQ (for example the King's Cross redevelopment), planning elements were considered during the 2012 USA and subsequent impacts have been satisfactorily controlled and mitigated at all stages of planning, construction and operation.

8.3 Proposed Actions

This USA reflects that there is no change in overall exceedances since the previous Progress Report, and from the previous USA in 2012. Annual mean objective for limit for NO_2 continues to be exceeded throughout the AQMA.

Camden therefore intends to retain the current AQMA with no changes.

Camden's Air Quality Action Plan 2012-15 with actions is repeated in Appendix C.

The next course of action is to submit the 2016 Progress Report.

9 References

Defra 2009; Local Air Quality Management, Technical Guidance LAQM.TG(09).

LB Camden 2011; Green Action For Change. Camden's Environmental Sustainability Plan (2011-2020).

LB Camden 2012; Air Quality Action Plan 2012-15.

LB Camden 2012; Updated Screening Assessment 2012.

LB Camden 2014; Air Quality Progress Report 2014.

LAQM Helpdesk 2014; WASP Summary – R117-124. Summary of Laboratory Performance in WASP NO2 Proficiency Testing Scheme for Rounds 117-124.

10 Appendices

10.1 Appendix A: QA/QC Data

Non automatic monitoring

This section contains details of Gradko international's:

- WASP scheme scoring results for the period between this and the Fifth Round of USAs.
- Precision Scores for 2008 onwards
- UKAS schedule of accreditation

Figure A.1 WASP scheme scoring Rounds 117-124

The following table lists those UK laboratories undertaking LAQM activities that have participated in recent HSL WASP NO_2 PT rounds and the percentage (%) of results submitted which were subsequently determined to be **satisfactory** based upon a z-score of ≤ ± 2 as defined above.

WASP Round	WASP R117	WASP R118	WASP R119	WASP R120	WASP R121	WASP R122	WASP R123	WASP R124
Round conducted in the period	April – June 2012	July – September 2012	October – December 2012	January – March 2013	April – June 2013	July – September 2013	October – December 2013	January – March 2014
Aberdeen Scientific Services	100 %	100 %	100 %	100 %	100 %	100 %	NR [2]	75 %
Cardiff Scientific Services	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Edinburgh Scientific Services	100 %	100 %	100 %	100 %	100 %	75 %	100 %	100 %
Environmental Services Group, Didcot [1]	100 %	100 %	100 %	100 %	100 %	100 %	100 %	
Exova (formerly Clyde Analytical)	0 %	100 %	25 %	75 %	NR [2]	NR [2]	NR [2]	50 %
Glasgow Scientific Services	50 %	100 %	100 %	50 %	25 %	100 %	100 %	100 %
Gradko International [1]	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Kent Scientific Services	100 %	75 %	100 %	50 %	75 %	100 %	100 %	100 %
Kirklees MBC	100 %	75 %	100 %	100 %	100 %	100 %	100 %	100 %
Lambeth Scientific Services	100 %	0 %	100 %	100 %	0 %	50 %	75 %	25 %
Milton Keynes Council	100 %	75 %	100 %	50 %	100 %	75 %	75 %	75 %
Northampton Borough Council	100 %	100 %	100 %	0 %	100 %	100 %	100 %	100 %
Somerset Scientific Services	100 %	100 %	100 %	100 %	100 %	75 %	100 %	100 %
South Yorkshire Air Quality Samplers	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Staffordshire County Council	100 %	75 %	100 %	50 %	100 %	100 %	100 %	100 %
Tayside Scientific Services (formerly Dundee CC)	100 %	100 %	100 %	75 %	100 %	100 %	100 %	100 %
West Yorkshire Analytical Services	75 %	50 %	100 %	100 %	100 %	50 %	100 %	75 %

[1] Participant subscribes to two sets of test samples (2 x 4 test samples) in each WASP PT round.
[2] NR Not reported

Taken from: LAQM Helpdesk (April 2014); WASP Summary – R117-124. Summary of Laboratory Performance in WASP NO2 Proficiency Testing Scheme for Rounds 117-124.

Figure A.2 Gradko International Precision Scores 2008-14

Year	Precision	Year	Precision	Year	Precision	Year	Precision
2008	G	2009	G	2010	G	2011	G
2008	G	2009	G	2010	G	2011	G
2008	G	2009	G	2010	G	2011	G
2008	G	2009	G	2010	G	2011	G
2008	G	2009	G	2010	G	2011	G
2008	G	2009	G	2010	G	2011	G
2008	G	2009	G	2010	G	2011	G
2008	G	2009	G	2010	G	2011	G
2008	G	2009	G	2010	G	2011	G
2008	G	2009	G	2010	G	2011	G
2008	G	2009	P	2010	G	2011	G
2008	G	2009	G	2010	G	2011	G
2008	G	2009	G	2010	G	2011	G
2008	G	2009	G	2010	G	2011	G
2008	G					2011	G
2008	P					2011	G
2008	G					2011	G
2008	G					2011	G
						2011	G
						2011	G
						2011	G
						2011	P
						2011	P
						2011	P
						2011	P

Year	Precision	Year	Precision	Year	Precision
2012	G	2013	G	2014	G
2012	G	2013	G	2014	G
2012	G	2013	G	2014	G
2012	G	2013	G	2014	G
2012	G	2013	G	2014	G
2012	G	2013	G	2014	G
2012	G	2013	G	2014	G
2012	G	2013	G	2014	G
2012	G	2013	G	2014	P
2012	G	2013	G		
2012	G	2013	G		
2012	G	2013	G		
2012	G	2013	G		
2012	G	2013	G		
2012	G	2013	G		
2012	G	2013	G		
2012	G	2013	G		
2012	P	2013	G		
2012	P	2013	G		
2012	P	2013	P		

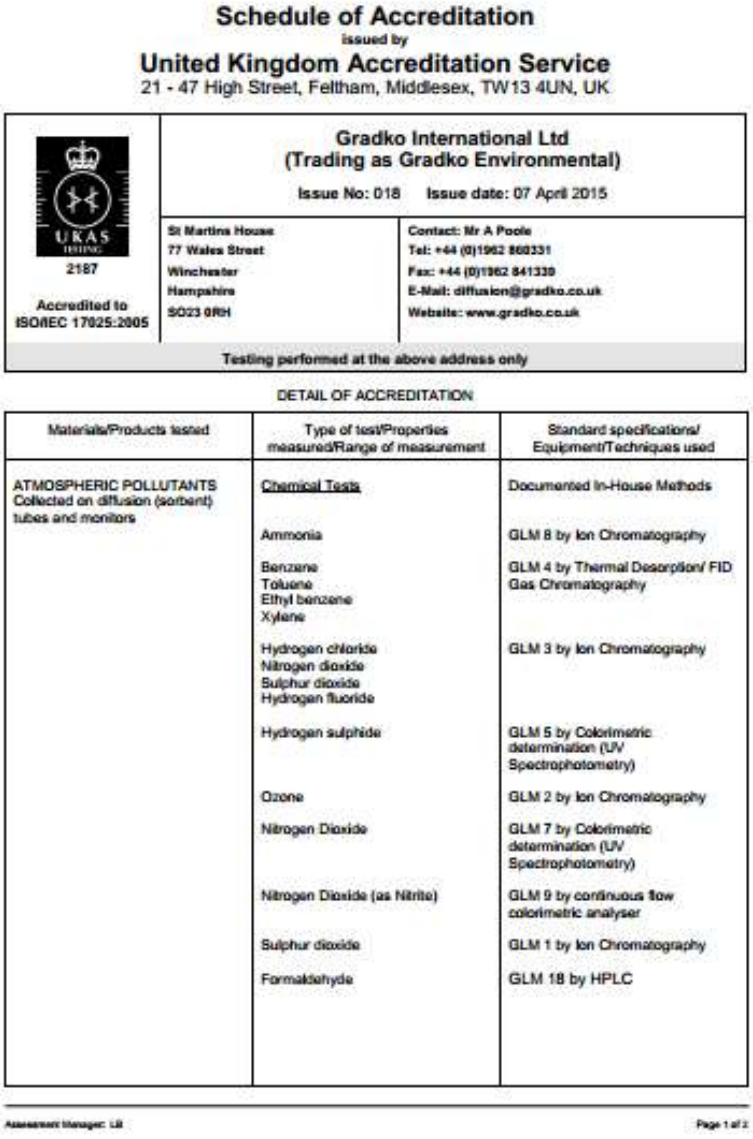
Where G: Good and P: Poor

Taken from Tube Precision 2015 (Defra 2015).

http://laqm.defra.gov.uk/documents/Tube_Precision_2015_version_03_15-Final.pdf

(accessed April 2015)

Figure A.3 Gradko International UKAS Accreditation



Schedule of Accreditation

issued by

United Kingdom Accreditation Service

21 - 47 High Street, Feltham, Middlesex, TW13 4UN, UK

2187

Accredited to ISO/IEC 17025:2005

Gradko International Ltd
(Trading as Gradko Environmental)

Issue No: 018 Issue date: 07 April 2015

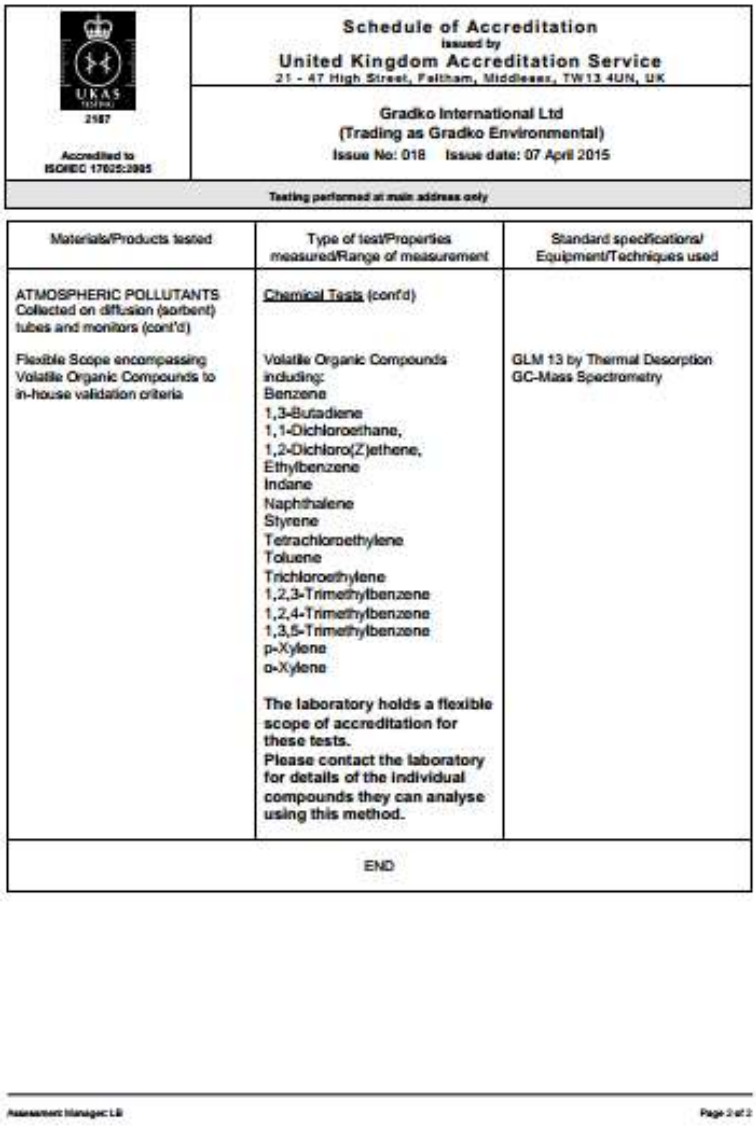
St Martins House
77 Wales Street
Winchester
Hampshire
SO23 0RH

Contact: Mr A Poole
Tel: +44 (0)1962 860331
Fax: +44 (0)1962 841330
E-Mail: diffusion@gradko.co.uk
Website: www.gradko.co.uk

Testing performed at the above address only

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ATMOSPHERIC POLLUTANTS Collected on diffusion (sorbent) tubes and monitors	Chemical Tests	Documented In-House Methods
	Ammonia	GLM 8 by Ion Chromatography
	Benzene Toluene Ethyl benzene Xylene	GLM 4 by Thermal Desorption/ FID Gas Chromatography
	Hydrogen chloride Nitrogen dioxide Sulphur dioxide Hydrogen fluoride	GLM 3 by Ion Chromatography
	Hydrogen sulphide	GLM 5 by Colorimetric determination (UV Spectrophotometry)
	Ozone	GLM 2 by Ion Chromatography
	Nitrogen Dioxide	GLM 7 by Colorimetric determination (UV Spectrophotometry)
	Nitrogen Dioxide (as Nitrite)	GLM 9 by continuous flow colorimetric analyser
	Sulphur dioxide	GLM 1 by Ion Chromatography
	Formaldehyde	GLM 18 by HPLC



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Accredited to ISO/IEC 17025:2005

Gradko International Ltd
(Trading as Gradko Environmental)
Issue No: 018 Issue date: 07 April 2015

Testing performed at main address only

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ATMOSPHERIC POLLUTANTS Collected on diffusion (sorbent) tubes and monitors (cont'd)	Chemical Tests (cont'd)	
Flexible Scope encompassing Volatile Organic Compounds to in-house validation criteria	Volatile Organic Compounds including: Benzene 1,3-Butadiene 1,1-Dichloroethane, 1,2-Dichloro(Z)ethene, Ethylbenzene Indane Naphthalene Styrene Tetrachloroethylene Toluene Trichloroethylene 1,2,3-Trimethylbenzene 1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene p-Xylene o-Xylene **The laboratory holds a flexible scope of accreditation for these tests. Please contact the laboratory for details of the individual compounds they can analyse using this method.**	GLM 13 by Thermal Desorption GC-Mass Spectrometry

END

Assessment Manager: LB Page 2 of 2

Taken from: UKAS Laboratory Testing Website. http://www.ukas.org/testing/schedules/Actual/2187Testing%20Single.pdf (accessed April 201%)

Diffusion Tube Bias Adjustment Factors

Diffusion Tube bias adjustment factors are chosen for the Laboratory, Preparation Method and Year relevant, and are taken from the Diffusion Tube Bias Adjustment Factors Spreadsheet.

Figure A.4 Sample diffusion tube bias adjustment factor (2014)

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/15

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2015
LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List

If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List

If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List

If a year is not shown, we have no data[2]

Step 4:

Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.

If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953

Analysed By[1]	Method To make your selection, choose (All) from the pop-up list	Year[2] To make your selection, choose (All)	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[4]	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	50% TEA in acetone	2014	R	East Hampshire District Council	12	25	23	10.9%	G	**0.90**
Gradko	50% TEA in acetone	2014	R	London Borough of Croydon	11	48	46	4.5%	P	**0.96**
Gradko	50% TEA in acetone	2014	R	London Borough of Richmond upon Thame	10	39	36	6.2%	G	**0.94**
Gradko	50% TEA in acetone	2014	R	London Borough of Richmond upon Thame	12	48	42	15.2%	G	**0.87**
Gradko	50% TEA in acetone	2014	B	London Borough of Richmond upon Thame	11	24	25	-4.0%	G	**1.04**
Gradko	50% TEA in acetone	2014	KS	Marylebone Road Intercomparison	12	92	80	14.8%	G	**0.87**
Gradko	50% TEA in acetone	2014	UB	Norwich City Council	12	13	14	-6.2%	G	**1.07**
Gradko	50% TEA in acetone	2014	R	Reading Borough Council	11	42	41	3.6%	G	**0.97**
Gradko	50% TEA in acetone	2014	R	Worthing Borough Council	12	43	51	-15.2%	G	**1.18**
Gradko	50% TEA in acetone	2014		**Overall Factor[3] (9 studies)**				**Use**		**0.97**

10.2 Appendix B: Annualised mean calculations

Table B.1 Adjustment to estimate annual mean NO_2

Site ID	Annual mean (Am) 2014	Period mean (Pm) 2014	Ratio (Am/Pm)
LB	45	43	1.04651163
CD1	66	66	1
CD9	98	106	0.9245283
Average Ratio:			**0.99034664**

10.3 Appendix C: AQ Action Plan actions

SECTION 1: REDUCING TRANSPORT EMISSIONS

Action	Measure/indicator	Timeframe
1. Undertake measures to increase walking and cycling in the borough.	• Percentage reduction in resident trips made by car and motorcycle • Percentage increase in cycling as a proportion of traffic flow	Ongoing
2. Undertake travel awareness initiatives which make links with improving air quality.	• Number of events/yr (and number of attendees where possible) • Inclusion of air quality information/advice in relevant communications	Ongoing
3. Use car-clubs as a means to encourage residents to give up owning a car and to drive less.	• Number of new car club members	Ongoing
4. Work in partnership with schools and businesses by providing advice to encourage the adoption of travel plans.	• Number of travel plans produced/yr	Ongoing
5. Support the uptake of low emission (electric and bio-methane) vehicles.	• Uptake of low emission vehicles • Number of electric charging points • Number of times Camden electric vehicle trials video is viewed	Ongoing
6. Provide guidance and information about low emission vehicles to residents and local businesses.	• Number of people using Camden's web-based advice	Ongoing
7. Undertake awareness-raising to encourage drivers to employ smarter driving techniques and switch off their engines, and raise awareness about the impact of tyre and break wear.	• Incorporating messages into relevant communication channels and campaigns	Ongoing
8. Increase the proportion of low emission vehicles in our fleet, and reduce fuel usage.	• % change in emissions (kg) from Council vehicle fleet/annum against 2009/10 baseline	Ongoing
9. Review Camden's Corporate Travel Plan and introduce new measures to reduce staff travel by car.	• Number of events/promotions to encourage walking and	Plan reviewed by April 2013

	cycling	
10. Update and adhere to Camden's Green Fleet Policy.	• % of vehicles purchased/leased in line with policy	Policy updated by January 2013
11. Undertake a feasibility study into a freight consolidation centre for Camden's deliveries.	• Development of study with proposals for next steps	April 2013
12. Seek opportunities to improve the sustainability of Camden's fleet through the Carbon Management Plan (CMP).	• Number and type of projects funded through the CMP	2013-2020
13. Develop and trial technologically advanced cargo cycle vehicles in public/private partnership.	• Development of vehicle and operation of trial	June 2013

SECTION 2: REDUCING EMISSIONS ASSOCIATED WITH NEW DEVELOPMENT

Action	Measure/indicator	Timeframe
14. Require developers to undertake an air quality assessment (AQA) in circumstances where a new development could have a negative impact on air quality, and provide an air pollution mitigation plan where necessary.	• Number of planning applications assessed and regulated through AQAs	Ongoing
15. Require developers to submit Construction Management Plans in accordance with the London Best Practise Guidance to Control Dust and Emissions from Construction and Demolition. Through onsite pollutant monitoring, ensure that large developments are adhering to the CMP requirements.	• Number of Construction Management Plans and monitoring requirements included for relevant developments	Ongoing
16. Continue to use planning conditions and obligations to require developers to adopt measures which will reduce transport emissions, such as requesting travel and business plans, installing electric vehicle recharging infrastructure, and allocating car club bays.	• Number of sites with reduced parking • Number of sites with cycle parking facilities • Number of sites with EV charging points and car club spaces	Ongoing
17. Review and update Camden's air quality policies and guidance in line with the National Planning Policy Framework April 2012, and revised Best Practice Construction Guidance	• Guidance updated and followed	April 2013

from the GLA, which is due end at the end of 2012.		
18. Require development sites to meet the Mayor of London's energy hierarchy, with high standards of sustainable building design and construction, and consideration of CHP and renewables. Developers must ensure that best practice requirements for controlling NOx and PM_{10} emissions from biomass boilers and CHP are met.	• Number of biomass boilers/CHP installed with conditions/obligations set to control emissions	Ongoing

SECTION 3: REDUCING EMISSIONS FROM GAS BOILERS AND INDUSTRIAL PROCESSES

Action	Measure/indicator	Timeframe
19. Camden will promote the adoption of fuel saving measures to residents through the Green Camden campaign.	• Number of residents receiving advice • Number of home energy visits	Ongoing
20. Camden will promote the adoption of fuel saving measures to businesses through the Camden Climate Change Alliance.	• Number of new business subscribed to Climate Change Alliance/yr	Ongoing
21. Ensure forthcoming planned awareness-raising projects (Campaign Days, Business project, and Clean Air for Schools) include awareness raising about the link with boilers and air quality, to reduce boiler usage and ensure newly installed boilers are low-NOx.	• The forthcoming detailed campaign plans will include specific measurable outcomes	April 2014
22. Continue to undertake energy efficiency improvement work in the Council's own buildings.	• Progress with insulation and improvement programmes	Ongoing
23. Reduce gas consumption from Camden's Corporate Property (excluding housing).	• Reduction in gas consumption	Ongoing
24. Ensure that all Part B Installations in the borough maintain the highest standards of air pollution emission control.	• Number of Part B Installations meeting compliance	Ongoing

SECTION 4: RAISING AWARENESS

Action	Measure/indicator	Timeframe
25. Continue to disseminate up to date information about air quality and investigate new methods of informing the public about air pollution levels.	• Number of people visiting Camden's air quality webpages	Ongoing
26. Continue to monitor air pollution levels across the borough and review our air quality monitoring network every year.	• Continued monitoring	Ongoing
27. Continue to monitor, maintain and refresh the LED air quality sign.	• Increase in air quality enquiries • Uptake of campaigns/webpages that have been advertised on the sign	2012 - 14
28. Develop and deliver a communications strategy which ensures maximum co-benefits from the multiple planned projects.	• Communications strategy in place • Successful and coordinated approach to delivering the varied project schedule	Strategy in place by February 2013
29. Work directly with 2-3 schools for the "Clean Air Zones for Schools" project, to raise awareness and deliver direct improvements to pupils (such as green screens/energy efficiency measures/reduction in idling), and ensure that schools not involved in CAZ$S benefit from shared information and dissemination of resources. *This project will be delivered in partnership with the GLA and several other London boroughs.*	• Number of students reached • Amount of exposure reduced/awareness raised • Development of replicable models for other schools • Effective dissemination of outputs to other schools	April 2014
30. Deliver an AQ business campaign. *This project will be delivered in partnership with the GLA and several other London boroughs.*	• Number of businesses signed up to campaign	April 2014
31. Deliver a "Campaign Days" project to encourage behaviour change when air quality is particularly elevated. *This project will be delivered in partnership with the GLA and several other London boroughs.*	• TBC	April 2014
32. Seek funding for air quality projects.	• Number of successful funding bids	Ongoing

33. Seek opportunities to strengthen the link between public health and air quality through joint working and policy development with Public Health in Camden.	• Policies, relationships and processes in place to ensure air quality is considered wherever relevant.	Ongoing

SECTION 5: LOBBYING AND PARTNERSHIP WORKING

Action	Measure/indicator	Time frame
34. Continue to support measures introduced by the Mayor to improve air quality.	• Full participation in joint projects, attendance at meetings, etc.	Ongoing
35. Continue to partner with other local authorities to lobby TfL and the GLA on reducing air pollution from taxis and buses.	• Engagement with relevant authorities and improvement in performance of taxis and buses	Ongoing
36. Lobby national government to implement a national NO_2-abatement technology framework, to fund research into tyre and break wear, and to provide financial and strategic support for air quality.	• Lobbying undertaken and commitments obtained.	Ongoing
37. Work with TfL and the GLA to explore options for encouraging increased uptake of bio-methane.	• Increased usage of bio-methane refuelling station	Ongoing