2014 Air Quality Progress Report for London Borough of Camden

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

April 2014

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Report Reference number	

Executive Summary

The London Borough of Camden has examined the results from monitoring in the borough.

Concentrations within the AQMA still exceed the long term objectives for NO_2 at all of our automatic monitoring sites and at the vast majority of our nitrogen dioxide diffusion tube sites, and exceeds the short term objectives at two of four of the automatic monitoring sites, so the AQMA should remain. We continue to meet objectives for all of the pollutants we monitor with the exception of NO_2.

There are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

As the whole of the borough has been designated an AQMA there is no need to carry out a Detailed Assessment at this time.

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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, 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 are 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 Progress Report

This report fulfils the requirements of the Local Air Quality Management (LAQM) 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 exceedences 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.

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 LAQM 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 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 exceedences 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	Annual mean	31.12.2010
1,3-Butadiene	2.25 µg/m^3	Running annual mean	31.12.2003
Carbon monoxide	10 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.50 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
Particulate Matter (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 exceeded more than 3 times a year	24-hour mean	31.12.2004
	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

A previous Progress Report was completed in 2012. It had the following conclusions:

1.4.1 Conclusions from New Monitoring Data

Concentrations within the AQMA still exceed the objectives for NO_2 at all of our automatic monitoring sites and the vast majority of our nitrogen dioxide diffusion tube sites and the AQMA should remain. We continue to meet objectives for all of the pollutants we monitor with the exception of NO_2.

As the whole of the borough has been designated an Air Quality Management Area there is no need to carry out a Detailed Assessment at this time. We will therefore proceed to the 2014 Progress Report.

1.4.2 Conclusions relating to New Local Developments

No new or newly identified local developments which may have an impact on air quality within the Local Authority area.

1.4.3 Proposed Actions

Due to no significant change in the situation since the completion of the last Air Quality Action Plan, we refer to this document for proposed actions.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

In 2013, Camden operated four automatic monitoring sites. Their location is shown in Figure 2.1 and the details are described in Table 2.1.

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). These are the only UKAS accredited bodies for this process in the UK. NPL is also UKAS accredited for the recertification of onsite cylinders.

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(s) of Automatic Monitoring Sites

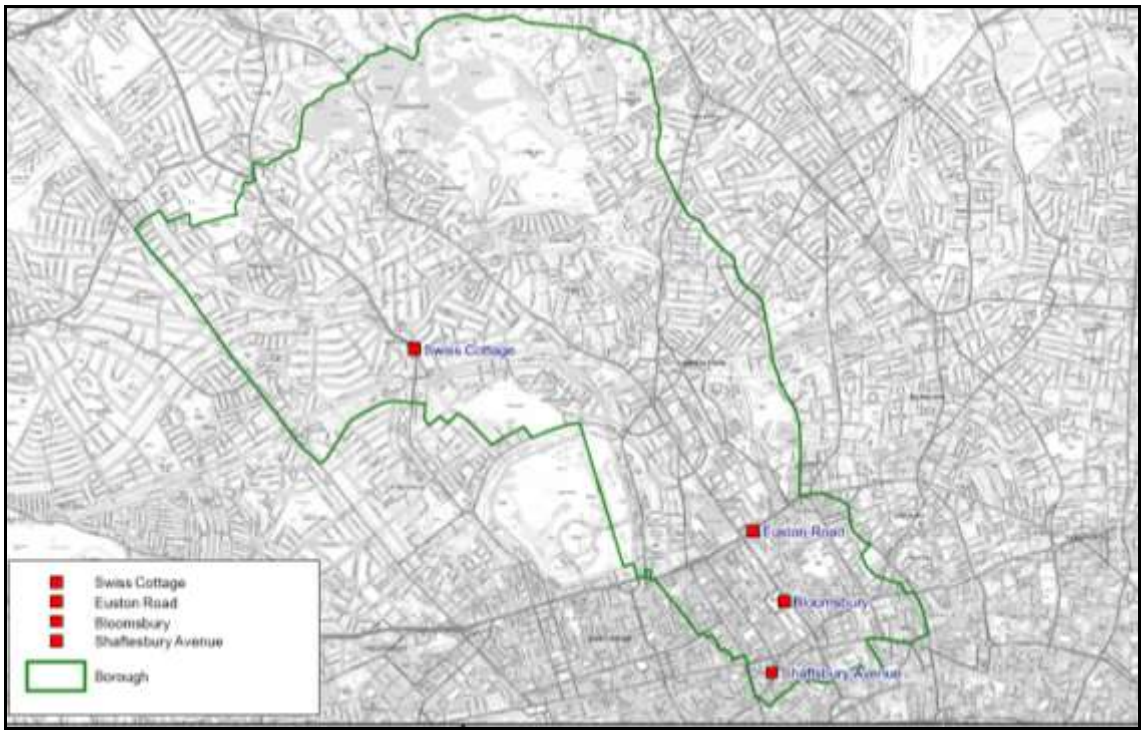


Table 2.1 Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Inlet Height (m)	Pollutants Monitored	In AQMA?	Monitoring Technique	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
LB	London Bloomsbury	Urban background	X 530120	Y 182034	3	NO2, PM10, PM2.5, SO2, CO, O3	Y	FDMS, API Nox	Y (40m)	27m	Y
CD1	Swiss Cottage	Kerbside	X 526633	Y 184392	3	NO2, PM10, PM2.5,	Y	FDMS, AC31 Nox	Y (7m)	3m	Y
CD3	Shaftesbury Avenue	Roadside	X 530060	Y 181290	4	NO2, PM10,	Y	TEOM, API Nox	Y (1m)	<1m	Y
CD9	Euston Road	Roadside	X 529878	Y 182648	2.5	NO2	Y	API Nox	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 2013 programme consisted of fourteen sites chosen as they were considered the most important sites 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.

There was one change of monitoring station with Withanhurst Lane introduced instead of Mill Lane/West End Lane. This was due to- specific concerns of residents and to provide coverage of a broader range of areas in the borough as Mill Lane/West End Lane was very close to Emmanuel Primary School.

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.

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).

Figure 2.2 Map of Non-Automatic Monitoring Sites

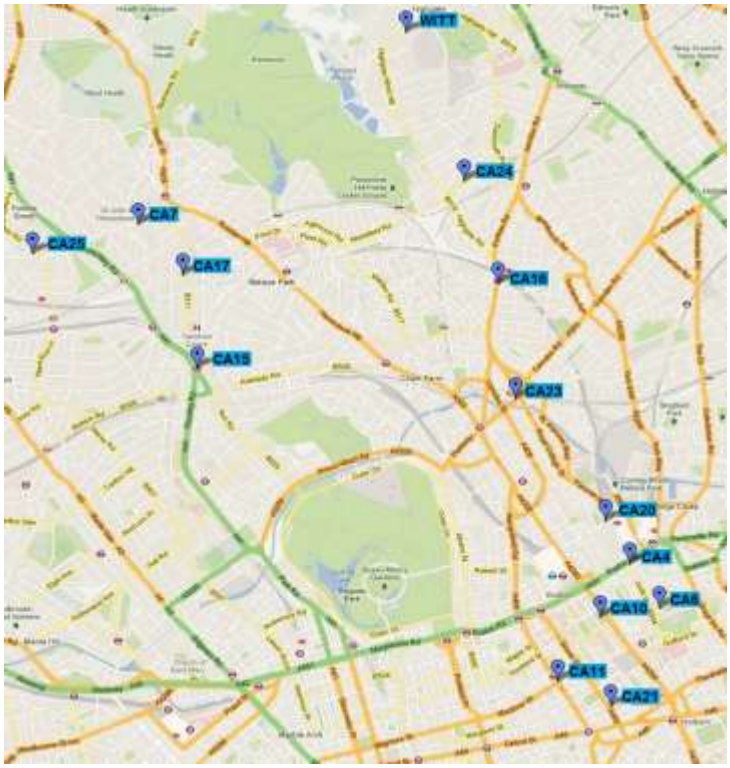


Table 2.2 Details of Non- Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Heights (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
CA4	Euston Road	Roadside	X 530110	Y 182795	2.5	NO_2	Y	N	Y (1m)	5m	Y
CA6	Wakefield Gardens	Urban background	X 530430	Y 182430	2.5	NO_2	Y	N	Y (18m)	30m	Y
CA7	Frognal Way	Urban background	X 526213	Y 185519	2.5	NO_2	Y	N	Y (6m)	30m	Y
CA10	Tavistock Gardens	Urban background	X 529880	Y 182334	2.5	NO_2	Y	N	Y (35m)	25m	Y
CA11	Tottenham Court Road	Kerbside	X 529568	Y 181728	2.5	NO_2	Y	N	Y (4m)	<1m	Y
CA15	Swiss Cottage	Kerbside	X 526633	Y 184392	2.5	NO_2	Y	Y	Y (7m)	<1m	Y
CA16	Kentish Town Road	Roadside	X 529013	Y 185102	2.5	NO_2	Y	N	Y (1m)	1m	Y
CA17	47 Fitzjohn's Road	Roadside	X 526547	Y 185125	2.5	NO_2	Y	N	Y (5m)	5m	Y
CA20	Brill Place	Roadside	X 529914	Y 183147	2.5	NO_2	Y	N	Y (9m)	<5m	Y

Site ID	Site Name	Site Type	X OS Grid Reference	Y OS Grid Reference	Site Heights (m)	Pollutants Monitored	In AQMA?	Is Monitoring Co-located with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) from monitoring site to relevant exposure)	Distance to Kerb of Nearest Road (m) (N/A if not applicable)	Does this Location Represent Worst-Case Exposure?
CA21	Bloomsbury Street	Roadside	X 529962	Y 181620	2.5	NO_2	Y	N	Y (4m)	<1m	Y
CA23	Camden Road	Roadside	X 529173	Y 184129	2.5	NO_2	Y	N	Y (5m)	<1m	Y
CA24	Chetwynd Road	Roadside	X 528722	Y 185950	2.5	NO_2	Y	N	Y (2m)	1m	Y
CA25	Emmanuel Primary	Roadside	X 525325	Y 185255	2.5	NO_2	Y	N	Y (3m)	1m	Y
WITT	Wittanhurst Lane	Roadside	X 528213	Y 187203	2.5	NO_2	Y	N	Y (3m)	1.5m	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide (NO_2)

Automatic Monitoring Data

The annual NO_2 mean objective was exceeded at all of LB Camden's four automatic monitoring sites in 2013 as has been the case in previous years of reporting.

There was substantial data loss at Shaftesbury Avenue (82%) and Euston Road (88%) which should be considered when looking at trends at these two locations. However despite this the annual mean of 106µg/m^3 on the Euston Road shows that the levels there are still highly significant.

Table 2.3 below outlines the annual mean concentrations of NO_2 for the last six years and the trends are displayed in Figure 2.3. This shows that the annual mean concentrations of NO_2 reduced slightly at three of the four monitoring sites from the previous year but rose at Shaftesbury Avenue. This trend is also observed in the number of exceedences of the hourly mean where it reduced at all the sites except Swiss Cottage, as displayed in Table 2.4 below.

Table 2.3 Results of Automatic Monitoring for NO_2: Comparison with Annual Mean Objective

Site ID	Site Name	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % [a]	Valid Data Capture 2013 % [b]	Annual Mean Concentration (µg/m^3)				
						2009* [c]	2010* [c]	2011* [c]	2012* [c]	2013 [c]
CM1		Roadside	Y	95	95	27.1	**42.5**	26.2	**48.1**	26.3
LB	London Bloomsbury	Urban Background	Y	90+	90+	54	55	50	**55**	**44**
CD1	Swiss Cottage	Kerbside	Y	90+	90+	84	82	71	**70**	**63**
CD3	Shaftesbury Avenue	Roadside	Y	82	82	88	89	76	**71**	**74**
CD9	Euston Road	Roadside	Y	88	88	-	-	122*	**106**	**106**

In bold, exceedence of the NO_2 annual mean AQS objective of 40µg/m^3

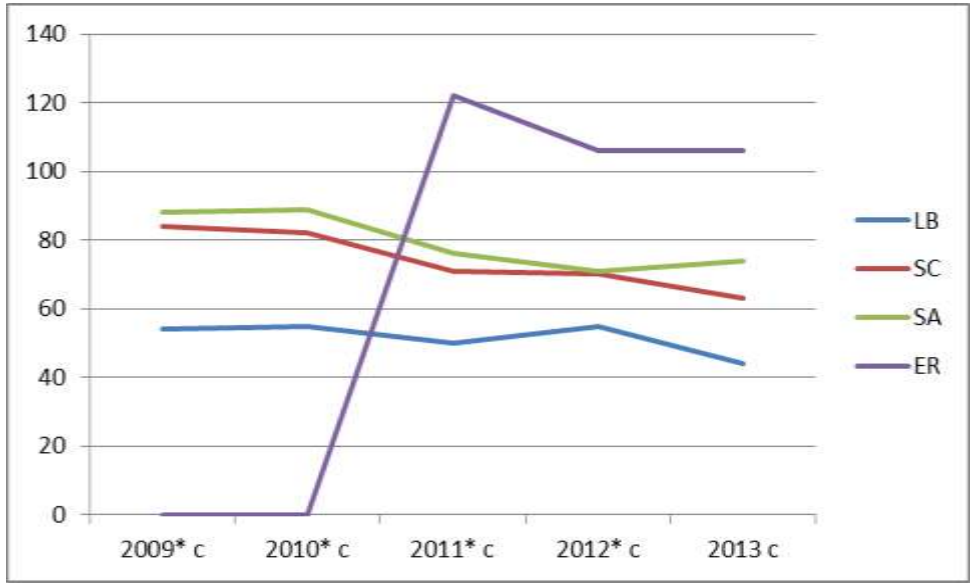
[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[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) (http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38), if valid data capture is less than 75%

* Annual mean concentrations for previous years are optional

Figure 2.3 Trends in Annual Mean NO_2 Concentrations Measured at Automatic Monitoring Sites



The trends in annual mean concentrations show that there has been a small gradual decrease in levles at Swiss Cottage and Shaftesbury Avenue over the last five years. London Bloomsbury, which measures background levels, has not shown an equivalent decline. It is too soon to determine trends from Euston Road as this is only the third year of measurements.

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Table 2.4 Results of Automatic Monitoring for NO_2: Comparison with 1-hour Mean Objective

Site ID	Site Name	Site Type	Within AQMA?	Valid Data Capture for period of monitoring %[a]	Valid Data Capture 2013 % [b]	Number of Hourly Means > 200µg/m^3				
						2009* [c]	2010* [c]	2011* [c]	2012* [c]	2013 [c]
LB	London Bloomsbury	Urban Background	Y	98	98	2	1	0	1	0
CD1	Swiss Cottage	Kerbside	Y	100	100	**217**	**128**	**79**	**43**	**28**
CD3	Shaftesbury Avenue	Roadside	Y	82	82	13	21	15	12	6
CD9	Euston Road	Roadside	Y	88	88	-	-	**726**	**295**	**296**

In bold, exceedence of the NO_2 hourly mean AQS objective (200µg/m^3 – not to be exceeded more than 18 times per year)

[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 data capture for full calendar year is less than 90%, include the 99.8th percentile of hourly means in brackets

* Number of exceedences for previous years is optional

Diffusion Tube Monitoring Data

NO_2 concentrations were measured at fourteen sites in the borough using nitrogen dioxide diffusion tubes. The 2013 results are displayed in Table 2.5 below.

The objective was exceeded at all sites other than Wakefield Gardens. The highest diffusion tube NO_2 concentrations were measured at the Euston Road (107.75 µg/m^3) and Tottenham Court Road sites (88.09m^3).

100% data capture was achieved at 12 of the 14 sites. Brill Place had one month of incomplete data in February and Emmanuel Primary School had three months (January, October and December).

The results have been bias corrected. The full dataset and bias adjustment calculations can be found in Appendix B.

Table 2.5 Results of NO_2 Diffusion Tubes 2013

Site ID	Location	Site Type	Within AQMA?	Triplicate or Co-located Tube	Full Calendar Year Data Capture 2013 (Number of Months or %) [a]	2013 Annual Mean Concentration (µg/m^3) - Bias Adjustment factor = 1.00[b]
CA4	Euston Road	Roadside	Y	N	12	**107.75**
CA6	Wakefield Gdns	Urban background	Y	N	12	**40.32**
CA7	Frognal Way	Urban background	Y	N	12	31.95
CA10	Tavistock Gdns	Urban background	Y	N	12	**49.37**
CA11	Tottenham Court Road	Kerbside	Y	N	12	**88.09**
CA15	Finchley Rd	Kerbside	Y	Triplicate and Co-located	12	**83.08**
CA16	Kentish Town Rd	Roadside	Y	N	12	**65.32**
CA15	47 Fitzjohn's Ave	Roadside	Y	N	12	**65.24**
CA20	Brill Place	Roadside	Y	N	11	**49.37**
CA21	Bloomsbury St	Roadside	Y	N	12	**76.08**
CA23	Camden Rd	Roadside	Y	N	12	**77.85**
CA24	Chetwynd Rd	Roadside	Y	N	12	**47.75**
CA25	Emmanuel Primary School	Roadside	Y	N	9	**57.91**
TEMP	Witthanhurst Lane	Roadside	Y	N	12	**53.10**

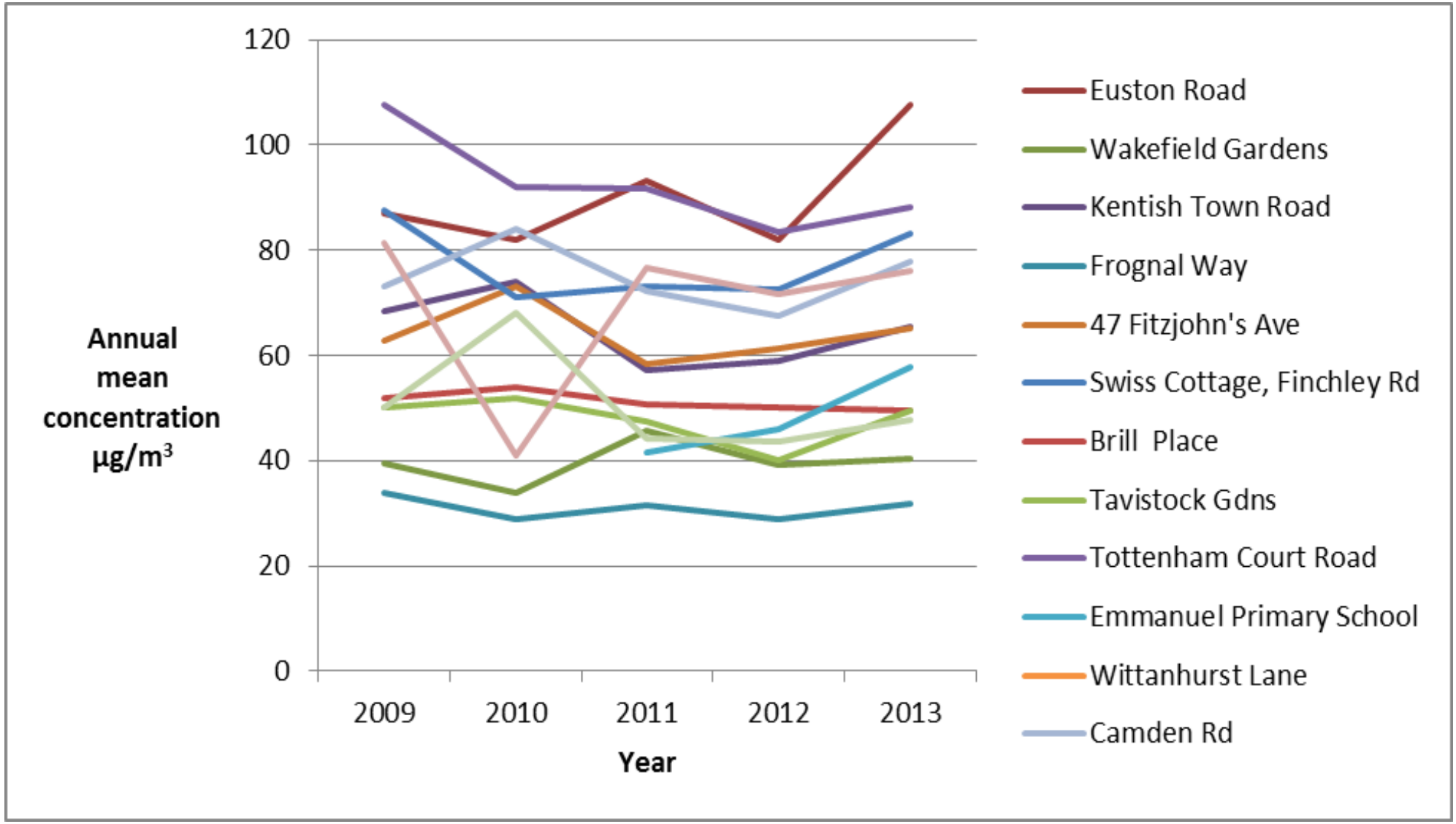
In bold, exceedence of the NO_2 annual mean AQS objective of 40µg/m^3

Underlined, annual mean > 60µg/m^3, indicating a potential exceedence of the NO_2 hourly mean AQS objective

Table 2.6 Results of NO_2 Diffusion Tubes (2009 to 2013)

Site ID		Site Type	Within AQMA?	Annual Mean Concentration (µg/m^3) - Adjusted for Bias [a]				
				2009 (Bias Adjustment Factor = XX)	2010 (Bias Adjustment Factor = XX)	2011 (Bias Adjustment Factor = 0.95)	2012 (Bias Adjustment Factor =0.95)	2013 (Bias Adjustment Factor = 1.00)
CA4	Euston Road	Roadside	Y	**87.1**	**82**	**93.12**	**82.05**	**107.75**
CA6	Wakefield Gdns	Urban background	Y	39.4	34	**45.61**	39.29	**40.32**
CA7	Frognal Way	Urban background	Y	33.9	29	31.46	28.89	31.95
CA10	Tavistock Gdns	Urban background	Y	**50.1**	**52**	**47.56**	**40.12**	**49.37**
CA11	Tottenham Court Road	Kerbside	Y	**107.7**	**92**	**91.67**	**83.30**	**88.09**
CA15	Finchley Rd	Kerbside	Y	**87.5**	**71**	**73.17**	**72.66**	**83.08**
CA16	Kentish Town Rd	Roadside	Y	**68.3**	**74**	**57.19**	**58.97**	**65.32**
CA15	47 Fitzjohn's Ave	Roadside	Y	**62.9**	**73**	**58.39**	**61.20**	**65.24**
CA20	Brill Place	Roadside	Y	**51.9**	**54**	**50.79**	**50.00**	**49.37**
CA21	Bloomsbury St	Roadside	Y	**81.3**	**41**	**76.73**	**71.66**	**76.08**
CA23	Camden Rd	Roadside	Y	**73**	**84**	**72.21**	**67.40**	**77.85**
CA24	Chetwynd Rd	Roadside	Y	**50.0**	**68**	**44.12**	**43.67**	**47.75**
CA25	Emmanuel Primary School	Roadside	Y			**41.5**	**45.94**	**57.91**
TEMP	Witthanhurst Lane	Roadside	Y					**53.10**

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



There has been an increase in concentrations at all sites other than Brill Place between 2012 and 2013.

2.2.2 Particulate Matter (PM_{10})

The concentrations of PM_{10} recorded in the Borough at Shaftesbury Avenue, Bloomsbury and Swiss Cottage, continue to meet the objective of less than 40 μg/m^3. The annual mean concentrations for the last six years are presented in Table 2.7, while the trends are presented in Figure 2.5. These show that concentrations of PM_{10} decreased marginally at each of the three sites between 2011 and 2012.

The number of exceedences of 24 hour mean over 50 μg/m^3 also meet the objective at LB Camden's three monitoring sites. The number of exceedences decreased between 2011 and 2012 at all three sites.

The monitoring site locations are representative of relevant public exposure and data has been adjusted to gravimetric equivalent.

Table 2.7 Results of Automatic Monitoring for PM_{10}: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % [a]	Valid Data Capture 2013 % [b]	Confirm Gravimetric Equivalent (Y or N/A)	Annual Mean Concentration (µg/m^3)				
						2009* [c]	2010* [c]	2011* [c]	2012* [c]	2013 [c]
LB	Urban Background	Y	94	94	Y	23	18	22	19	18
SC	Kerbside	Y	99	99	Y	25	26	27	23	21
SA	Roadside	Y	91	91	Y	30	29	32	29	29

In bold, exceedence of the PM_{10} annual mean AQS objective of 40µg/m^3

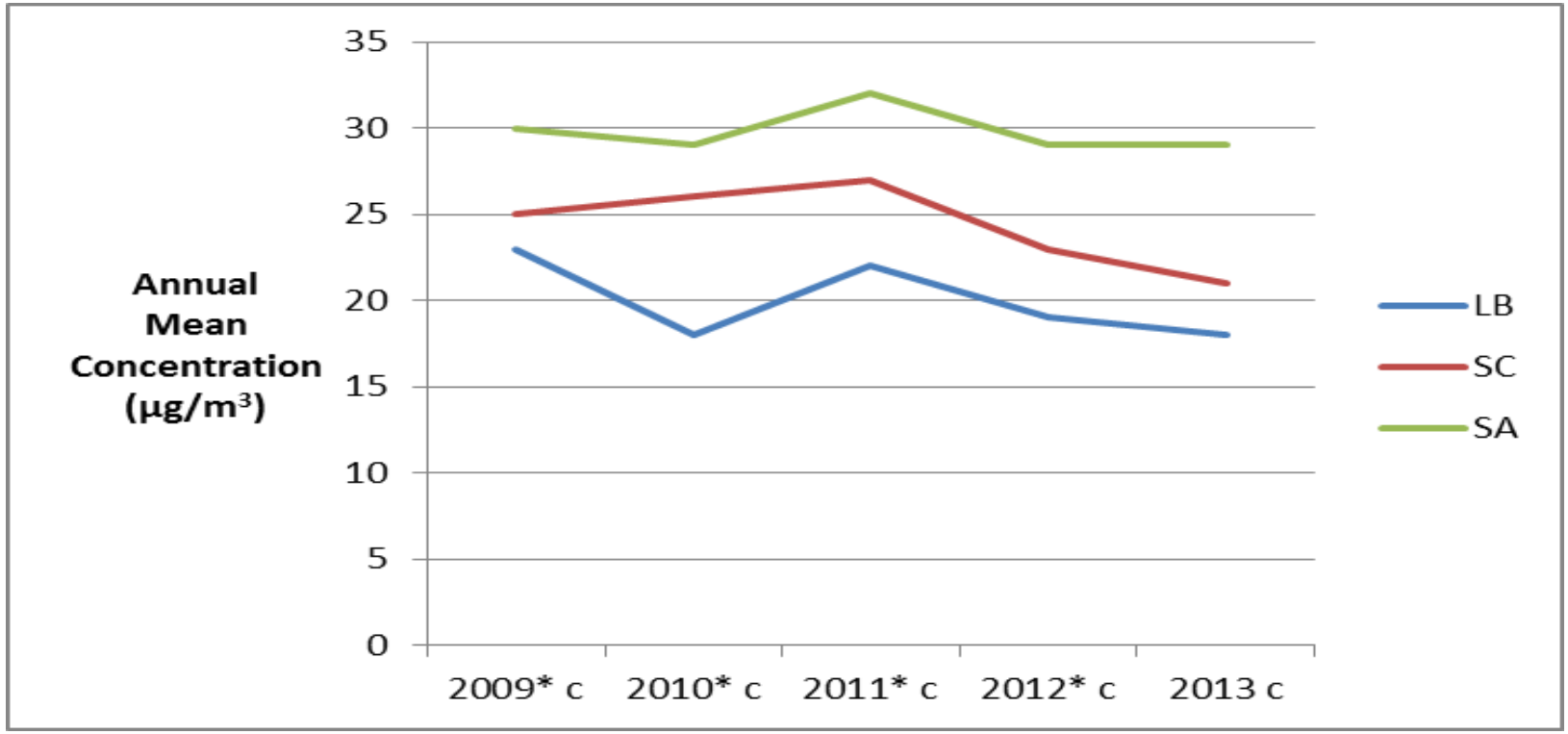
[a] i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[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) (http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38), if valid data capture is less than 75%

* Annual mean concentrations for previous years are optional

Figure 2.5 Trends in Annual Mean PM_{10} Concentrations



The trends show that PM10 has been consistently meeting objectives, with slight reductions in 2013 compared to 2012 at two of the three sites.

Table 2.8 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 2013 % [b]	Confirm Gravimetric Equivalent (Y or N/A)	Number of Daily Means > 50µg/m^3				
						2009* [c]	2010* [c]	2011* [c]	2012* [c]	2013 [c]
LB	Urban Background	Y	94	94	Y	15	2	17	10	4
SC	Kerbside	Y	99	99	Y	25	26	31	21	8
SA	Roadside	Y	91	91	Y	30	29	27	18	

In bold, exceedence of the PM_{10} daily mean AQS objective (50µg/m^3 – not to be exceeded more than 35 times per year)

[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 for full calendar year is less than 90%, include the 90.4th percentile of 24-hour means in brackets

* Number of exceedences for previous years is optional

2.2.3 Sulphur Dioxide (SO_2)

Camden has achieved each of the SO_2 objectives for the last fourteen years at London Bloomsbury. Between 1997 and 2013 there has been a downward trend in SO_2 concentrations

Table 2.9 Results of Automatic Monitoring for SO_2: Comparison with Objectives

Site ID	Site Type	Within AQMA?	Valid Data Capture for Monitoring Period % [a]	Valid Data Capture 2012 % [b]	Number of: [c]		
					15-minute Means > 266µg/m^3	1-hour Means > 350µg/m^3	24-hour Means > 125µg/m^3
LB	Urban Background	Y	100	100	14	3	0

In bold, exceedence of the relevant AQS objective (15-min mean = 35 allowed/year; 1-hour mean = 24 allowed/year; 24-hour mean = 3 allowed/year)

[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 for full calendar year is less than 90%, include the relevant percentile in bracket (in µg/m^3): 15-min mean = 99.9th ; 1-hour mean = 99.7th ; 24-hour mean = 99.2th percentile

2.2.4 Benzene

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

2.2.5 Other Pollutants Monitored

Ozone

Between 2007 and 2013 Camden has achieved the ozone objective at London Bloomsbury. Between 1997 and 2002 annual mean ozone concentrations fluctuated around 23 µg/m3. Over the next six years annual mean ozone concentrations increase by approximately 5%, peaking in 2003, 2006 and 2008. The ozone objective has been breached on two occasions over the twelve year monitoring period, 2003 and 2006 due to particularly hot summers which enhanced the formation of ozone.

Carbon Monoxide

Camden achieved the air quality objective for carbon monoxide since monitoring commenced in 1997 up until 2012. Annual mean CO concentrations display a downward trend over the last fourteen years with concentrations stabilising to their lowest long term concentration between 2007 and 2012. The validated data for 2013 has not yet been received but the levels are so low there is no reason to believe that there will have been an exceedance this year.

2.2.6 Summary of Compliance with AQS Objectives

The London Borough of Camden has examined the results from monitoring in the borough.

Concentrations within the AQMA still exceed the long term objectives for NO_2 at all of our automatic monitoring sites and the vast majority of our nitrogen dioxide diffusion tube sites, as well as exceeding the short term objective at two of the automatic monitoring sites, so the AQMA should remain. We continue to meet objectives for all of the pollutants we monitor with the exception of NO_2.

As the whole of the borough has been designated an Air Quality Management Area there is no need to carry out a Detailed Assessment at this time. We will therefore proceed to the 2014 Updating and Screening Assessment.

3 New Local Developments

3.1 Road Traffic Sources

Since the last progress report no new/newly identified road traffic sources have been identified.

3.2 Other Transport Sources

Since the last progress report, no new/newly identified non-road traffic sources.

3.3 Industrial Sources

Since the last progress report there are no new/newly identified industrial sources.

3.4 Commercial and Domestic Sources

Information in the LAEI 2008 states that there are no particulate matter emissions from domestic coal burning in Camden, which is likely to be because the whole of the borough is a smoke free zone. Smokeless fuel burning is not included as a source in the LAEI, but there may be a few households burning smokeless fuels on open fireplaces (as a secondary source of heating). However, this does not occur on the significant scale as classed in the guidance, posing no risk to exceeding the PM_{10} objectives.

3.5 New Developments with Fugitive or Uncontrolled Sources

Since the last progress report no new/newly identified uncontrolled sources have been identified.

London Borough of Camden confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.
London Borough of Camden 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

London Borough of Camden has developed an Air Quality Action Plan 2013-2015 which references its links with Local transport plans and strategies and Climate Change Strategies.

5 Planning Applications

Planning applications which include the installation of CHP or Biomass are required to complete specific application forms to ensure that they are approved by the air quality officer as part of the planning process. As well as CHP and Biomass, major planning applications are subject to Air Quality Assessments to ensure they comply with air quality planning policies, and well as being subject to scrutiny to ensure they comply with local transport plans and strategies and Climate Change Strategies.

In 2013 Camden's air quality officer assessed in excess of 60 new planning applications, and applied numerous conditions and S106 requirements relating to monitoring construction dust, and CHP emissions. Further details are contained in the Action Plan Year 1 Review Report.

6 Air Quality Planning Policies

Camden's Local Development Framework includes Development Policy 32 Air Quality and Camden's Clear Air Zone.

Camden Planning Guidance document CPG6 Amenity also provides advice and information on how we will apply our air quality planning policies.

7 Local Transport Plans and Strategies

Transport information is included in the Cleaner Air Action Plan Year 1 Review Report.

8 Implementation of Action Plans

Our Cleaner Air Action Plan 2013-15 was published in January 2013. A review of progress during the first year is included below.

Action Plan Year 1 Review (Jan 2014)

SECTION 1: REDUCING TRANSPORT EMISSIONS

Action	Measure/indicator	Timeframe	2013 Progress Review
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	• A wide range of Sustainable Transport measures have been delivered through our Local Implementation Plan (LIP). • There was a 2% reduction in resident vehicle trips between 2011/12 and 12/13. • There was a 0.5% decrease in cycling as a proportion of traffic flow in 2013 compared with 2012.
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	• 24 Cycling events held. Attendance = 7481, Dr Bike services = 458 bikes, Bikes security marked = 458. • 5 Exchanging Places cycling events held, which trained 102 cyclists. • 29 public events attended by outreach staff who provided air quality information and advice.

			• Car free day in September 2013 closed 5 roads in Covent Garden to host a “Pop-up Forest”, and had an air quality as its theme. • Give it a Go Festival September – hosted a dedicated air quality-themed stall. • Air Quality Summit II held in October 2013, with over 100 delegates. • Innovative Air Quality materials created for events – including snow globes representing particulate matter in different parts of the borough, and a map showing the most polluted roads. • Air quality news and updates regularly promoted through newsletters, webpages, web news stories, and the intranet, a blog on air quality was publicised to all staff. • Air quality training provided for outreach staff.

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	• 8,540 car club members. *Note:* The LIP target around car clubs has now been removed as recent research indicates that car club membership does not reduce car ownership as much as previously thought, so this action will be removed for the following years.
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	• 36 Business Travel Plans required under S106. • 8 Voluntary Business Travel Plans And 36 Personal Travel Plans developed. • The School Travel Team has provided one to one advice and encouraged the completion of travel plans to 31 schools and 18 nurseries in 2013. • 19 schools and 18 nurseries have submitted a fully completed school travel plan.
5. Support the uptake of low emission (electric and bio-methane) vehicles.	• Uptake of low emission vehicles • Number of electric	Ongoing	• Electric Vehicle Trials video viewed 712 times on Camden website and more than 10,000 times on Green TV.

	charging points • Number of times Camden electric vehicle trials video is viewed		• Camden and the EST's Animated Guide to Electric vehicles viewed over 20,000 on Green TV/AOL, and sent to 10,000 recipients of the EST newsletter. • Camden has been awarded funding for 1 rapid charger from OLEV. • 2 case studies of the award-winning Camden Electric Vehicle Trials have been published and promoted. • Electric Vehicle charging network used 7479 times. *Note:* contractual issues with the Biomethane refuelling site mean that additional Biomethane promotion has been put on hold.
6. Provide guidance and information about low emission vehicles to residents and local businesses.	• Number of people using Camden's web-based advice	Ongoing	• Guidance and information provided through Camden's Cleaner Air for Business project, which engaged with 50 medium and large organisations during 2013. • Information provided to residents via newsletters, website and

			events. • Travelfootprint site visited 29,000 times. • Newride website visited almost 8,000 times. • Camden's greener vehicles web pages have been viewed 1070 times.
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	• Smarter Driving has been promoted via Camden's LED sign. • No idling has been promoted via posters to libraries, and via an air quality video screened in Camden's GP Surgeries for 2 months, and through leaflets at events. • Smarter Driving initiative has been piloted with Camden drivers. See Action 12 for more information.
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	• CO2 from our fleet has decreased by 23% compared with the 2009/10 baseline. • 4 biomethane goods vehicles were purchased in 2013/14, and

			Camden is in the process of purchasing 2 possibly 3 electric cars. • Progressing with the purchase of 12 biomethane small goods vehicles is on hold pending new fuel supply proposal.
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 cycling	Plan reviewed by April 2013	• Travel plan draft complete. Targets include: increasing cycling from 14% to 16-18%. Discussions held with Property Services to increase the cycle parking provision at the new Civic Centre building to facilitate further growth in cycling to cater for up to 20% of staff cycling. • Walk to Work Week promoted to staff in May 2013. Routemaster walks held to promote walking to work on Walk to Work Day as part of the week. • 8 Bike Week events and one led ride promoted to staff during June 2013. This included one event held specifically for staff with a Dr Bike and bike marking.

			• 12 Sky Ride led cycling rides promoted to staff during June – October 2013.
10. Update and adhere to Camden's Green Fleet Policy.	• % of vehicles purchased/leased in line with policy	Policy updated by January 2013	• The Green Fleet Policy has been updated and is being followed.
11. Undertake a feasibility study into a freight consolidation centre for Camden's deliveries.	• Development of study with proposals for next steps	April 2013	• Feasibility study complete. Funding received from Li Milo project and Mayor's Air Quality Fund. 9 month pilot project (concept trial) was launched February 2014.
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	• Driver engagement and behaviour change project using Lightfoot in-cab driver training and data capture technology. Piloted on 26 of the least fuel efficient vehicles, and estimated to save 8,807 litres of fuel and 22 tonnes of CO2 per annum.
13. Develop and trial technologically advanced cargo cycle vehicles in public/private partnership.	• Development of vehicle and operation of trial	June 2013	• Camden and the Cross River Partnership provided a grant to Gnewt Cargo in 2013/14 to part fund (25% each) the development of a second generation electrically assisted cargocycle to use in a

			mobile depot concept. Gnewt Cargo provided the rest of the funding. The new vehicle will be trialled in the second stage of the project in 2014/15.

SECTION 2: REDUCING EMISSIONS ASSOCIATED WITH NEW DEVELOPMENT

Action	Measure/indicator	Timeframe	2014 Review
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	• 49 planning applications were assessed for air quality to ensure they had a negligible impact.
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	• Number of Construction Management Plans and monitoring requirements included for relevant developments	Ongoing	• All 49 developments put in place CMPs, and within 8 of these we included a requirement for real time dust monitoring.

CMP requirements.			
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	• In 2012/13 139 new approved dwellings were car free and 36 Business Travel Plans were required through Section 106.
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 from the GLA, which is due end at the end of 2012.	• Guidance updated and followed	April 2013	• Policies reviewed and up to date. • Consultation responses provided on the GLA's Sustainable Construction SPG and Best Practice Construction Dust Guidance. • New Checklist created for Planners and Developers so that we can ensure that all the Camden and GLA requirements are met. • Air Quality Guidance for Developers published.

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	• Permission for 10 CHPs granted – all subject to AQA's and stringent emissions standards.

SECTION 3: REDUCING EMISSIONS FROM GAS BOILERS AND INDUSTRIAL PROCESSES

Action	Measure/indicator	Timeframe	2014 Review
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	• There were 1089 calls to Camden's energy advice helpline in 2013. • 625 Well and Warm home energy visits were delivered in 2013.
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	• Camden signed up 40 new members of the Climate Change Alliance in 2013.
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	• The Cleaner Air for Business project had a strong focus on boilers and has already led to numerous low-Nox boilers being chosen, as well as lean burners being fitted to existing boilers. Through the second phase of the project (to be delivered in partnership with the Fitzrovia Partnership Business Improvement District) we will continue to promote energy efficiency and low-nox boilers, as well as Camden's newly published Air Quality Guidance for Building Managers. • The Cleaner Air for Schools project had a strong focus on energy efficiency, and through this project we will be providing significant energy efficiency improvements to 4 nurseries. • We have also worked with the Schools Improvement Team and

SECTION 4: RAISING AWARENESS

Action	Measure/indicator	Timeframe	2014 Review
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	• 1,700 views of Camden's main air quality page (7% more than 2012). • Information provided to residents through numerous channels, as detailed in Action 2. We have also promoted Airtext and the new Kings College Alert service through Camden communications channels. • We have supported the development of the new GLA air quality website. Camden developed the interactive Cleaner Air Plan section of the site as well as providing case studies and other information to be hosted on the website.
26. Continue to monitor air pollution levels across the borough and review our air quality monitoring network every year.	• Continued monitoring	Ongoing	• Monitoring has been ongoing, though there was some loss of data in late 2013 and early 2014 due to a faulty air conditioner,

			which has taken some time to resolve due to issues with the housing and concern within Camden about how we will continue to fund this monitor in resource constrained times. • The new Particulate Monitor on Euston Road has been delayed due to technical and permit issues but is due to be installed in Spring.
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	• There has been no clear impact on website hits/attendance at events as a result of the LED sign. The sign has also been subject to a significant number of technical issues. Also, due to the need to use Air Quality Index (AQI) bandings on the sign, and the fact that moderate and high thresholds under the AQI far higher than levels that are enough to breach EU limits and World Health Organisation Guidelines, the sign perhaps does not enable us to effectively convey the urgency of the problem.

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	• Communications Strategy is in place, and has ensured a higher profile for air quality information within Sustainability and Transport Strategy projects, as well as ensuring coverage via the resident's magazine, and web-based channels.
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	• Project delivered with Argyle school which strongly engaged 25 pupils, who received 8 air quality lessons and developed air quality materials. The class also delivered a whole school assembly, and thereby reached all of the pupils at the school. Additionally, a message was included in the schools newsletter, in order to raise awareness with parents. The project included a legacy of an air quality mural and beautiful and solar-irrigated garden on the roof top "Cleaner Air Haven" on the least polluted part of the school. • The second phase of the project is to provide 18 schools and nurseries with funding to deliver air

			quality infrastructure and educational projects, this will reach thousands of pupils, and their parents (as each project will be publicised via the newsletters). Funds have been awarded and projects are due for completion by September 2014.The project has been promoted via the schools intranet and sustainable schools group, as well as via the resident's magazine and the website. A case study has been created for the Argyle project. • In late 2014/early 2015, a case study of work undertaken in the 4 participating boroughs will be completed and disseminated. Further information is available here.
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	• All targets were met or exceeded (met target of 50 organisations engaged, 25 pledges signed against a target of 15, and 6 case studies finalised against a target of

			5). Achievements have included: several organisations consolidating deliveries and switching away from bottled water; several organisations either installing or planning to install low-Nox boilers; several organisations including air pollution information on their websites and customer-facing materials and still more including it within their environmental policies. In addition, the Fitzrovia Partnership have hosted an air quality event and committed to funding further work in the area. Further information is available here.
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	• Further funding has been received for this project from the Mayor's Air Quality Fund (MAQF), so the project start date has been pushed back, but plans are underway for a launch in September 2014.
32. Seek funding for air quality projects.	• Number of successful funding bids	Ongoing	• In 2013 Camden was the lead borough on two MAQF bids, and partners on 2 other bids, meaning Camden is sharing in more than £1.5 million in funding over the

			next 3 years. • Camden also obtained £50,000 in direct funding from Defra for two projects and have had £15,000 committed by the Fitzrovia Partnership for air quality work in their Business Improvement District area.
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	• Air Quality Chapter included in JSNA in summer 2013 • Joint Camden and Islington Air Quality Summit held, which was led by Public Health. • Funding received from Defra for a public health engagement project, which will include training for public health staff. • Air quality video screened in GP surgeries for 2 months over winter. • Air Quality has been an agenda item on numerous high-level Public

			Health meetings, including the Health and Wellbeing Board. • Air quality has been integrated into other services – for example, air quality maps are now considered when planning Health Walks and other outdoor physical activities.

SECTION 5: LOBBYING AND PARTNERSHIP WORKING

Action	Measure/indicator	Time frame	2014 Review
34. Continue to support measures introduced by the Mayor to improve air quality.	• Full participation in joint projects, attendance at meetings, etc.	Ongoing	• Officers and Members have attended all key meetings and events, including early stakeholder consultation meetings on the Ultra Low Emission Zone (ULEZ).
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	• A meeting has been held with Camden's Lead Member and the Mayor's Environment Advisor about the ULEZ. • Responses have been provided on a range of consultations (including the Defra LAQM consultation and consultations on GLA planning guidance).

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	• Camden was instrumental in organising a letter from the Mayor of London and London Councils lobbying the Government on a range of issues to support NO2 reductions.
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	• Due to contractual issues work on this area has been put on hold.

9 Conclusions and Proposed Actions

9.1 Conclusions from New Monitoring Data

Concentrations within the AQMA still exceed the objectives for NO_2 at at all of our automatic monitoring sites and the vast majority of our nitrogen dioxide diffusion tube sites and the AQMA should remain. We continue to meet objectives for all of the pollutants we monitor with the exception of NO_2.

As the whole of the borough has been designated an Air Quality Management Area there is no need to carry out a Detailed Assessment at this time. We will therefore proceed to the 2015 Updating and Screening Assessment.

9.2 Conclusions relating to New Local Developments

No new or newly identified local developments which may have an impact on air quality within the Local Authority area.

9.3 Proposed Actions

Due to no significant change in the situation since the completion of the last Air Quality Action Plan, we refer to this document for proposed actions.

10 References

- Camden Local Air Quality Action Plan 2013-2015
- 2012 Quality Updating and Screening Assessment for London Borough of Camden
- Camden Planning Guidance (CPG 6) Amenity
- Camden Development Policies Adoption version 2010

Appendices

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors
Gradko is the supplier/analyst.

Factor from Local Co-location Studies (if available)

Discussion of Choice of Factor to Use

We use DEFRA's bias factors.

PM Monitoring Adjustment
Particulate matter monitoring has taken place on a TEOM and the 1.3 correction factor has been used for data recorded pre 2004. Since 2004 all TEOM data has been corrected using the VCM.

Short-term to Long-term Data adjustment
All sites were able to have at 75% collections rates so no adjustment was required.

QA/QC of automatic monitoring
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). These are the only UKAS accredited bodies for this process in the UK. NPL is also UKAS accredited for the recertification of onsite cylinders.

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).

QA/QC of diffusion tube monitoring

All of Gradko's were considered to be satisfactory for the whole of 2013.

Appendix B- Full yearly records for diffusion tubes

Site ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CA4	97.87	73.74	84.97	99.31	97.82	96.92	103.88	95.54	99.57	102.45	137.70	177.91
CA6	46.70	50.18	47.14	38.51	34.21	31.03	31.03	31.25	39.03	38.96	44.11	42.25
CA16	65.70	59.18	82.21	67.93	64.65	74.22	48.43	55.97	61.88	60.64	62.93	64.77
CA7	41.36	33.13	31.50	27.40	24.26	21.58	26.08	24.44	33.13	29.86	44.01	39.07
CA17	65.71	60.76	63.38	59.95	61.77	61.04	71.63	61.54	68.83	58.88	67.53	66.54
CA15	83.60	76.66	85.13	80.24	80.54	82.28	78.02	77.38	84.24	69.10	102.87	60.83
CA15	84.56	87.55	93.47	65.09	90.26	82.14	77.48	75.02	85.86	65.82	108.07	70.22
CA15	86.68	74.06	91.62	74.16	86.26	84.44	83.17	74.72	82.34	74.47	98.98	75.03
CA20	55.73		86.76	59.32	49.19	55.87	55.32	49.39	55.02	46.22	52.24	56.58
CA10	53.57	50.78	54.30	49.13	44.81	39.76	44.69	40.11	45.74	47.67	54.13	56.07
CA11	86.53	79.36	86.49	96.18	78.26	82.60	92.76	86.29	92.75	87.22	94.30	73.55
CA25		52.09	67.59	57.36	51.24	45.17	73.64	47.47	57.11		59.32	
TEMP	61.41	43.62	86.95	44.66	41.58	40.34	41.69	42.11	53.06	52.86	59.03	57.44
CA23	76.94	64.84	91.29	71.40	73.55	77.45	89.55	83.52	88.56	66.25	64.57	68.00
CA21	72.43	77.73	45.95	80.22	65.43	72.75	85.36	79.59	87.77	70.68	84.57	72.56
CA24	55.10	39.66	50.41	48.36	41.35	35.79	39.46	43.97	48.64	47.91	59.72	51.44