



# 2010 Air Quality Progress Report for the London Borough of Camden

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

Date: September 2011

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## Executive Summary

This Progress Report provides an update on air quality in the London Borough of Camden during 2010, and information relating to the Council's progress on undertaking measures associated with their Air Quality Action Plan, climate change strategies, Local Implementation Plan, and new sources of pollution in the borough such as new local developments and traffic sources.

Camden complied with the following air quality standards in 2010: benzene, butadiene, lead, sulphur dioxide, carbon monoxide, particulate matter and ozone. Camden continues to fail the long and short term air quality objectives for nitrogen dioxide.

Even though PM<sub>10</sub> monitoring has revealed that Camden no longer breaches the air quality objectives for this pollutant, the Council does not intend on changing their Air Quality Management Order. The situation will be reviewed over the next five years in line with future trends in PM<sub>10</sub> concentrations.

There have been no new local developments, traffic sources or domestic and commercial sources which have had a negative impact on air quality. The Council is carefully monitoring the adoption of CHP and biomass boilers in the borough in order to mitigate potential cumulative impacts on air quality.

Camden works to our Air Quality Action Plan, which was revised in 2009. The plan covers a package of measures to reduce NO<sub>x</sub> and PM<sub>10</sub> emissions over the next three years. The Council has made good progress at achieving the initiatives outlined in the plan for 2009 and 2010, and is pressing forward with further measures in 2011.

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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<sup>2</sup> 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 there 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

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

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

## 1.3 Air Quality Objectives

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

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

<b>Pollutant</b>	<b>Concentration</b>	<b>Measured as</b>	<b>Date to be achieved by</b>
<b>Benzene</b>	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	5.00 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2010
<b>1,3-Butadiene</b>	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
<b>Carbon monoxide</b>	10.0 $\text{mg}/\text{m}^3$	Maximum daily running 8-hour mean	31.12.2003
<b>Lead</b>	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
<b>Nitrogen dioxide</b>	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
<b>Particles (PM<sub>10</sub>) (gravimetric)</b>	50 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004

<b>Sulphur dioxide</b>	350 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$ , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

## 1.4 Summary of Previous Review and Assessments

Between 1998 and 2001, 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<sub>2</sub>) and the short and long term objectives for particulate matter (PM<sub>10</sub>).

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

The fourth round identified that Camden no longer exceeded the short and long term objective for PM<sub>10</sub> at our three automatic monitoring sites. This can be attributed to a change in the method used to measure PM<sub>10</sub> concentrations rather than improvements in emissions. The fourth round of review and assessment additionally indicated that a number of diffusion tube sites and one automatic site at roadside locations exceeded that the short term NO<sub>2</sub> objective. Further modeling work has been carried out to understand the spatial distribution of long and short term PM<sub>10</sub> and NO<sub>2</sub> exceedances across the borough. This modeling work (undertaken in 2009) has revealed that a number of roads in Camden which experience high volumes of traffic and a large proportion of HGV vehicles exceed the short and long term PM<sub>10</sub> and NO<sub>2</sub> objectives, see Figures 1.1 and 1.2, below.



Figure 1.1 Modelled areas of Camden exceeding the annual mean NO<sub>2</sub> objective

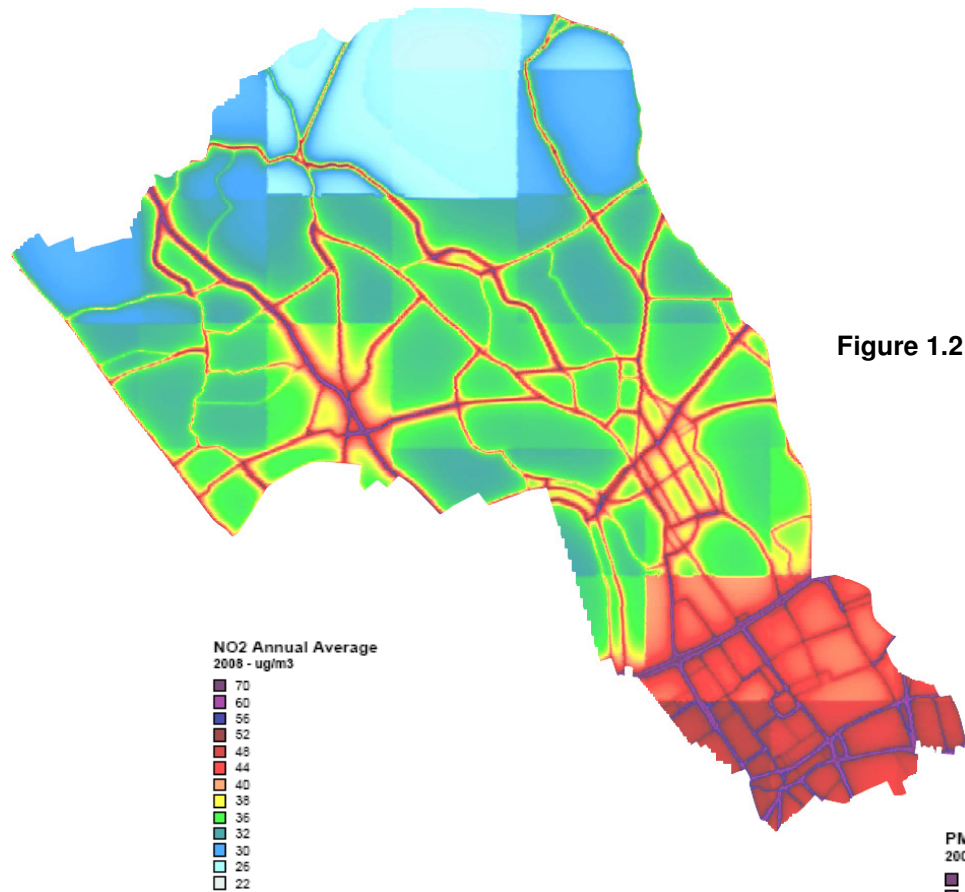
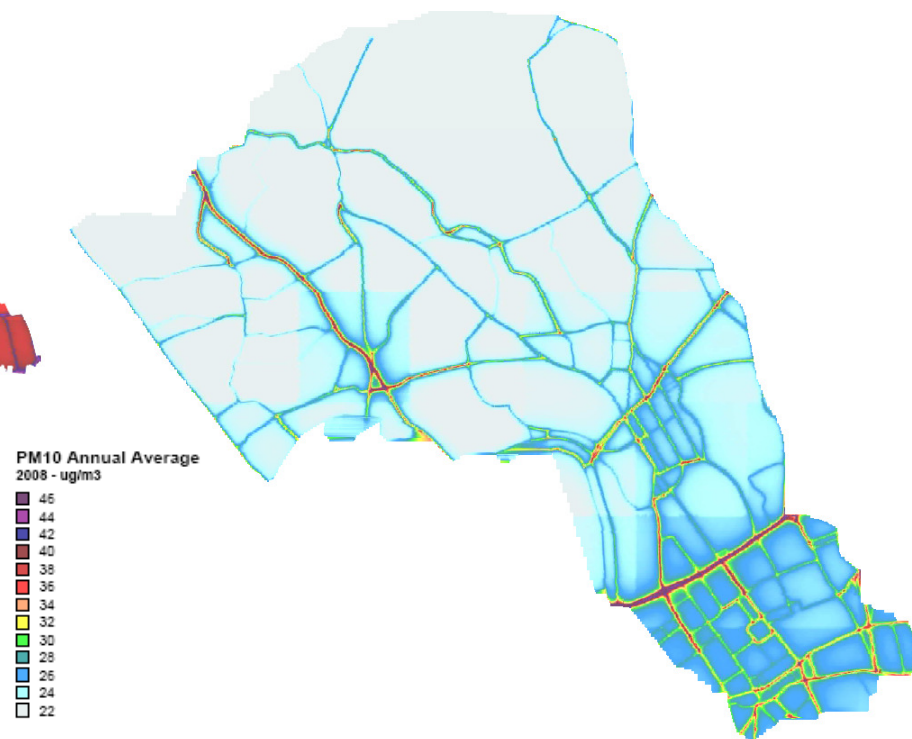


Figure 1.2 Modelled areas of Camden exceeding the annual mean PM<sub>10</sub> objective



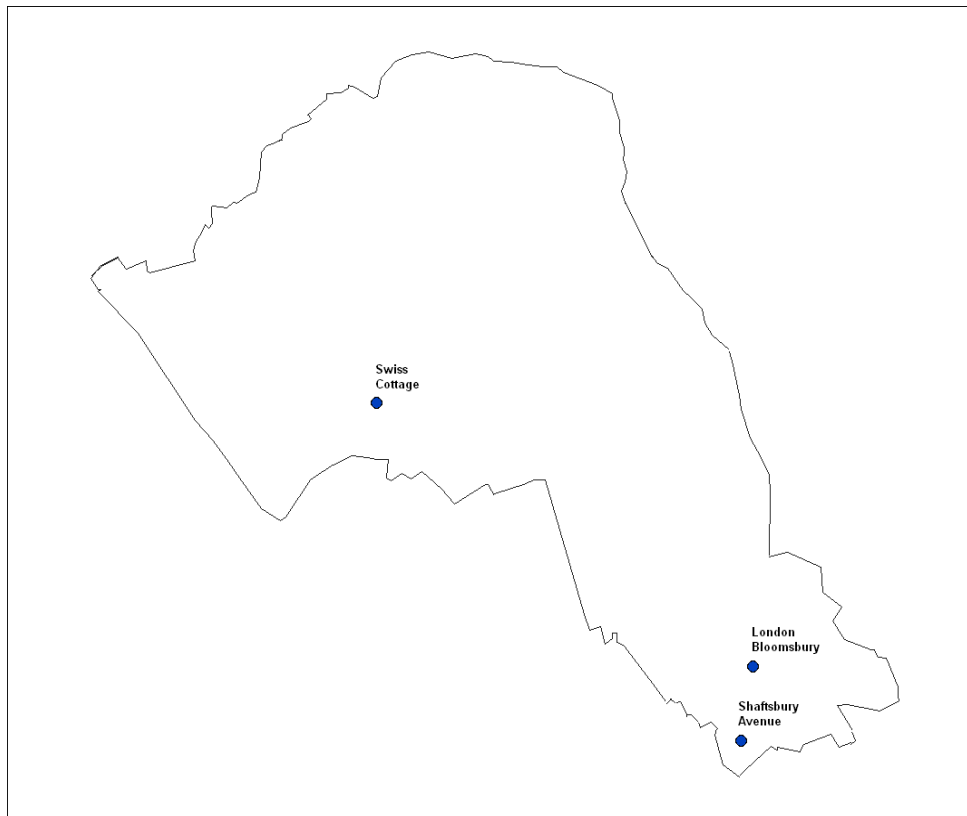
## 2 New Monitoring Data

### 2.1 Summary of Monitoring Undertaken

#### 2.1.1 Automatic Monitoring Sites

In 2010, Camden operated three automatic monitoring sites described in Table 2.1. The monitoring stations are calibrated every fortnight at Swiss Cottage and Shaftesbury Avenue by Bonningtons Electronics. The London Bloomsbury monitoring station is calibrated by Bureau Veritas as part of the Automatic Urban and Rural Network. All site audits are carried out by the National Physics Laboratory and all monitors are covered by a service contract with SupportingU. Data validation and ratification for all of Camden's automatic monitoring sites is carried out by King's College Environmental Research Group.

**Figure 2.1 Map of Automatic Monitoring Sites**



**Table 2.1 Details of Automatic Monitoring Sites**

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	Monitoring Technique	In AQMA	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?
London Bloomsbury	Urban background.	X 530120	Y 182034	PM <sub>10</sub> PM <sub>2.5</sub> , SO <sub>2</sub> , CO, NO <sub>2</sub> , O <sub>3</sub>	FDMS	Y	Y (40m)	27m	Y
Shaftesbury Avenue	Roadside	X 530060	Y 181290	PM <sub>10</sub> , NO <sub>2</sub>	TEOM	Y	Y (1m)	<1m	Y
Swiss Cottage	Kerbside	X 526633	Y 184392	PM <sub>10</sub> PM <sub>2.5</sub> , NO <sub>2</sub>	FDMS	Y	Y (7m)	3m	Y

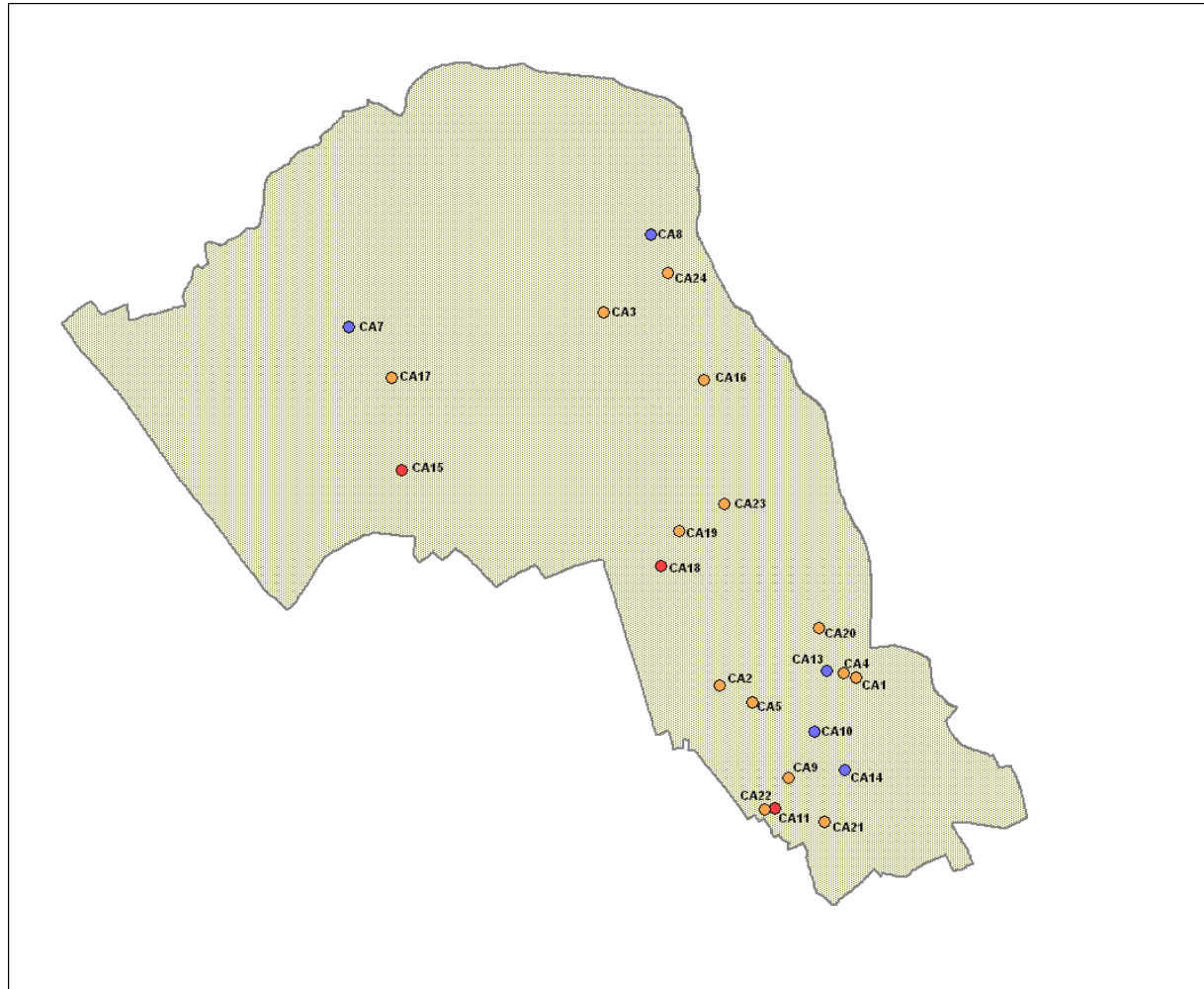
### **2.1.2 Non-Automatic Monitoring Sites**

Diffusion tubes are deployed across the borough to monitor nitrogen dioxide concentrations. The 2010 programme consisted of twenty four sites; their locations can be shown 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 in accordance with the methodology stated in TG09.

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 2.1 Map of Non-Automatic Monitoring Sites**



## 2.2 Comparison of Monitoring Results with Air Quality Objectives

### Automatic Monitoring Data

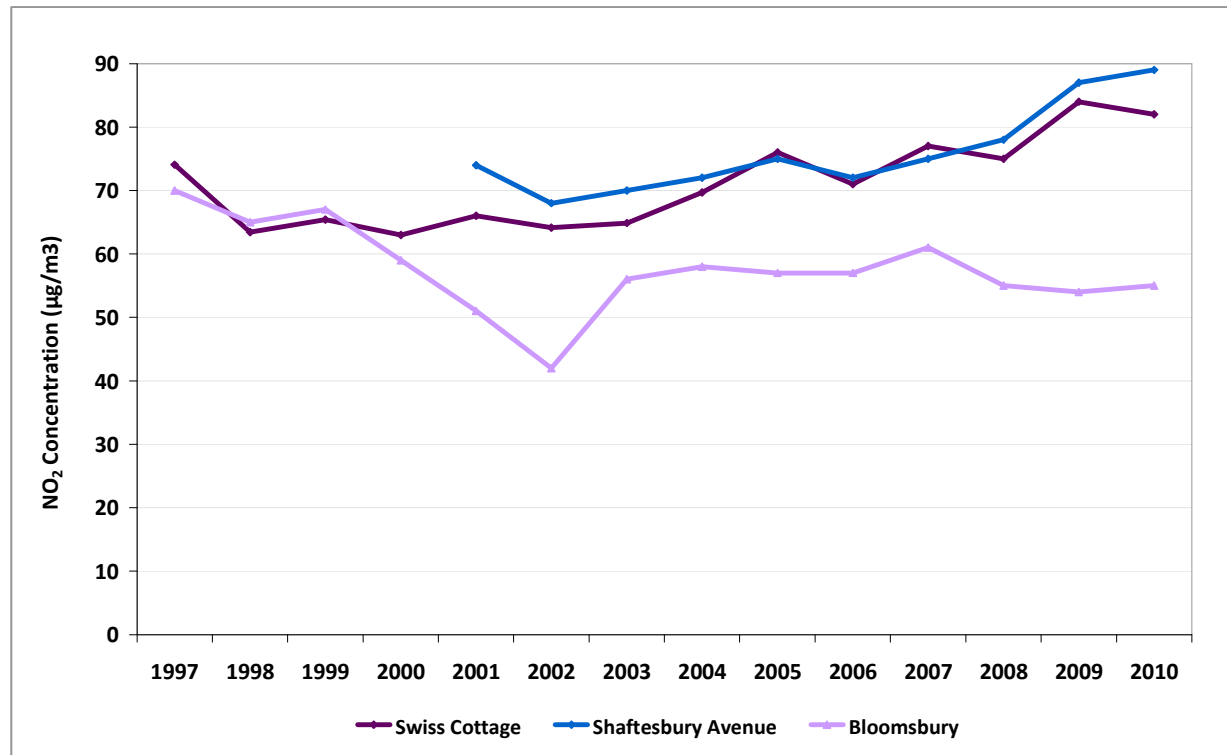
The annual mean objective for nitrogen dioxide was exceeded at all sites in 2010 and in the previous years. Between 2009 and 2010 the roadside site at Swiss Cottage decreased marginally, where as the roadside site at Shaftesbury Avenue, and the background site at Bloomsbury increased marginally.

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

Site ID	Location	Within AQMA?	Data Capture for monitoring period <sup>a</sup> %	Data Capture for full calendar year 2010 <sup>b</sup> %	Annual mean concentrations ( $\mu\text{g}/\text{m}^3$ )			
					2007 <sup>c,d</sup>	2008 <sup>c,d</sup>	2009 <sup>c</sup>	2010 <sup>c</sup>
CD1	Swiss Cottage	Y	83	83	77	75	84	82
CD3	Shaftesbury Avenue	Y	72	72	75	78	87	89
LB	London Bloomsbury	Y	99	99	61	55	54	55

**Nitrogen Dioxide**

**Figure 2.3 Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Automatic Monitoring Sites.**



Long term annual mean NO<sub>2</sub> concentrations at Camden’s three automatic monitoring sites show an upward trend at the roadside sites of Swiss Cottage and Shaftesbury Avenue, most apparent from 2003 onwards, Shaftesbury Avenue displays a sharp increase in annual mean NO<sub>2</sub> concentrations between 2006 and 2010, with 2010 recording the highest NO<sub>2</sub> concentrations since monitoring began in 2001, Swiss Cottage shows a slight decrease in 2010. The trends in NO<sub>2</sub> concentrations in Camden are mirrored across

London. The introduction of particle traps in diesel vehicles, especially buses, has been responsible for a rise in primary NO<sub>2</sub> concentrations which has subsequently increased ambient NO<sub>2</sub> concentrations.

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

Site ID	Location	Within AQMA?	Data Capture for monitoring period <sup>a</sup> %	Data Capture for full calendar year 2010 <sup>b</sup> %	Number of Exceedences of hourly mean (200 µg/m <sup>3</sup> )			
					2007 <sup>c</sup>	2008 <sup>c</sup>	2009c	2010c
CD1	Swiss Cottage	Y	83	83	113	70	151	128
CD3	Shaftesbury Avenue	Y	72	72	24	9	11	21
LB	London Bloomsbury	Y	99	99	6	0	2	1

The hourly objective was breached at Swiss Cottage and Shaftesbury Avenue in 2010. Breaches of the hourly NO<sub>2</sub> have decreased at Swiss Cottage but have doubled at Shaftesbury Avenue. The elevated hourly NO<sub>2</sub> concentrations at kerbside monitoring stations has been attributed to the increase in primary NO<sub>2</sub> from diesel vehicles. Swiss Cottage has exceeded the hourly NO<sub>2</sub> objective for the last three years.

### Diffusion Tube Monitoring Data

87% of diffusion tube monitoring sites in Camden breached the annual NO<sub>2</sub> objective in 2010. The highest concentrations were recorded at Tottenham Court Road (92 µg/m<sup>3</sup>), Euston Road (82 µg/m<sup>3</sup>), and Camden Road (84 µg/m<sup>3</sup>): Nine diffusion tube sites (highlighted in red in Table 2.4) measured annual mean concentration over 60 µg/m<sup>3</sup> indicating that the hourly NO<sub>2</sub> objective is being breached at these sites.

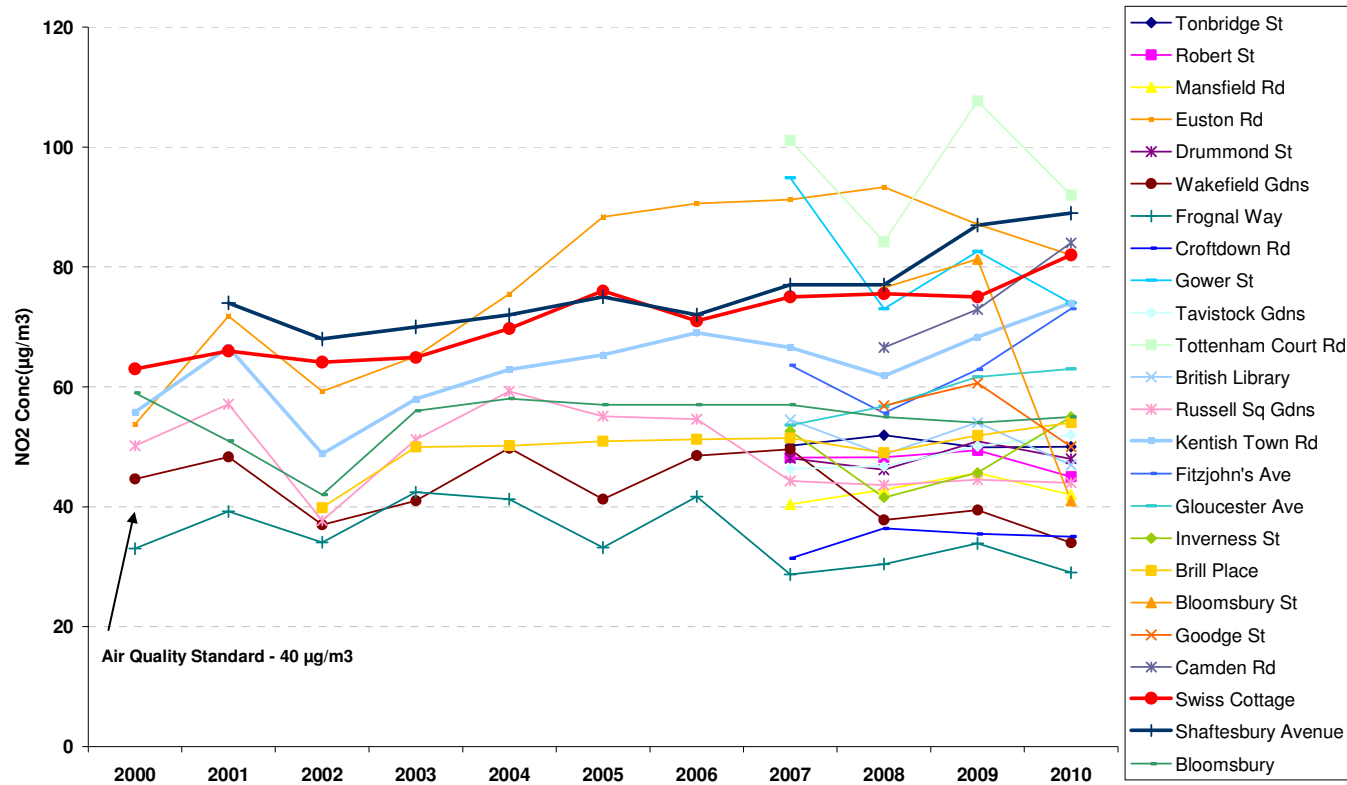
Between 2000 and 2010, long term monitoring sites show an upward trend in annual mean NO<sub>2</sub> concentrations, although there has been a marginal decrease in the total mean of 2010 compared with 2009. For the background site Wakefield Gardens and Frogal Place, which records the lowest concentrations, annual mean NO<sub>2</sub> concentrations fluctuate between 2002 and 2010 between 20 and 50 µg/m<sup>3</sup>.

**Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes**



Site ID	Location	Within AQMA?	Data Capture for monitoring period <sup>a</sup> %	Data Capture for full calendar year 2009 <sup>b</sup> %	Annual mean concentrations ( $\mu\text{g}/\text{m}^3$ )			
					2007 <sup>c, d</sup>	2008 <sup>c, d</sup>	2009 <sup>c</sup>	2010 <sup>c</sup>
CA1	Argyle School	Y	100	100	50.2	51.9	49.9	50
CA2	Robert St	Y	100	100	48.2	48.2	49.4	45
CA3	Mansfield Rd	Y	100	100	40.4	42.9	45.6	42
CA4	Euston Rd	Y	100	100	91.2	93.3	87.1	82
CA5	Drummond St/Cobourg St	Y	100	100	48.1	46.2	50.9	48
CA6	Wakefied Gds	Y	100	100	49.6	37.8	39.4	34
CA7	Frogna Way	Y	100	100	28.7	30.5	33.9	29
CA8	Croftdown Rd	Y	100	100	31.4	36.4	35.5	35
CA9	63 Gower St	Y	100	100	94.9	73.0	82.6	74
CA10	Tavistock Gardens	Y	90	90	46.3	46.8	50.1	52
CA11	Tottenham Court Road	Y	100	100	101.1	84.2	107.7	92
CA13	British Library	Y	100	100	54.5	48.7	54.1	47
CA14	Russel Square Gardens	Y	100	100	44.3	43.6	44.5	44
CA15	Finchley Rd	Y	100	100	81.5	68.1	87.5	71
CA16	Kentish Town Road	Y	100	100	66.6	61.8	68.3	74
CA17	47 Fitzjohn's Ave	Y	100	100	63.6	55.6	62.9	73
CA18	Corner Gloucester Ave/Parkway	Y	100	100	53.6	56.7	61.7	63
CA19	Inverness St	Y	100	100	52.6	41.5	45.7	55
CA20	Brill Place	Y	100	100	51.5	49.0	51.9	54
CA21	Bloomsbury St	Y	100	100		76.5	81.3	41
CA22	Goodge St	Y	100	100		56.8	60.6	50
CA23	Camden Road	Y	100	100		66.5	73.0	84
CA24	Chetwynd Road	Y	80	80			50.0	68

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



**2.2.1 PM<sub>10</sub>**

Research commissioned by DEFRA has shown that the conventional method to measure PM<sub>10</sub> using the TEOM (tamper element oscillating microbalance) was over reading PM<sub>10</sub> concentrations. In order to resolve this matter the Government advised that local authorities upgrade TEOMs with a new type of instrument called an FDMS (Filter Dynamic Measurement System) and use a

specialized model (Volatile Correction Model) to adjust historic particulate matter data to align with the new measuring technique. As a result of introducing this new equipment Camden's particulate matter levels have dropped and are now below the PM<sub>10</sub> air quality objectives.

The annual mean and daily mean air quality objectives for PM<sub>10</sub> were met at all three automatic monitoring sites in 2010. Overall there was a slight improvement in PM<sub>10</sub> levels between 2009 and 2010.

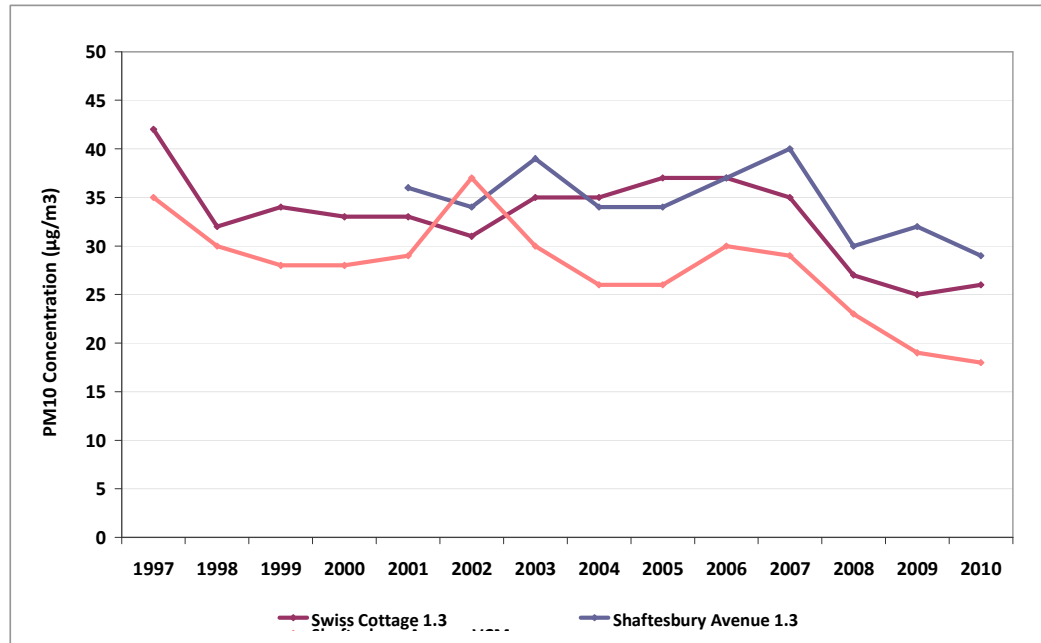
**Table 2.5a Results of PM<sub>10</sub> Automatic Monitoring: Comparison with Annual Mean Objective**

Site ID	Location	Within AQMA ?	Data Capture for monitoring period <sup>a</sup> %	Data Capture for full calendar year 2010 <sup>b</sup> %	Annual mean concentrations (µg/m <sup>3</sup> )			
					2007 <sup>c, d</sup>	2008 <sup>c, d</sup>	2009 <sup>c</sup>	2010 <sup>c</sup>
CD1	Swiss Cottage	Y	87	87	30	26	25	26
CD3	Shaftesbury Avenue	Y	85	85	33	29	32	29
LB	London Bloomsbury	Y	90	90	26	23	19	18

**Table 2.5b Results of PM<sub>10</sub> Automatic Monitoring: Comparison with 24-hour Mean Objective**

Site ID	Location	Within AQMA ?	Data Capture for monitoring period <sup>a</sup> %	Data Capture 2010 <sup>b</sup> %	Number of Exceedences of daily mean objective (50 µg/m <sup>3</sup> )			
					2007 <sup>c</sup>	2008 <sup>c</sup>	2009 <sup>c</sup>	2010
CD1	Swiss Cottage	Y	87	87	37	12	(8)	11
CD3	Shaftesbury Avenue	Y	85	85	32	20	19	5
LB	London Bloomsbury	Y	90	90	22	10	9	2

**Figure 2.5 Trends in Annual Mean PM<sub>10</sub>.**



Annual mean PM<sub>10</sub> concentrations have remained relatively stable over the last ten years at Camden automatic monitoring sites, with measurements at London Bloomsbury indicating a slight downward trend from 2002. Between 2007 and 2010 annual mean PM<sub>10</sub> show a sharp drop at all of Camden’s monitoring sites. This is a consequence of the change in PM<sub>10</sub> measurement methodology rather than emission improvements.

There has only been one exceedence of the annual mean objective since monitoring began, which occurred at Swiss Cottage in 1997. Shaftesbury Avenue recorded the next highest annual mean concentration of 40µg/m<sup>3</sup> in 2007. London Bloomsbury records the lowest annual means overall mainly due to its urban background location.

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### **2.2.2 Sulphur Dioxide**

Camden has achieved each of the SO<sub>2</sub> objectives for the last twelve years at London Bloomsbury. Between 1997 and 2010 there has been a definitive downward trend in SO<sub>2</sub> concentrations.

**Table 2.6 Results of SO<sub>2</sub> Automatic Monitoring: Comparison with Objectives**

Site ID	Location	Within AQMA	Data Capture for monitoring period <sup>a</sup> %	Data Capture 2009 <sup>b</sup> %	Number of Exceedences of:											
					15-minute Objective (266 µg/m <sup>3</sup> )				1-hour Objective (350 µg/m <sup>3</sup> )				24-hour Objective (125 µg/m <sup>3</sup> )			
					07	08	09	10	07	08	09	10	07	08	09	10
LB	London Bloomsbury	N	98	98	0	0	0	0	0	0	0	0	0	0	0	0

### 2.2.3 Other pollutants monitored

#### Carbon Monoxide

Camden has achieved the air quality objective for carbon monoxide since monitoring commenced in 1997. 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 2010.

**Table 2.7 Results of CO Automatic Monitoring: Comparison with Objectives**

Site ID	Location	Within AQMA	Data Capture for monitoring period <sup>a</sup> %	Data Capture 2009 <sup>b</sup> %	Number of Exceedences of: Days maximum rolling 8hr mean >10 $\mu\text{g}/\text{m}^3$ ( $\mu\text{g}/\text{m}^3$ )			
					2007	2008	2009	2010
LB	London Bloomsbury	N	98	98	0	0	0	0

#### Ozone

Between 2007 and 2009 Camden has achieved the ozone objective at London Bloomsbury. Between 1997 and 2002 annual mean ozone concentrations fluctuated around  $23 \mu\text{g}/\text{m}^3$ . 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.

**Table 2.8 Results of O<sub>3</sub> Automatic Monitoring: Comparison with Objectives**

Site ID	Location	Within AQMA	Data Capture for monitoring period <sup>a</sup> %	Data Capture 2009 <sup>b</sup> %	Number of Exceedences of: ( $\mu\text{g}/\text{m}^3$ )
					No more than 10 times per annum > 100 mg/m <sup>3</sup> as maximum rolling 8 hour mean



					<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
LB	London Bloomsbury	N	98	98	3	1	1	1

#### **2.2.4 Summary of Compliance with AQS Objectives**

Camden Council has measured concentrations of NO<sub>2</sub> above the annual and 1 hour mean objectives at relevant locations. These are within the AQMA so a detailed assessment is not required.

### **3 New Local Developments**

#### **3.1 Road Traffic Sources**

Since the last USA, no new/newly identified road traffic sources have been identified.

#### **3.2 Other Transport Sources**

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

#### **3.3 Industrial Sources**

Since the last USA, there are no new/newly identified industrial sources.

#### **3.4 Commercial and Domestic Sources**

Information in the LAEI 2006 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<sub>10</sub> objectives.

#### **3.5 New Developments with Fugitive or Uncontrolled Sources**

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

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

Camden Council confirms that all the following have been considered –

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

## **4 Local / Regional Air Quality Strategy**

Camden council will consider the Mayor's Air Quality Strategy for London when revising our AQ action plan in 2012/13.

## **5 Planning Applications**

All major applications were reviewed for potential impact on air quality in 2010. All large developments, or those in areas with particularly poor air quality, or those involving demolition, have been accompanied by air quality assessment. CHP and Biomass boilers are also strictly regulated through the planning process.

## 6 Air Quality Planning Policies

Camden has used the planning system to bring air quality benefits, and uses the planning process to primarily minimise the impact on local traffic (during construction and operational phases), to prevent increases in congestion and curtail dust and pollution emissions during construction. For example, the Council's Unitary Development Plan (UDP) has strict parking standards to limit residential parking, and most major developments are required to implement measures such as travel plans and local improvements to reduce traffic. Camden's main planning policy with regards to air quality states that an air quality assessment should be submitted for application which could have a significant impact on air quality.

The Council has made successful use of Section 106 agreements to drive air pollution emission reductions at new development sites by requesting -

- Car free housing
- Installation of electric vehicle recharging infrastructure
- Adoption of work place travel plan
- Cycle storage
- Construction management plan which must include measures to reduce air pollution emissions.
- New residents and business to join car clubs
- Imposing strict parking standards
- Air quality assessment for developments associated with increases in traffic and where biomass boilers and CHP are proposed as low carbon energy sources.
- Emission mitigation measures for biomass boilers and CHP

Camden has published an Air Quality Supplementary Planning Guidance note and encourages developers to adopt the London Best Practise Guidance For Controlling Emissions at Demolition and Construction Sites. Dust monitoring is required for medium and large sites, lengthy construction periods or where sites are located near sensitive receptors. Camden has produced a biomass boiler checklist for applicants in order to appraise boiler technology, fuel use and emissions control, and guidance for developer outlining best practise measures for controlling NO<sub>x</sub> and PM<sub>10</sub> emission. The Council is however discouraging the use of biomass boilers in areas of exceptionally poor air quality. Similar technical information is being required in relation to CHP. The Council is using GIS to monitor the location of biomass boilers and gas CHP in order to avoid cumulative air pollution impacts.

September 2011

London Borough of Camden - England

The new Local Development Framework includes policies related to reducing the direct and indirect effects of developments on air quality. This will focus on minimising the impact of increases in traffic and take into account reducing emissions from on site energy generation.

Camden has commissioned guidance on CHP systems and will incorporate the findings of this into policy documents and S106 agreements as appropriate.



## **7 Local Transport Plans and Strategies**

Camden deliver a range of sustainable transport projects through the Local Implementation Plan (LIP). Plans and strategies that are linked to the LIP include Camden Walking Plan, Camden Cycling Plan, School Travel Plan Strategy and the Green Transport Strategy.

The over arching aim of the LIP is to reduce traffic levels by 15% by 2015 against a 2001 baseline. Camden has already achieved this target. Achievements in sustainable transport are included in the Action Plan progress update below.

## 8 Implementation of Action Plans

**Table 9.1 Action Plan Progress**

No.	Measure	Focus	Implementation and completion phase	Indicator(s)	Progress
1	Reduce traffic and improve opportunities to encourage sustainable transport	Require car free and car capped housing in new developments to limit journeys by car.	On-going	Number of car free housing/yr	676 car free/capped requested 50% increase from 2008.
2		Undertake measures to increase walking and cycling in the borough	On-going	% reduction in vehicle counts/yr % increase in cycling /yr	Good progress has been made at undertaking various walking and cycling schemes including the Mayor's Cycle Hire Scheme (Camden now have 42 cycle hire docking stations, and there are 7,127 Barclays Cycle Hire members in Camden), Legible London (85 signs in place). In financial year April 2010-March 2011 a total of 1, 104 people attended cycle training sessions. This is roughly a 20% increase on the previous financial year. In 2010 a total of 810 Year 5 children were trained in pedestrian skills in 21 primary schools across the Borough.
3		Undertake travel awareness initiatives and making links with improving air quality	On-going	No of events organised/yr	We undertook 11 events during 2010 calendar year. Information on air quality was carried at all events including information on airTEXT and Travelfootprint. The combined recorded attendance was 3236, with 376 bikes being serviced by our Dr Bike Mechanics.
4		Increase the number of car club bays across the borough and encourage more people to join car clubs.	On-going	No of new car club bays No of new car club members	In partnership with two local car club operators Camden has introduced the UK's first hybrid and electric car club cars. Introduced 35 new car club bays and increased car club membership by 20%.
5		Work in partnership with schools and	On-going	Number of school travel plans	90% of Camden schools have adopted travel plans. Camden has assisted 20 business to adopt workplace travel plans.

No.	Measure	Focus	Implementation and completion phase	Indicator(s)	Progress
		businesses providing advice to encourage the adoption of travel plans		produced/yr	
6	Encourage the Use of Low Emission Vehicles	Increase the number charging points in the borough for electric vehicles and promote electric vehicles as part of the Newride scheme	On-going	Number of electric vehicle charging points installed/yr	Camden introduced five on-street electric vehicle charging points in 2010.
7		Support the uptake of biomethane vehicles, and participate in a demonstration project with a local business.	2009 -2012	No of new fleet operators using Camden's bio-methane refuelling station	The bio-methane refuelling station (6 tonnes) which was installed in 2009 has been used to great effect by Camden and local businesses such as John Lewis. The station is due to be upgraded as a result of increasing demand.
8		Work in partnership with private and public organizations to carry out hydrogen fuel cell transport projects	2009-2012		Council used their portable 5kw fuel cell generator at 4 events. These included; Camden Green Fair – June 2010 Eco Rally – July 2010 Kentish Town Event – July 2010 Car Free Day – November 2010
9		Provide guidance and information about low emission vehicles to residents and local businesses	On-going	No of visitors visiting Travelfooprint website/month  No of people visiting Newride/month	Running of the Newride site is funded until March 2013. The site is being developed to make it easier for people to use and to show more general information and news about electric vehicles.
10	Encourage Changes to	Undertake an awareness raising campaign to	2010-2012	No of idling vehicle campaign carried out/year	Code 63 enforcement will be introduced for buses, and awareness continues to be raised through Camden channels.

No.	Measure	Focus	Implementation and completion phase	Indicator(s)	Progress
	Driver Behaviour	encourage drivers to switch off their engines			
11		Promote smarter driving to residents and businesses, and carry out regular vehicle emissions testing.	2010-2012		Camden promoted eco-driving through its Travelfootprint website and the Council's website.
12	Reduce the Impact of Freight Vehicles	Investigate how a freight consolidation centre can be introduced in the borough	2009-2012		See 'working in partnership with CLFQP'
13		Work in partnership with local delivery companies to encourage the use of bicycles instead of motorised forms of transport	2009-2011		A cycle freight trial took place in 2009 to investigate whether electric cargo bikes could replace diesel vans for delivering small packages between a main depot and retail outlets in central London. Partnership with Gnewt bike couriers. The trial provided encouraging results, demonstrating that electric cycle freight could be viable alternative to diesel vans especially when combined with micro consolidation.
14		Work in partnership with the Central London Freight Partnership to promote cleaner vehicles and smarter driving to local freight companies	On-going		Camden explored establishing a Cargocycle freight depot in the borough, which was eventually placed in the adjacent City of London. Both authorities (with Westminster) were members of the Clear Zone Partnership, led by Camden. Camden, through the CLZ, commissioned a study Evaluation of a Cargocycle Freight Trial in Central London followed by a more general study Micro-consolidation Network Model for Freight Transport in the London Clear Zone. These studies show that significant reductions in emissions can be achieved by micro-consolidation techniques for 'last mile' deliveries, an issue that is being promoted through the CLFQP
15	Support Initiatives Introduced by the Mayor of London	Continue to support the full implementation of the Low Emission Zone and other measures introduced by the Mayor to improve air	On-going		Camden continues to support the full implementation of the Low Emission Zone and the Mayor's decision to introduce Phase 3 in 2012.

No.	Measure	Focus	Implementation and completion phase	Indicator(s)	Progress
		quality			
16	Reduce Diesel Train Emissions	Request train operating companies using Kings Cross Mainline Station to provide an action plan outlining measures to reduce diesel train emissions	2010		AQ requirements about re-development of Kings Cross station have been included.
17	Reduce the Council's Transport Emissions	Increase the proportion of low emission vehicles in our fleet, reduce fuel usage and organise smarter driving training.	On-going	<p>% change in emissions (kg) from Council vehicle fleet/annum against 2008/9 baseline</p> <p>No of new low emission vehicles introduced/yr</p> <p>No of drivers receiving smarter driver training</p>	<p>Emissions from Camden's fleet were reduced from 1145.5 TCO<sub>2</sub> in 2009-10 to 979.1TCO<sub>2</sub> in 2010-11, which represents a 14% reduction.</p> <p>Camden introduced 18 biomethane vehicles to its fleet in November 2010.</p> <p>35 Camden drivers have been trained in eco driving in 2010.</p>

18		Review Camden's Corporate Travel Plan and introduce new measures to reduce staff travel by car.	2009-2010	% reduction in staff car usage/yr	The Green Travel strategy (2007 -12) has not been renewed in 2009-10.
19		Create a green vehicle policy which sets vehicle size, fuel, technology and efficiency standard and integrate this into the Council's strategic procurement system.	2009-2010		A Green Vehicle Fleet Policy for Council's own fleet was prepared and adopted in 2009.  Policy for contractors was piloted in 2010, and the requirements (which include eco driving training, maintenance regimes and vehicles to comply with specific euro emissions standards) were applied to 10 contracts.
20	Determine The Impact of New Developments on Air Quality	Require developers to undertake an air quality assessment in circumstances where a new development could have a negative impact on air quality, and provide an air pollution mitigation plan where necessary.	On-going	Number of planning application set conditions <sup>s106</sup> related to air quality/yr	Air quality assessments continue to be requested and reviewed to ensure negligible impact of new developments.
21	Reduce Emissions at Construction Sites	Require developers to submit Construction Management Plans in accordance with the London Best Practise Guidance to Control Dust and Emissions from Construction and Demolition'	On-going	No of CMP complying with BPG	Construction Management Plans requested where necessary – which are analysed to ensure they contain suitable measures to control emissions. Several major development sites continue to monitor PM <sub>10</sub> in response to implementing the London Best Practise Guidance.
22	Reduce Transport Emissions At New Developments	Continue to use planning conditions and obligations to require developers to adopt measures	On-going	Number of parking space required  No of travel	Transport measures continue to be requested in s106 agreements.

		which will reduce transport emissions – request travel and business plans, installation of electric vehicle recharging infrastructure, car club bays to reduce private car use.		plans  No of electric charging bays	
<b>23</b>	Reduce Gas Boiler Emissions At New Developments	Camden will require major development sites to meet the Mayor of London's energy hierarchy, with high standards of sustainable building design and construction, and consideration of combined heat and power and renewables.	On-going	Number of development meeting the BREEAM rating of 'very good' and above/yr	Camden continue to apply obligations pertaining to CHP, renewable energy technology, BREEAM and Code for Sustainable Homes through S106 agreements
<b>24</b>	Control Emissions From Biomass Boilers	Use planning conditions and obligations to set best practice requirements for controlling NOx and PM <sub>10</sub> emissions from biomass boilers and CHP	On-going	Number of biomass boilers/CHP installed with conditions/obligations set to control emissions	The Council has commissioned a best practice guidance notes with EPUK on measured to control CHO emissions. This will be published in September 2011.
<b>25</b>	Support Fuel Saving and Energy Efficiency Measures	Camden will promote the adoption of fuel saving measures to residents and businesses through the Small Steps campaign and Camden Climate	On-going	Number of new business subscribed to Climate Change Alliance/yr  No of dwellings	The Climate Change Alliance organised 15 events in 2010 which covered specific energy efficiency advice to businesses. The team undertook audits for 6 new members and provided recommendations for office improvements to enhance fuel saving. Camden's Climate Change Alliance hosted a Green Travel and Transport Event on the 29 <sup>th</sup> September 2010, which was attended by seven Camden businesses. The event was delivered by sustainable transport experts Ecolane.

		Change Alliance.		fitted with insulation by 2011	<p>In addition, sustainable travel recommendations were given to 12 SMEs through Carbon Confident, recommendations included; using a green taxi company or courier service, installing secure bike parking facilities, replacing domestic flights and entering into cycle schemes for staff.</p> <p>In 2010 Camden installed cavity wall insulation in over 3000 dwellings in Camden owned and privately owned blocks of flats at no cost to residents.</p>
26	Reduce the Council's Gas Boiler Emissions	Continue to undertake energy efficiency improvement work in the Council's own buildings	On-going	Energy rating of Council housing	<p>The following initiatives were carried out to improve energy efficiency in 2010:</p> <ul style="list-style-type: none"> <li>• Fuel poverty grants and support</li> <li>• Remote metering</li> <li>• Cavity wall and loft insulation</li> <li>• Changing the way people pay for fuel</li> <li>• Pipe, valve and flange insulation</li> <li>• Boiler Energy Management Systems on district heating systems</li> <li>• Heating controls</li> </ul> <p>SAP rating of 71 in 2009 a marginal improvement from the previous year (70). The SAP rating for Camden's social housing in 2010 using the new RD SAP methodology was 60</p>
27		Camden will introduce an emissions measurement and reduction requirement for its main contractors and investigate options for encouraging contractors to reduce fuel usage in their buildings.	2009-2010	% change in PM10 and NOx emissions from Council buildings against 2008/9 baseline	Environmental procurement standards piloted in 2010 and emissions measurement and reductions have been required from new large contractors.
28		Investigate the long term use of CHP ensuring that air quality impacts are considered in the	2009-2012		Camden continues to ensure that any proposals for new CHP include an air quality assessment and if necessary mitigation measures. Various CHP feasibility studies carried out.



		design phase.			
29	Control Industrial Air Pollution Emissions	Ensure that all Part B Installations in the borough maintain the highest standards of air pollution emission control.	On-going	Number of Part B Installations meeting compliance	All Part B installation inspections completed by 31 March 2010.
30		Continue to dissemination up to date information about air quality and investigate new methods of informing the public about air pollution levels.	On-going	No of people visiting Camden's air quality webpages	Analysis of web usage indicates that air quality was the second most popular topic within sustainability on Camden's website in 2010. The site received hits from 841 unique users during this time.
31	Provision of Air Quality Information	Continue to monitor air pollution levels across the borough and review our air quality monitoring network every year.	On-going	Number of new air pollution monitoring sites operating/yr	Review of the monitoring network led to agreement to install continuous monitor on the Euston Road (installed early 2011).
32		Carry out air quality research and disseminate the results in order to influence effective actions to improve air quality across central London.	2009-2012		Innovative particulate matter research being undertaken on behalf of Camden by Kings College at Shaftesbury Avenue and York Way (PM10 monitor is owned and operated by Argent as part of the Kings Cross Central development). Entails the chemical analysis of PM10 and PM2.5 at both sites. This research will be published in late 2011.

33	Strengthen Promotional Work Relating To Air Pollution and Health	Undertake air pollution and health awareness initiatives, and explore how these can be linked with NHS Camden.	On-going	Number of residents subscribed to AirText/yr	Airtex leaflets are made available at Council events.  In 2010 1466 alerts were sent out to subscribers via text, email or voicemail. Fifteen new subscribers joined the scheme.
34	Working With The Wider Community	Camden will carry out awareness raising activities across the borough linking measures that reduce air pollution and CO <sub>2</sub> emissions.	On-going		Range of awareness raising work carried out - Small Steps, Urban Gym, Bike Week, Car Free Day and Walk to Work Day. Camden has been using their Eco-exhibition trailer at event to display posters and leaflets about air quality and climate change.

## **9 Conclusions and Proposed Actions**

### **9.1 Conclusions from New Monitoring Data**

There were no new monitoring sites introduced in 2010. Monitoring in 2010 demonstrated that Camden continues to breach long and short term objectives for NO<sub>2</sub>.

### **9.2 Conclusions relating to New Local Developments**

There have been no new local developments which have had a negative impact on air quality. Camden is carefully monitoring the adoption of CHP and biomass boilers in the borough.

### **9.3 Proposed Actions**

Even though PM<sub>10</sub> monitoring has revealed that Camden no longer breaches the air quality objectives for this pollutant, the Council do not intend on changing their Air Quality Management Order. The situation will be reviewed over the next five years in line with future trends in PM<sub>10</sub> concentrations.

Camden has installed a continuous NO<sub>x</sub> monitor on the Euston Road to confirm whether the short term NO<sub>2</sub> objective is being breached on this road. This road currently records extremely high annual mean NO<sub>2</sub> concentrations, and diffusion tube data reveals that this site breaches the short term NO<sub>2</sub> objective. Urban development in the areas immediately surrounding the Euston Road will be expanding in the next five to ten years. This monitor will prove beneficial in terms of providing more accurate information of air quality in this area and inform the planning process with regards to reducing exposure to poor air quality.

Camden introduced a new Air Quality Action Plan in 2009. The plan covers a package of measures to reduce NO<sub>x</sub> and PM<sub>10</sub> emissions over the next three years. The Council has made good progress at achieving the initiative scheduled for 2010 and will press forward with further measures in 2011. The Council will continue to work closely with Camden's climate change agenda to ensure that measures to improve air quality and tackle climate change are carried out in harmony.

Camden are progressing number of new actions which include a health perceptions study and development of a communications toolkit, the promotion of electric vehicles through and event and trials, the installation of a LED AQ sign on the Euston Road (funded by Defra) and Smarter Driving training for local companies.

## **Appendix A: QA:QC Data**

### **Diffusion Tube Bias Adjustment Factors**

Camden's bias adjustment factor for 2010 diffusion tubes was 0.96, this was calculated using continuous NO<sub>2</sub> monthly concentrations from the Swiss Cottage monitoring sites and triplicate diffusion tubes co-located at this site.

### **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.

### **QA/QC of automatic monitoring**

Monitoring stations are calibrated every fortnight at Swiss Cottage and Shaftesbury Avenue by Camden. London Bloomsbury monitoring station is calibrated by Bureau Veritas as part of the AURN.

All Site audits are carried out by the National Physics Laboratory and all monitors are covered by a service contract with SupportingU. Data validation and ratification is carried out by ERG for all automatic monitoring sites.

### **QA/QC of diffusion tube monitoring**

Gradko performed very well in the WASP scheme January 2009 - December 2009 gaining the highest score of good, on both the performance of the RPI old criteria and RPI new criteria.