THE ROYAL BOROUGH OF KENSINGTON AND CHELSEA

Local Air Quality Management Progress Report 2005

LOCAL AIR QUALITY MANAGEMENT

PROGRESS REPORT

April 2005

Local Air Quality Management Progress Report

EXECUTIVE SUMMARY

Under the Government's Air Quality Strategy, the Council is required to review and assess air quality at regular intervals. As a result of a review in 2000, the whole Borough was declared an Air Quality Management Area (AQMA) on the basis that nitrogen dioxide and particulate matter (to a lesser extent) would fail their respective objectives. Consequently in 2003 the Council published its Air Quality Action Plan, which set out the steps the Council is taking to work towards meeting the Government's air quality objectives.

This report takes another look at current air quality conditions in the Royal Borough, incorporating monitoring data from 2003 and 2004, and also gives an update on how the Council is progressing with measures listed in the Action Plan for the purpose of improving air quality.

Monitoring results shows that air quality objectives for carbon dioxide, 1,3-butadiene, lead, and sulphur dioxide continue to be met, but we continue to fail to meet the hourly average objective for particulate matter and the hourly and annual mean objective set for nitrogen dioxide.

One petrol station within the Borough also continues to fail the newer, more stringent, 2010 objective for benzene, as was reported in our Updating and Screening Assessment last year. However planning permission has been granted to re-develop the site, and the filling station is to close.

Almost two years have passed since the final version of the Council's Air Quality Action Plan was published, and we have made good progress with the majority of the 25 actions set out in it. Despite this, air quality concentrations are not significantly improving. This is mainly due to the fact that although a number of actions within the plan seek to reduce traffic volumes, which in turn should result in a reduction in emissions from vehicles, a reduction in emissions, does not give a proportional reduction in pollution concentrations. This is caused by a combination of complex atmospheric reactions, the weather and the way that pollutants behave across boundaries. Many of our actions are designed to improve other areas as well as air quality, or are primarily for the Council to set a good example. Although they will also reduce the impact of the council's activities, the effect on their own is not directly measurable. Others are designed to encourage visitors, other organisations and businesses to reduce their impact on air quality.

INTRODUCTION

Background

Under the national Air Quality Strategy, the Council is required to review and assess air quality at regular intervals. As a result of a review in 2000, the whole borough was declared an Air Quality Management Area (AQMA) on the basis that nitrogen dioxide and particulate matter (to a lesser extent) would fail their respective objectives. Consequently in 2003 the Council published its Air Quality Action Plan (hereon referred to as the Action Plan), which set out the steps the Council is taking to work towards meeting the government's air quality objectives.

Since then, reviews of air quality have taken place almost annually. The latest review in December 2003 - the 'Updating and Screening Assessment' - demonstrated that no significant changes had occurred since the previous assessment, and that the air quality management area must be retained.

In addition, councils must also show what progress is being made with their Action Plan. For the first time, we have produced a single document that includes the result of the Council's latest air quality review and also an update on how the Council is progressing with measures listed in the Action Plan which should help to improve air quality.

Part One - Review and assessment of air quality

As part of this latest review, which is referred to by Defra as a 'Local Air Quality Management Progress Report' we are required not only to include and assess monitoring data collected since our previous report – the 'Updating and Screening Assessment', but list new planning developments that might affect air quality in the Borough.

The overall aims of the document are to report on progress in achieving the air quality objectives and implementing the air quality Action Plan. We do this by comparing the objectives (as set out in table 1 below) with the levels of pollutants recorded. Air quality objectives are health based standards which have to be achieved by a given date. These objectives must continue to be met beyond the deadline. Objectives have been set with different time averaging periods for each pollutant. These most closely represent the exposures that are likely to be harmful to health.

Table 1 Air Quality Objectives within London

Pollutant	Concentration	Measured as	Date to be achieved
Benzene	16.25μg/m^3 5.00μg/m^3	running annual mean annual mean	31.12.2003 31.12.2010
1,3-butadiene	2.25μg/m^3	running annual mean	31.12.2003
Carbon monoxide	10 mg/m^3	max daily running 8hr mean	31.12.2003
Lead	0.5 μg/m^3 0.25 μg/m^3	annual mean annual mean	31.12.2004 31.12.2008
Nitrogen dioxide	200 μg/m^3 (not to be exceeded more than 18 times per year) 40 μg/m^3	1hr mean annual mean	31.12.2005 31.12.2005
Particles (PM_{10})	50μg/m^3 (not to be exceeded more than 35 times per year) 40μg/m^3	24 hr mean annual mean	31.12.2004 31.12.2004
Sulphur dioxide	350 μg/m^3 (not to be exceeded more than 24 times per year) 125μg/m^3 (not to be exceeded more than 3 times per year) 266 μg/m^3 (not to be exceeded more than 35 times per year)	1 hr mean 24 hr mean 15 minute mean	31.12.2004 31.12.2004 31.12.2005

For two pollutants – particles and polycyclic aromatic hydrocarbons (PAHs), further objectives have been set. These have not yet been incorporated within the Air Quality Regulations and are shown in Table 2 below. Local Authorities are being encouraged to work towards these objectives, though until they have been incorporated into regulations, we are not obliged to.

Table 2 Objectives adopted but not yet incorporated within the Air Quality Regulations.

Pollutant	**Concentration**	**Measured as**	**Date to be achieved**
Particles (PM_{10})	50 µg/m^3 not to be exceeded more than 10 times per year 23 µg/m^3 20 µg/m^3	24 hr mean annual mean annual mean	31.12.2010 31.12.2010 31.12.2015
Polycyclic aromatic hydrocarbons (PAH)	25 ng/m^3	annual mean	31.12.2010

An objective for a further pollutant, ozone, is shown in table 3. This has not been adopted for the purposes of local air quality management because of the difficulties of dealing with it at a local level. A brief section on the assessment of PAH and ozone has been included within this document, for information purposes only.

Table 3 Objectives not adopted for Local Air Quality Management purposes

Pollutant	**Concentration**	Measured **as**	**Date to be achieved**
Ozone	100µg/m^3 not to be exceeded by more than 10 times a year	Daily maximum 8 hour mean	31.12.2005

Existing monitoring data have been updated to include data from 2003 and 2004. This allows us to examine the longer term trends and observe any changes that may have occurred and whether there have been any exceedences of the objectives. General information on monitoring can be found on page 5; detailed information on each specific pollutant then follows. For the first time, information has also been included in this report on pollution episodes that occurred in 2003. This can be found in Appendix A4. It has been included as it was a particularly unusual weather year resulting in the reversal of some downward trends of air pollution. Seven major pollution episodes occurred in 2003; involving ozone, particulate matter, and to a lesser extent nitrogen dioxide.

Part Two - Action Plan

As mentioned earlier, the second part of this document reports on the progress the Council is making with each of the 25 actions listed in the Action Plan. Almost two years has passed since the Council published its final version of the Action Plan and when implemented, these actions should help to improve air quality within the Borough, and consequently help us to work towards achieving the air quality objectives set out in the Air Quality Strategy.

For further copies of this report, or any other report mentioned, please contact Rebecca Brown on 020 7341 5716. If you have any comments or suggestions on how the Council could work towards improving air quality then please e-mail them to airquality@rbkc.gov.uk or post them to the Environmental Quality Unit, Royal Borough of Kensington and Chelsea, 37 Pembroke Road, London W8 6PW.

PART ONE

AIR QUALITY PROGRESS REPORT

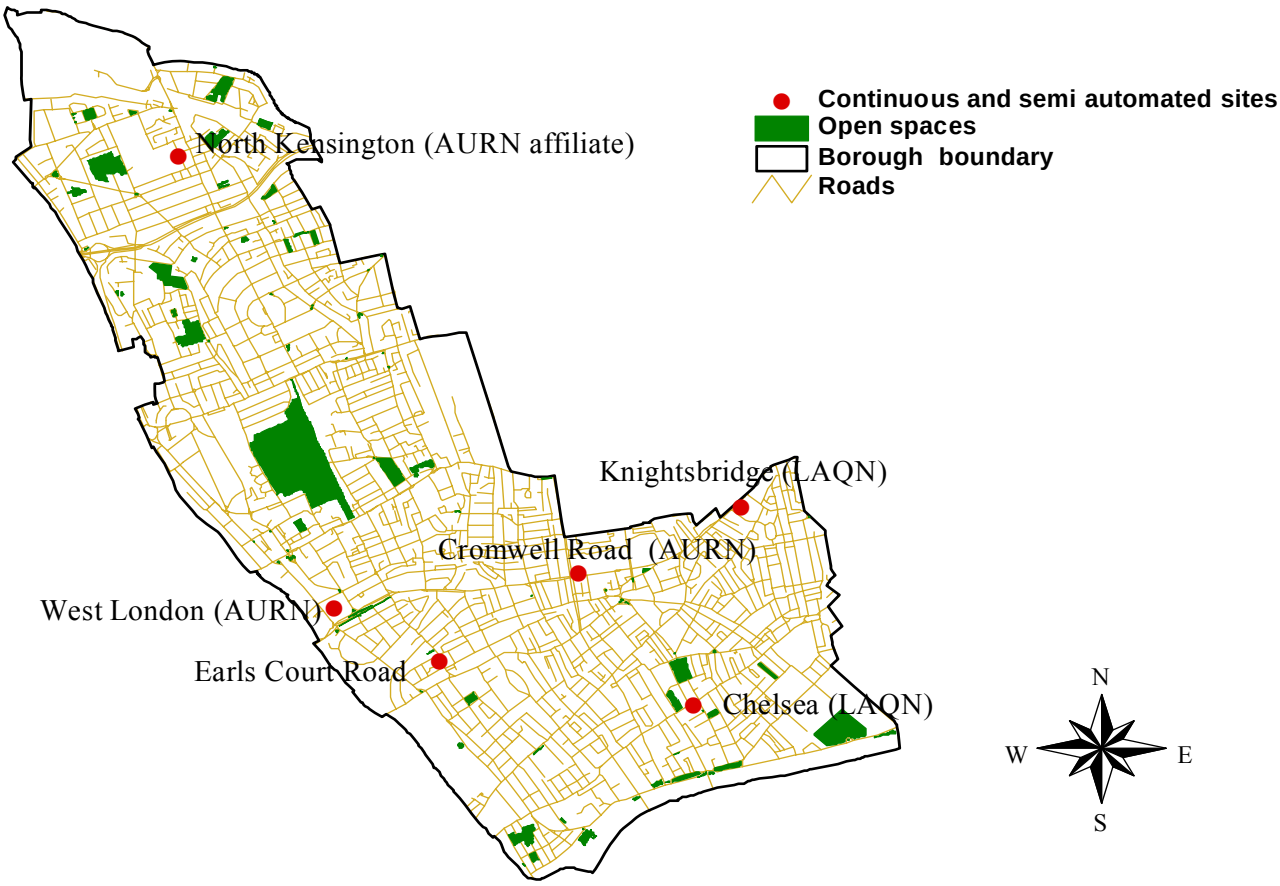
MONITORING AIR QUALITY IN THE BOROUGH

This section considers pollution monitoring results and trends that have occurred over the past ten years, it looks at relevant population exposures and lists new planning developments that may have an impact on air quality, so that these may be examined.

The air quality strategy specifies objectives for nine pollutants though two of these, ozone and PAH, have not been made into regulations at the present time. The Borough monitors **most** of these pollutants. Additional data have been obtained from two sites located in the borough operated by Defra and supplemented with further data from additional sites in central London where necessary.

The location of monitoring sites in the borough is shown below. Continuous monitoring data are collected at six monitoring sites in the Borough (including the two Defra sites). The details of each site, its classification (e.g. background, kerbside or roadside site) and pollutants monitored are described in Table **12** Appendix A3. All automated monitoring is subject to quality audit and quality control (QA/QC) procedures either as part of the AURN (the government's network) or the LAQN (the London network) by independent laboratories. Routine calibration and servicing is undertaken again to AURN or LAQN standards. Further information on QA/QC procedures can be found in Appendix A5. In the guidance it is suggested that where data capture is less than 90% for short term objectives, e.g. number of hours/days above an objective level, then results should be presented as percentiles. The only times where data capture of less than 90% has been recorded at our monitoring sites, are the years in which the sites were established. Clearly caution must be applied when interpreting these data. All automated data include data capture rates and caution must clearly be applied to data from years in which sampling is incomplete.

Locations of continuous and semi automated monitoring in the Borough



Air quality monitoring trends

The most significant trends to note are that while there has been a small decline in nitrogen dioxide levels at two background sites in the past 10 years, roadside levels show no clear overall trend (for a definition of these terms, please refer to the glossary.) This may be partly because of the shorter time scales that some of these sites have been operating (approximately four years), but also because concentrations of nitrogen dioxide are affected by complicated atmospheric reactions, which mean that reductions in concentrations are not in proportion to reductions in emissions. In any case the measured concentrations at most of the sites within the Borough are above the annual mean objective level. This demonstrates the continuing difficulty that central London has in meeting this objective. Exceedence of the hourly objective for nitrogen dioxide has occurred at busy roadside locations confirming the modelling work previously undertaken.

For particles (PM_{10}) the situation is more complex. Monitoring data indicate that the Borough has met the 2004 objectives in large areas of the Borough however exceedences remain likely at busy roadside locations. Even the annual mean objective which previous modelling work had not predicted an exceedence anywhere in the Borough in 2004, was breached in 2003 and 2004. In addition more stringent objectives set for 2010 are likely to prove far harder to meet, especially the annual mean objective of $23\mu g/m^3$. This will mean that in the future much larger areas of the borough are likely to be affected by a breach of this objective.

Relevant public exposure

For an air quality management area to be declared it must be demonstrated that air quality objectives are likely to be exceeded and that there is relevant public exposure i.e. any outdoor location that members of the public might reasonably be expected to spend a similar time to the averaging period of the objective e.g. the hourly objective would apply in a busy high street where people might spend an hour or more shopping.

Based on the stage four modelling work, estimates have been made of the number of people likely to be exposed to concentrations above the 2004 (PM_{10}) and 2005 (NO_2) objective levels. However these estimates are based on the residential population and therefore do not take into account visitors and shoppers who may be exposed to the shorter- term objective values.

As no exceedence of the annual mean PM_{10} objective was predicted no population exposure was expected. Even though the objective was exceeded in 2003 and 2004 at a kerbside location, because relevant exposure must be demonstrated over the averaging period of the objective, in this instance it is unlikely that exposure has occurred because of the kerbside position of the monitor. For relevant exposure to be established for long term objectives exceedences must be measured near building facades of residential properties. This will be reviewed at the next updating and screening assessment.

Table 4 Estimated population exposed to levels above the objective levels

Objective	Schools, hospitals and other sensitive receptors	Exposed Population*
Annual mean NO_2 2005	101	158,919
Hourly mean NO_2 2005	0	<1,800
Annual mean PM_{10} 2004	-	-
24 hour mean PM_{10}	0	<19,500

* Population based on census data (2001)

NEW LOCAL DEVELOPMENTS

Authorised industrial activities -Part A and Part B processes

Since the closure of Lots Road power station in 2002, there are no Part A processes operating or planned in the Borough. Currently there are eight authorised Part B processes (seven petrol stations and one paint sprayer); these have been operating for some time. All are regularly inspected in accordance with our statutory requirements. With the introduction of the Solvents Emission Directive, we are in the process of identifying and authorising all dry cleaners that operate in the Borough. There are currently approximately 29 dry cleaners that will require a permit by October 2006. These will be considered in the next updating and screening assessment.

Planning Developments

Several planning applications where permission has been granted have a condition attached that requires the developer to carry out an air quality assessment to see the effect that the development may have on air quality. This does not necessarily mean that the development will have a negative impact on air quality, we just want to make sure it is given sufficient consideration. The table below lists these:

Address of development	Type of development
Lots Road	Mixed Use
130-136 Barlby Road & 6 Exmoor Street	Residential
Bard Rd/Freston Road	Commercial

An update on these will be given in the next full round of review and assessment.

Development of the congestion charging zone

The Council continues to have concerns about the Mayor of London's proposed western extension of the congestion charge zone. If the Mayor extends the current congestion charging zone into the Borough, there could be an impact on air quality, specifically along the Earls Court Road, which in the Mayor's current proposal would not be subject to a charge. Consequently, it would be likely to attract additional traffic. Levels of particulates and nitrogen dioxide already exceed air quality objectives, if the road is to become even more congested, this could see concentrations rise further. In addition to the impact on air quality there are other unresolved issues of great importance to residents and businesses in the Royal Borough, not least the likely effect of the extension on commercial, particularly retail, activity, on recruitment and retention, on the cluttering of our streetscape and on the Council's future ability to fund community transport and streetscape projects.

CARBON MONOXIDE

The objective for carbon monoxide (CO) is 10 mg/m^3 as a maximum daily 8 hour running mean to be achieved by 2003. All carbon monoxide monitoring data measured in the Borough (since 1999) are shown in table 5. It includes data from one other busy kerbside location, Marylebone Road.

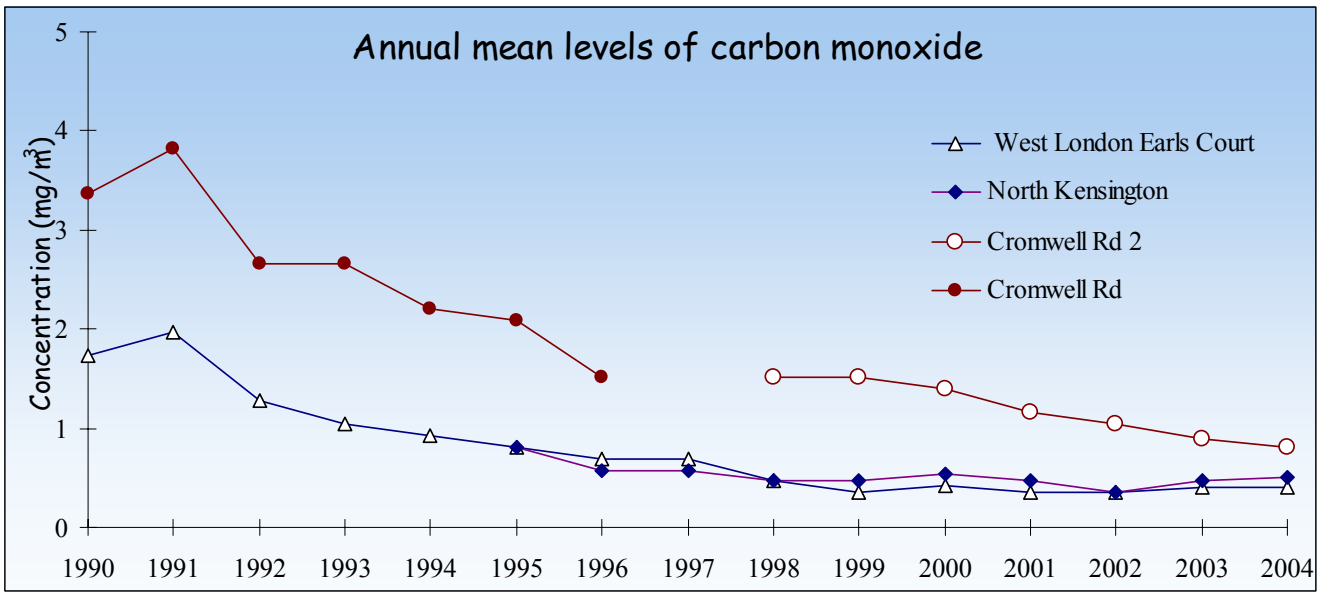
Table 5 Concentrations of CO measured in the Borough and at one central London site

Year	Site	Annual mean (mg/m^3)	Max daily 8-hour* (mg/m^3)	No. of hours above 10mg/m^3	% Data capture
1999	North Kensington	0.4	3.9	0	96
	West London	0.4	4.3	0	97
	Cromwell Rd 2	1.5	5.1	0	98
	Marylebone Rd	2.1	8.5	0	92
2000	North Kensington	0.4	5.8	0	95
	West London	0.3	5.3	0	97
	Cromwell Rd 2	1.3	6.0	0	98
	Marylebone Rd	2.4	9.9	0	96
2001	North Kensington	0.5	3.4	0	92
	West London	0.4	3.8	0	98
	Cromwell Rd 2	1.2	4.1	0	98
	Marylebone Rd	1.7	6.5	0	96
2002	North Kensington	0.4	5	0	96
	West London	0.4	3	0	97
	Cromwell Rd 2	1.0	4	0	93
	Marylebone Rd	1.4	5	0	98
2003	North Kensington	0.4	2.5	0	92
	West London	0.4	2.1	0	95
	Cromwell Rd 2	0.9	2.9	0	89
	Marylebone Rd	1.3	3.7	0	98
2004	North Kensington	0.5	2.3	0	99
	West London	0.4	1.6	0	99
	Cromwell Rd 2	0.8	2.3	0	98
	Marylebone Rd	1.1	3.0	0	96

***Maximum daily 8-hour running mean**

These data show there have been no exceedences of the objective level at monitored locations during this time. The Marylebone Road site, whilst not located within the Borough, is none the less indicative of higher levels at kerbside locations, and even here the objective level has not been exceeded. Figure 1 below shows that annual mean levels have for many years been declining. Annual mean levels have continued to decline at roadside locations but have stabilised at background locations. In any case this objective continues to be been met.

Figure 1



Conclusions

- The current objective for carbon monoxide has been met.

BENZENE

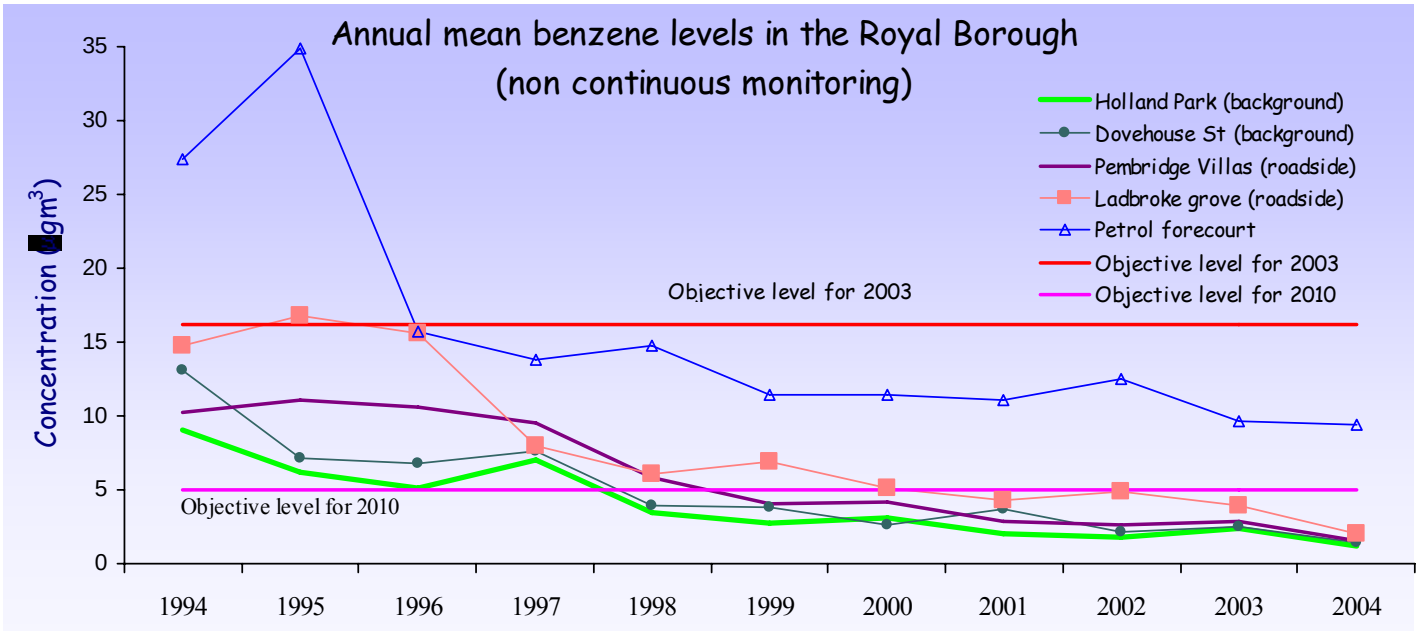
Two objectives have been set for the assessment of benzene – a running annual mean of 16.25µg/m^3 to be met by December 2003 and a newer, more stringent annual mean of 5µg/m^3 to be achieved by December 2010. Monitoring for this pollutant began in 1992 as part of the London Wide Environmental Programme, which is managed by Casella Stanger. We undertake sampling at five locations using passive diffusion samplers (the results of the monitoring are shown in Table 6). The laboratory we use is UKAS accredited and uses GC-MS technique to analyse the diffusion tubes. Diffusion tubes are regularly co-located with the continuous hydrocarbon monitor at Marylebone Road

Table 6 Annual average benzene levels using diffusion samplers (µg/m^3)

Location	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Holland Park (background)	8.1	10.5	9.0	6.2	5.1	7.1	3.4	2.8	3.1	2.0	1.8	2.43	1.24
Dovehouse St (background)	15.2	22.8	13.1	7.1	6.8	7.6	3.9	3.8	2.6	3.7	2.1	2.47	1.38
Pembridge Villas (roadside)	-	-	10.2	11.1	10.6	9.5	5.8	4.0	4.2	2.9	2.6	2.85	1.59
Ladbroke grove (roadside)	28.7	20.6	14.8	16.8	15.6	7.9	6.1	6.9	5.1	4.3	4.9	3.92	2.07
Petrol forecourt	59.7	44.0	27.3	34.9	15.7	13.8	14.7	11.5	11.4	11.0	12.5	9.63	9.46

Figure 2 below shows a steady downward trend at most sites. The highest levels of benzene have been recorded at the petrol forecourt location. The results show that the 2003 (16.25µg/m^3) objective has been met at all sites since 1997 (the measured annual mean is assumed to be the equivalent of the running annual mean) and continues to be met beyond 2003. However the stricter 2010 objective (5µg/m^3) is currently exceeded at the petrol forecourt location, despite a continuing slight downward trend. This will be reviewed in the next updating and screening assessment.

Figure 2



Conclusions

- The current objective for benzene has been met at all monitoring sites.
- Only the petrol station is at risk of exceeding the 2010 objective but planning permission for this site has been given and the site is due to be redeveloped.

1, 3-BUTADIENE

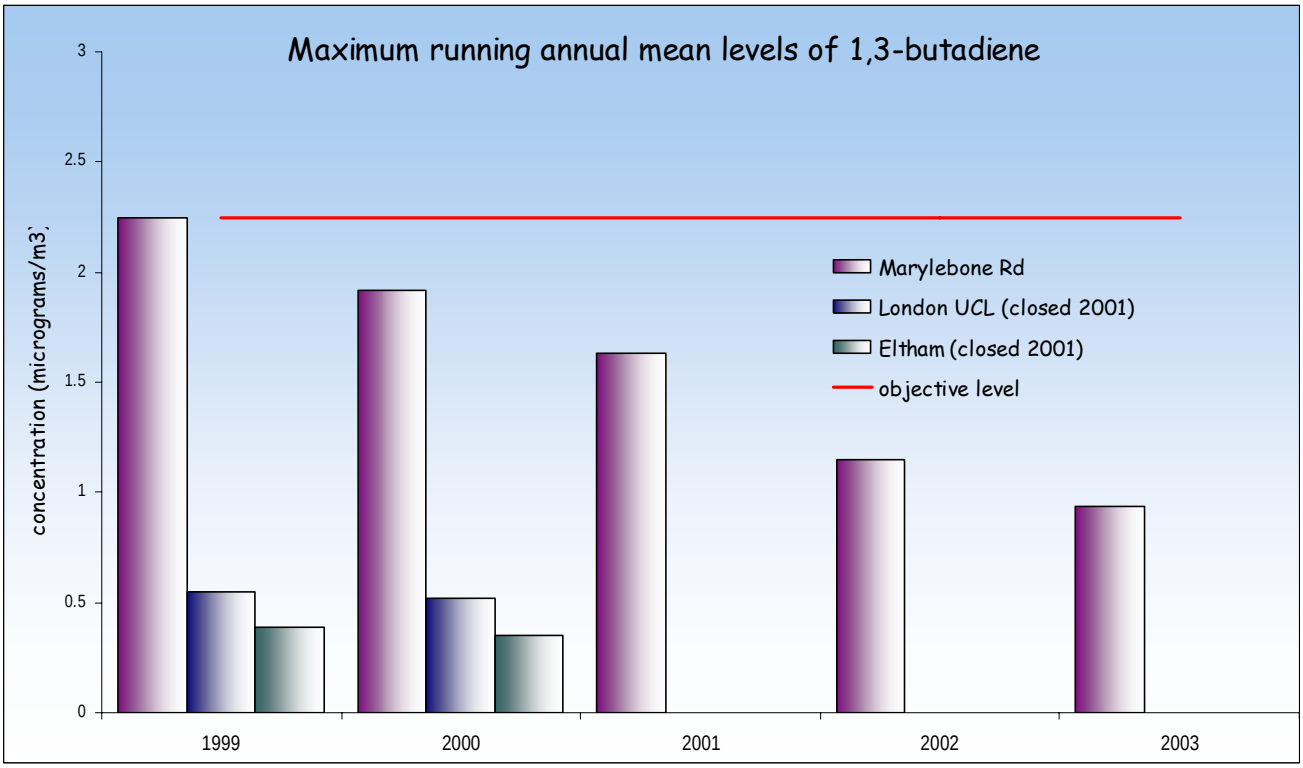
1,3-butadiene is not monitored in Kensington and Chelsea, however some data have been collected by Defra at three other sites within London. These data are shown in Table 7. This pollutant is now only monitored at the Marylebone Road site within central London.

Table 7 Levels of 1,3-butadiene (maximum annual running means, µg/m^3) in London

Location	1999	2000	2001	2002	2003	2004
Marylebone Rd	2.25	1.92	1.63	1.15	0.94	N/A
London UCL	0.55	0.52	-	-	-	-
Eltham	0.39	0.35	-	-	-	-

The highest running annual mean was recorded at the Marylebone Road (roadside) site in 1999. This measurement of 2.25µg/m^3 has continued to decline as the years have progressed, dropping to 0.94 µg/m^3 in 2003. The 2003 objective (2.25µg/m^3) has therefore been met and there is no evidence to suggest that 1,3-butadiene is at risk of exceeding objective levels in the borough. 1,3-butadiene data for 2004 were not available on the air quality archive at the time of the preparation of this report.

Figure 3



Conclusions

- The current objective for 1,3- butadiene is not at risk of being exceeded in the Borough.

LEAD

There are two annual mean objectives for lead: 0.5µg/m^3 to be achieved by 2004 and a more recent objective of 0.25µg/m^3 to be achieved by 2008.

Monitoring data

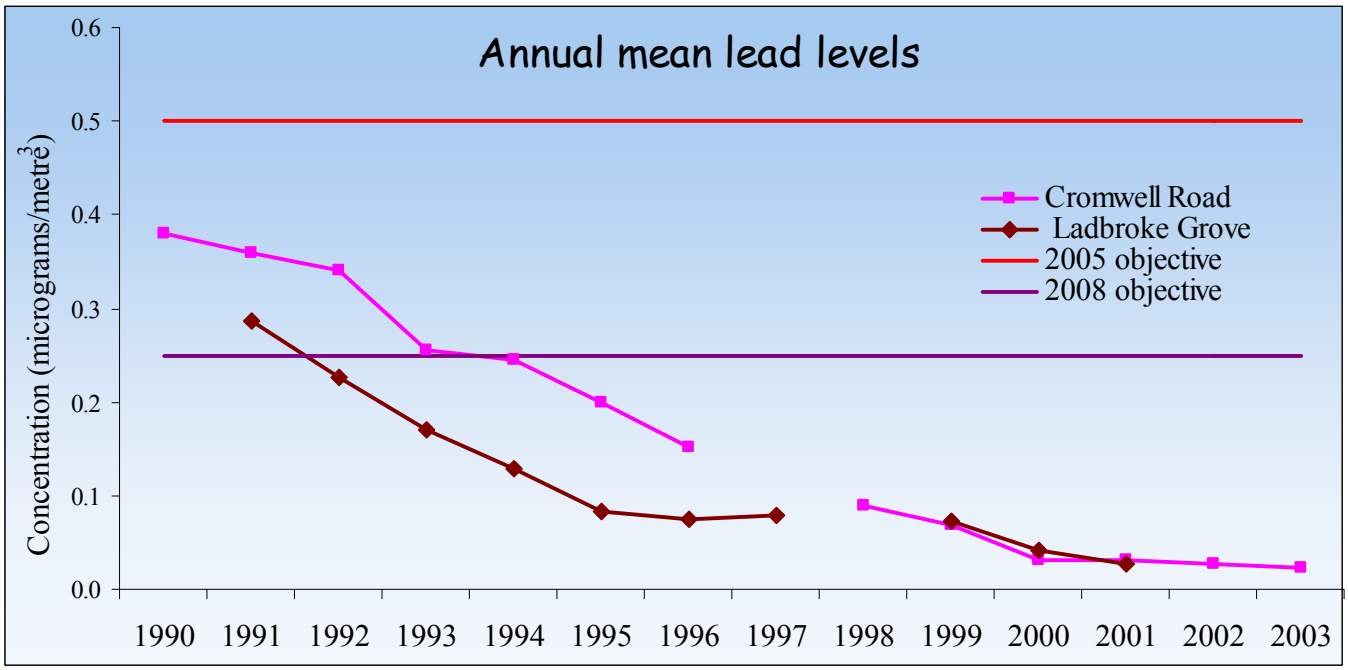
Monitoring of lead is now only undertaken by Defra at the Cromwell Road monitoring site in the Borough. We previously undertook lead monitoring in the borough at one additional site at Ladbroke Grove, however this site closed at the end of 2001 as levels had dropped so significantly it was not considered necessary to retain it.

Table 8 Lead levels within the Borough and Marylebone Road

Year	Ladbroke Grove (µg/m$^{3)}$	Cromwell Road (µg/m^3)	Marylebone Road (µg/m^3)
1999	0.073	0.068	0.033
2000	0.041	0.032	0.038
2001	0.026	0.031	0.036
2002	-	0.027	0.028
2003	-	0.022	0.028
2004	-	Data not yet available	

Monitoring data, as demonstrated below, show a downward trend at both Cromwell Road and Ladbroke Grove. Since the re-siting of the Cromwell Rd site in 1998 to the rear of the pavement, both sites have shown comparable levels. Monitored concentrations of lead are already within the objectives for both 2004 and 2008. Lead data for 2004 were not available on the air quality archive at the time of the preparation of this report. However levels in 2004 are very unlikely to affect this trend.

Figure 4



Conclusions

- Both the 2005 and the 2008 objective for lead have been met.

NITROGEN DIOXIDE

There are two different objectives for nitrogen dioxide (NO_2); a short term objective of 200µg/m^3 not to be exceeded more than 18 times per year as a one hour mean, and a longer term objective of 40µg/m^3 as an annual mean, both to be achieved by the end of 2005. Automatic chemiluminescent analysers and passive diffusion tubes have been used to monitor nitrogen dioxide for many years.

Diffusion tube monitoring for 2003 & 2004

Diffusion tube data are collected at a number of locations in the Borough as part of the London Wide Environmental Programme (LWEP). The diffusion tubes employed in the LWEP programme are prepared by UKAS accredited Gradko International Ltd. using the 50% v/v triethanolamine with acetone method. Tubes are exposed for a 4/5 week period approximating to a calendar month.

Diffusion tubes are a cost-effective method for assessing NO_2 enabling the Council to monitor at a greater number of locations. However the method is less accurate than fully automated techniques and the data shown in the graphs below have been factored. This factor takes into account the differences between the two monitoring techniques as the diffusion tube method tends to under-estimate concentrations. The factor used for 2003 and 2004 data was 1.11 based on the LWEP co-location study. These data indicate that all locations exceeded the annual mean objective level in 2003 and 2004 apart from a small number of background locations.

Figure 5

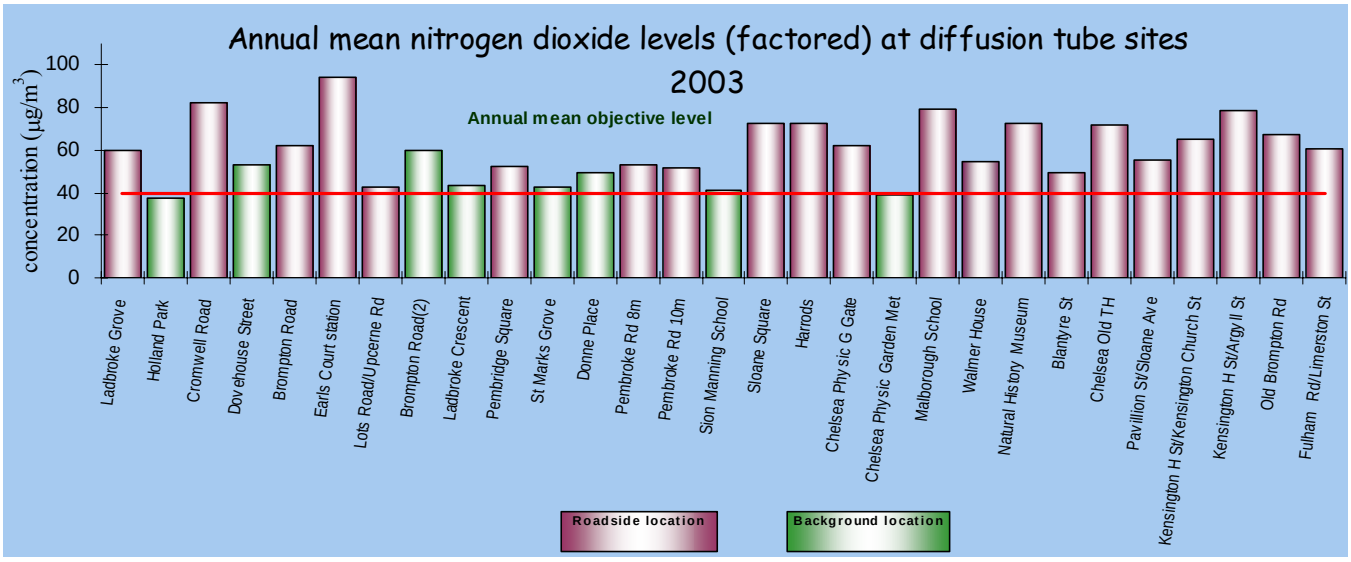
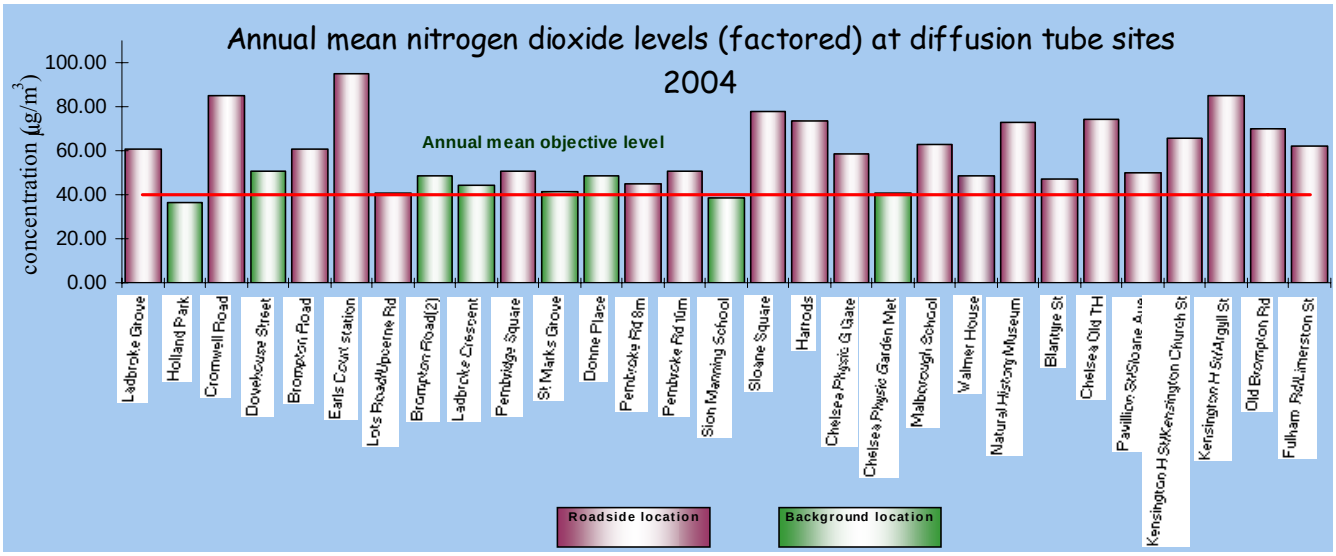


Figure 6



Continuous monitoring data

Continuous monitoring is now undertaken at five sites in this Borough. The Marylebone Road site data are included in Table 9 and in Figure 7 to give an indication of levels from a kerbside location.

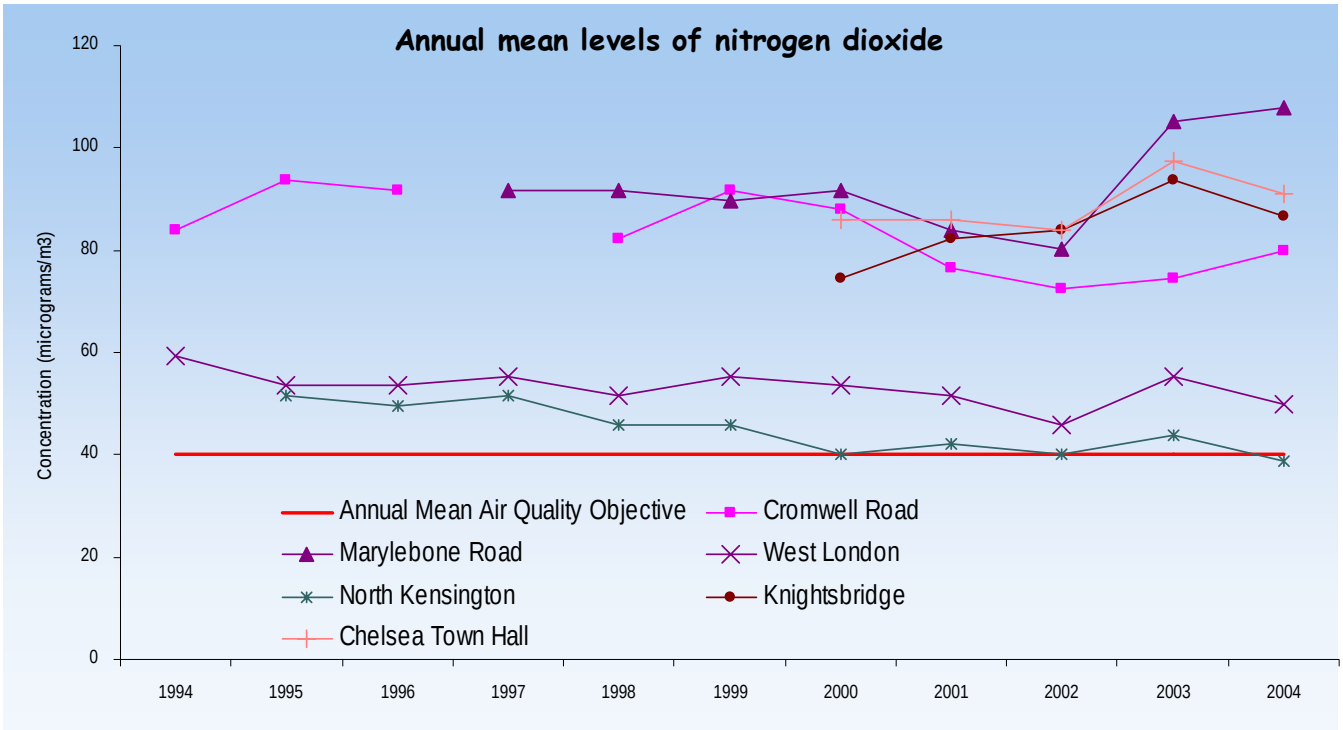
Table 9 Concentrations of NO_2 measured in and near the Borough using chemiluminescent monitors

Year	Site	Annual mean µg/m³ (ppb)	Max hour µg/m³ (ppb)	No of hours >200 µg/m³#	% Data Capture
1995	North Kensington*	52 (27)	283 (148)	17	75
	West London	54 (28)	251 (131)	10	98
	Cromwell Rd	90 (47)	325 (170)	141	92
1996	North Kensington	50 (26)	237 (124)	8	92
	West London	54 (28)	392 (205)	**18**	91
	Cromwell Rd*	82 (43)	300 (157)	101	68
1997	North Kensington	52 (27)	346 (181)	20	98
	West London	56 (29)	415 (217)	**38**	97
	Marylebone Rd*	92 (48)	300 (1570)	69	39
1998	North Kensington	46 (24)	226 (118)	2	99
	West London	52 (27)	193 (101)	0	98
	Cromwell Rd 2*	82 (43)	222 (116)	4	60
	Marylebone Rd	92 (48)	176 (92)	71	98
1999	North Kensington	46 (24)	178 (93)	0	97
	West London	55 (29)	205 (107)	1	98
	Cromwell Rd 2	92 (48)	253 (132)	12	98
	Marylebone Rd	90 (47)	325 (170)	51	85
2000	North Kensington	40 (21)	425 (222)	3	96
	West London	53 (28)	304 (159)	0	98
	Cromwell Rd 2	88 (46)	746 (390)	12	94
	Knightsbridge*	74 (39)	2818 (1473)	**52**	72
	Chelsea Town Hall*	86 (45)	270 (141)	2	25
	Marylebone Rd	92 (48)	570 (298)	100	96
2001	North Kensington	42 (22)	220 (115)	4	96
	West London	52 (27)	187 (98)	0	95
	Cromwell Rd 2	76 (40)	204 (107)	1	97
	Knightsbridge	84 (44)	325 (170)	**97**	97
	Chelsea Town Hall	86 (45)	228 (120)	16	95
	Marylebone Rd	82 (43)	273 (173)	74	94
2002	North Kensington	40 (21)	160 (84)	0	99
	West London	46 (24)	151 (79)	0	95
	Cromwell Rd 2	73 (38)	183 (96)	0	95
	Knightsbridge	86 (45)	366 (192)	**154**	98
	Chelsea Town Hall	84 (44)	193 (101)	0	99
	Marylebone Rd	80 (42)	237 (124)	2	99
2003	North Kensington	44	195	0	94
	West London	55	186	0	96
	Cromwell Rd 2	76	224	6	93
	Knightsbridge	93	371	**235**	99
	Chelsea Town Hall	98	282	**50**	99
	Marylebone Rd	107	394	471	94
2004	North Kensington	39	170	0	99
	West London	50	206	1	99
	Cromwell Rd 2	80	230	3	99
	Knightsbridge	*87*	*472*	***226***	*98*
	Chelsea Town Hall	*91*	*268*	***62***	*99*
	Marylebone Rd	110	361	529	99

* some sites have operated for part of a year only, data from these sites must be treated with caution
# more than 18 hours above 200 µg/m³ indicate an exceedence of the objective
Figures in bold indicate an exceedence of an objective, recorded within Kensington and Chelsea.
Data in italics are unratified and should be treated with caution.

Exceedences of the annual average nitrogen dioxide objective level have occurred at **almost** all sites in the Borough.

Figure 7



As expected, levels are lowest at the background site at North Kensington monitoring site, where for the last few years they have either equalled or hovered just above the objective. However data from 2004 show that the site dipped just below the limit (caution must be applied as the data have not been fully ratified). All other sites remain above the objective level.

In the past 10 years there has been a small decline in nitrogen dioxide levels at the two background sites (North Kensington and West London). Of the other sites, Cromwell Road appears to show an overall decrease too, however it is difficult to be certain about, as the site was moved in the late 1990's. Also it is the only site to show a slight increase in nitrogen dioxide levels from 2003 to 2004 these may be due to changes in traffic flows or changes in abatement technology. This needs to be investigated further.

Trends from the more recently established sites at Knightsbridge and Chelsea (installed April and September 2000 respectively) show overall increases. This is likely to be due to the fact that the sites have operated for just under five years. Also the weather in 2003 had a significant impact on levels at all sites. 2003 was dominated by a large number of pollution episodes which were weather dependant.

Exceedences of the one-hour objective have only been occasionally breached in this Borough. Post 1997, this has only been recorded at the kerbside monitoring site in Knightsbridge and at the Chelsea site. Here, members of the public have the potential to be exposed over this time period. Similar locations may be at risk of exceedences; this confirms the findings of previous modelling work.

Conclusions

- All the monitoring indicates that apart from some background areas the objective for the annual mean objective will not be met in 2005.
- The evidence for exceedences of the hourly mean objective confirms exceedences are likely at some busy roadside locations especially during years in which weather is particularly poor for dispersion.

SULPHUR DIOXIDE

Three objectives have been set for this pollutant; a one hour mean of 350 µg/m^3 (not to be exceeded more than 24 times per year), a 24 hour mean of 125µg/m^3 (not to be exceeded more than 3 times per year) and a 15 minute mean of 266 µg/m^3 (not to be exceeded more than 35 times per year).

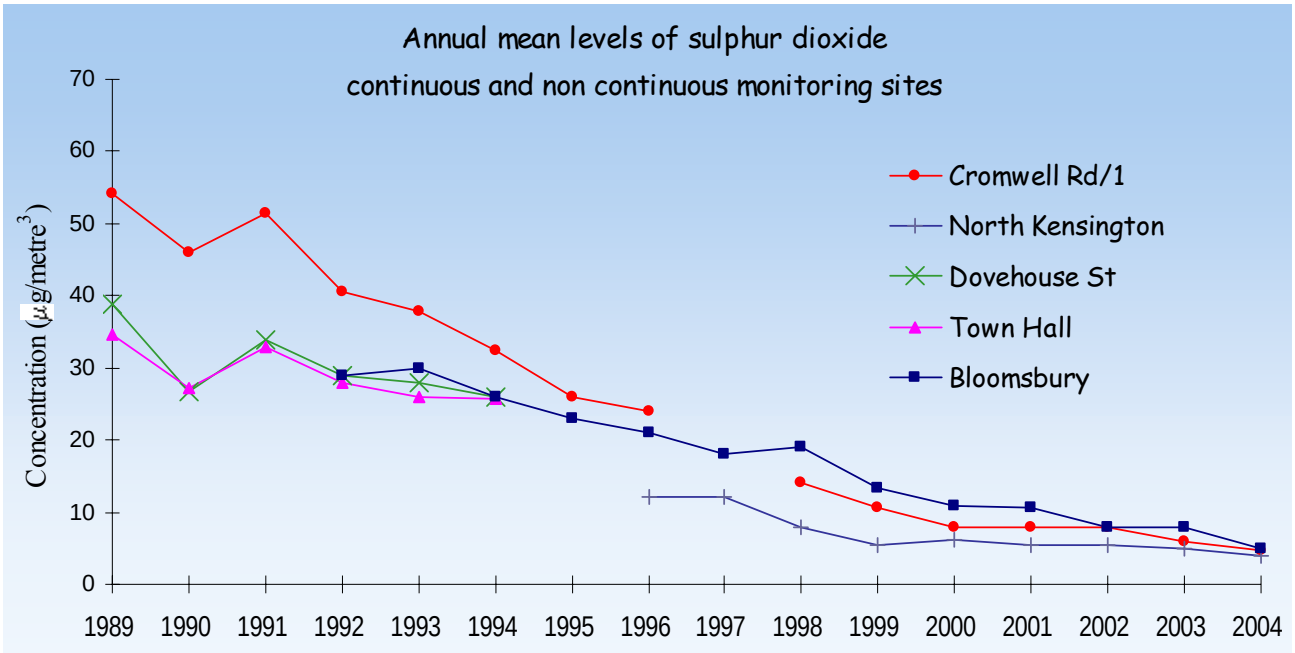
Monitoring of sulphur dioxide has been undertaken for many years in the borough, originally by semi-automated method which was replaced during the 1990's by fully automated methods. The monitoring data have shown that annual average and peak levels have declined substantially. This has been largely due to the switch from coal and heavy oil use to gas from both local and industrial sources. In addition continuing smaller improvements have been brought about by reductions of sulphur in fuel.

Table 10 Sulphur dioxide concentrations measured in the Borough

Year	Location	Annual average µg/m^3	No. of 1 hour means > 350µg/m^3	No. of 24 hour means > 125µg/m^3	No. of 15min means > 266µg/m^3	Data capture %
1999	North Kensington	5	0	0	0	99
	Cromwell Rd	11	0	0	0	98
2000	North Kensington	6	0	0	0	96
	Cromwell Rd	8	0	0	0	97
2001	North Kensington	5	0	0	0	97
	Cromwell Rd	8	0	0	0	95
2002	North Kensington	5	0	0	0	99
	Cromwell Rd	8	0	0	0	85
2003	North Kensington	5	0	0	0	99
	Cromwell Rd	5.7	0	0	0	88
2004	North Kensington	4	0	0	0	97
	Cromwell Rd	5	0	0	0	99

No exceedences of any of the objectives have been observed in the past six years at any of monitoring locations in the borough. The graph below demonstrates the decline in sulphur dioxide levels over the 15 years.

Figure 8



Conclusions

- The current objective for sulphur dioxide has been met.

PARTICLES (PM_{10})

Two objectives for particles have been incorporated within the Air Quality Regulations to be achieved by the end of 2004 – a short term 24 hour mean objective of 50µg/m^3 (not to be exceeded more than 35 times per year) and a long term annual average objective of 40µg/m^3. In addition to these, three more stringent objectives have been set (Table 2) to be achieved by 2010 and 2015. These have not been incorporated into the Air Quality Regulations, therefore comparisons against these future objectives are indicative only.

Since 1998, automatic monitoring of PM_{10} (using TEOMs) has been carried out at two sites within the Borough – North Kensington (urban background site) and Cromwell Road (roadside). In 2002 monitoring using a gravimetric sampler commenced on the Earls Court Road. We also have data from a co-located gravimetric sampler at North Kensington. All PM_{10} data are shown in Table 11.

Table 11 Concentrations of PM_{10} (TEOM) measured in the Borough and other nearby locations

Year	Site	Annual mean µg/m^3 (TEOM)	Annual mean 40µg/m^3 2004 (GRAV)	No of days above 50µg/m^3 (GRAV) fixed 24 hr mean	% Data Capture
1995	North Kensington*	26	34	**36**	75
	Bloomsbury	28	36	58	93
1996	North Kensington	25	33	46	98
	Bloomsbury	30	39	65	92
1997	North Kensington	24	31	34	98
	Bloomsbury	27	35	43	96
	Marylebone Rd*	39	51	50	45
1998	North Kensington	20	26	16	98
	Bloomsbury	23	30	21	94
	Cromwell Rd2*	28	37	28	60
	Marylebone Rd	32	42	85	98
1999	North Kensington	21	27	16	99
	Bloomsbury	22	29	21	96
	Cromwell Rd2	30	39	**51**	95
	Marylebone Rd	35	46	114	95
2000	North Kensington	20	26	11	96
	Bloomsbury	21	28	11	97
	Cromwell Rd2	27	35	30	97
	Marylebone Rd	37	48	159	99
2001	North Kensington	20	26	4	96
	Bloomsbury	22	29	16	98
	Cromwell Rd2	27	35	34	99
	Marylebone Rd	34	43	105	98
2002	North Kensington	19	25	8	99
	N Kensington Partisol	Not applicable	25	**39**	88
	Bloomsbury	29	38	43	85
	Cromwell Rd 2	28	37	**36**	95
	Marylebone Rd	34	44	111	98
	Marylebone Rd Partisol	Not applicable	44	44	Not available
	Earls Court Partisol*	Not applicable	37	30	62
2003	North Kensington	22	28	29	98
	N Kensington Partisol	Not applicable	28	**32**	88
	Bloomsbury	23	30	14	58
	Cromwell Rd 2	30	39	**56**	88
	Marylebone Rd	37	48	161	99
	Marylebone Rd Partisol	Not applicable	45	96	98
	Earls Court Partisol*	Not applicable	**43**	**91**	97
2004	North Kensington	19	24	6	97
	N Kensington Partisol	*Not applicable*	*24 (10 months#)*	*5*	*65*
	Bloomsbury	20	26	7	98
	Cromwell Rd 2	*27*	*35*	*29*	*99*
	Marylebone Rd	33	43	97	98
	Marylebone Rd Partisol	*Not applicable*	*Not available*	*Not available*	*Not available*
	Earls Court Partisol	*Not applicable*	***41***	***66***	*89*

* Indicates that these sites were not operating for a full year. Partisol indicates gravimetric collection method.

• Figures in bold indicate an exceedence of an objective recorded within Kensington and Chelsea.

Results based on 10 months available data, data shown in italics is not fully ratified

Because TEOMs tend to underestimate levels compared to gravimetric instruments, measurements are adjusted to take this into account. At North Kensington where these instruments are co-located a comparison of adjusted TEOM data (using an adjustment factor of 1.3) with gravimetric levels gives a fairly good approximation of the annual average. It is likely to be less reliable when applied to exceedences of the daily objective. Adjusting non-gravimetric sampling is important because locations near to busy roads are hovering around the annual mean objective level with our kerbside site just above, and the roadside site just below. Such sites are at risk of exceeding the objectives especially in years when climatic conditions exacerbate pollution levels i.e. poor dispersion or high number of secondary episodes due to long range pollution.

Figure 9

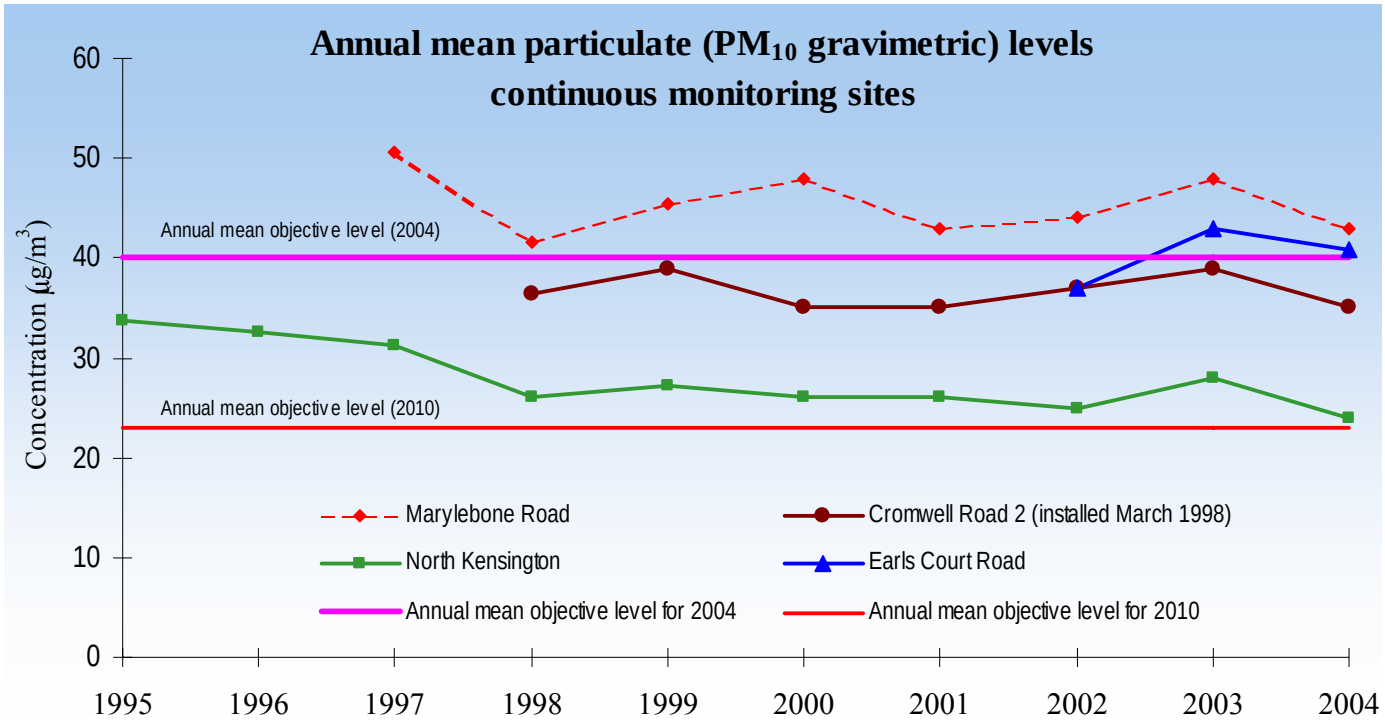
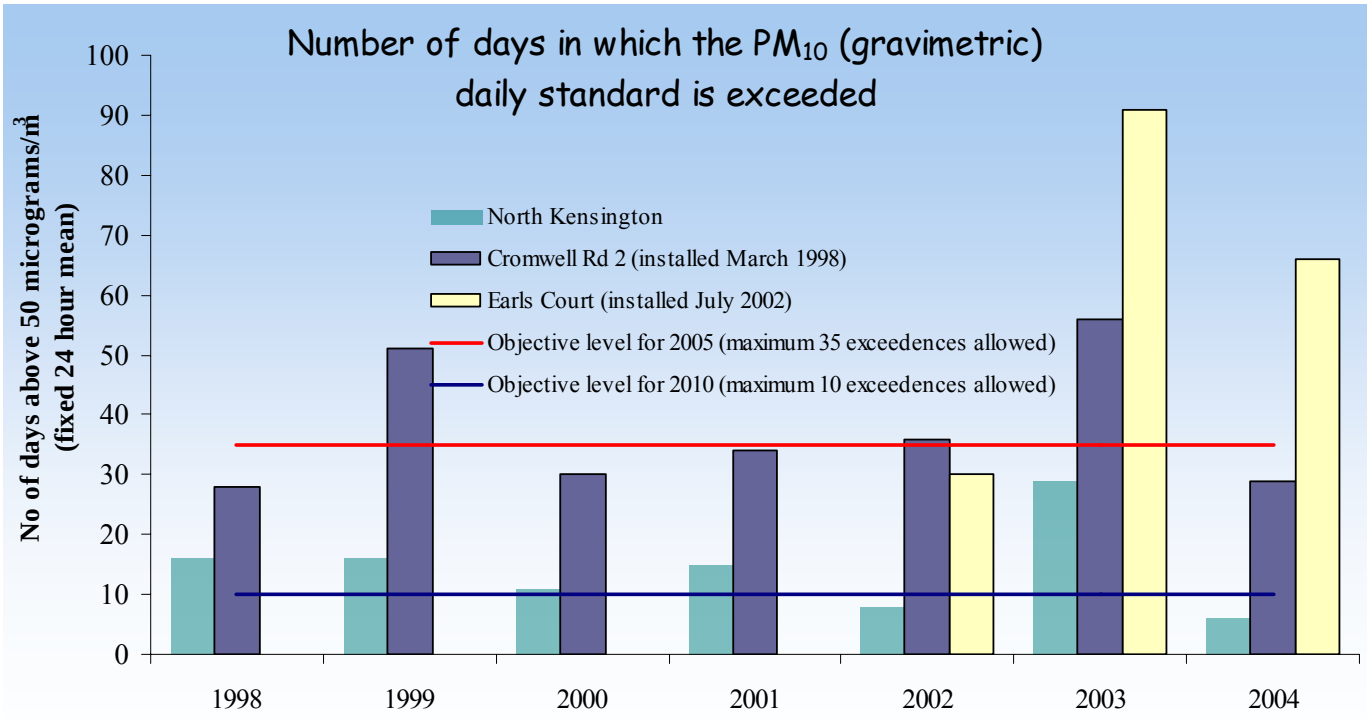


Figure 9 indicates that, as identified in our Stage Four Review and Assessment, the 2004 annual mean objective is likely to be met at most locations. However the kerbside monitoring location exceeded the objective in 2003 and was again just above the objective level in 2004. This indicates that some busy roadside locations are still breaching the objective. The introduction of the stricter annual mean objective of 23µg/m^3 (which is almost half the current objective level) will also mean that potentially large areas of the Borough will be at risk of exceeding this when it is made into regulations.

The second of the objectives (measured over 24-hours) was not met in 2003 at two of the three sites (one kerb and one roadside). See Figure 10 overleaf. In 2004 only one of the sites exceeded the objective. But once again the introduction of a much stricter 24-hour objective will mean that the standard will potentially be exceeded over a bigger area.

Figure 10



Conclusions

- Only small areas currently exceed the 2004 annual and 24 hour mean objectives.
- However objectives for 2010 are likely to be exceeded in much of the borough.

POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)

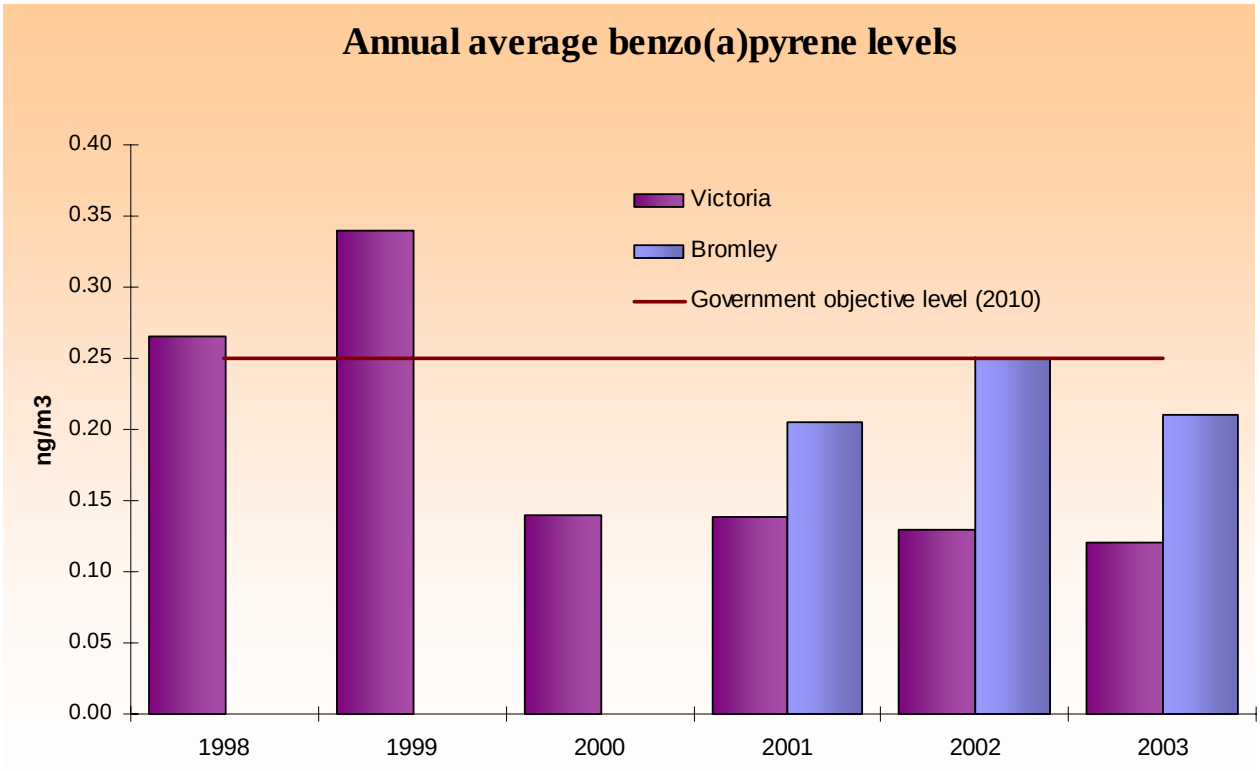
Polycyclic Aromatic Hydrocarbons are a complex mixture of organic compounds some of which are carcinogens. The Government introduced an objective for these pollutants in 2003 based on a representative marker. It would be very difficult and expensive to monitor a selection of these pollutants. Consequently, the Government has selected benzo(α)pyrene (b(a)p) as a marker for PAH and set an objective based on this pollutant: 0.25ng/m^3 as an annual average to be achieved by the end of 2010.

Whilst this objective for PAHs has been introduced it has not been included in regulations for the purposes of local air quality management. However some information has been included in this report, in anticipation of the regulations.

The main sources of b(α)p are industrial emissions and domestic coal and wood burning. Vehicles no longer appear to be a major source of b(α)p. Urban areas, without significant industrial activity, such as London have shown large reductions.

Only limited monitoring data exist for PAHs in inner and outer London, from monitoring at Victoria and Bromley. The current data indicate that at these locations the levels are within the objective level (Bromley equalled the objective in 2002). Data for 2004 are not yet available on the national archive website.

Figure 11



Conclusion

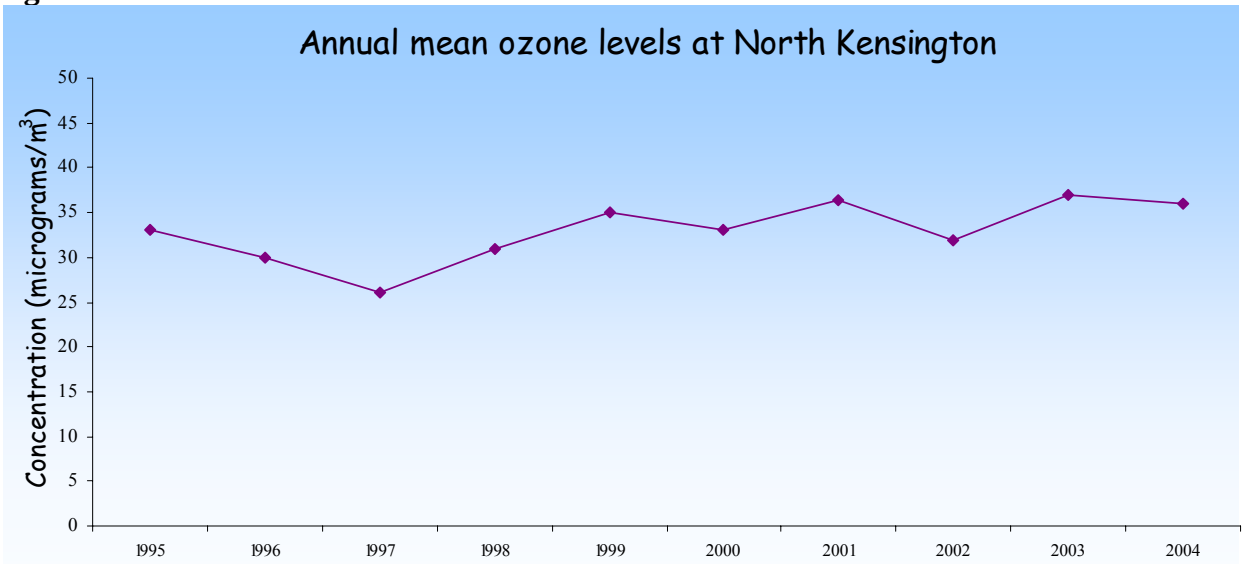
- Indications are that the objective will be achieved by 2010.

OZONE

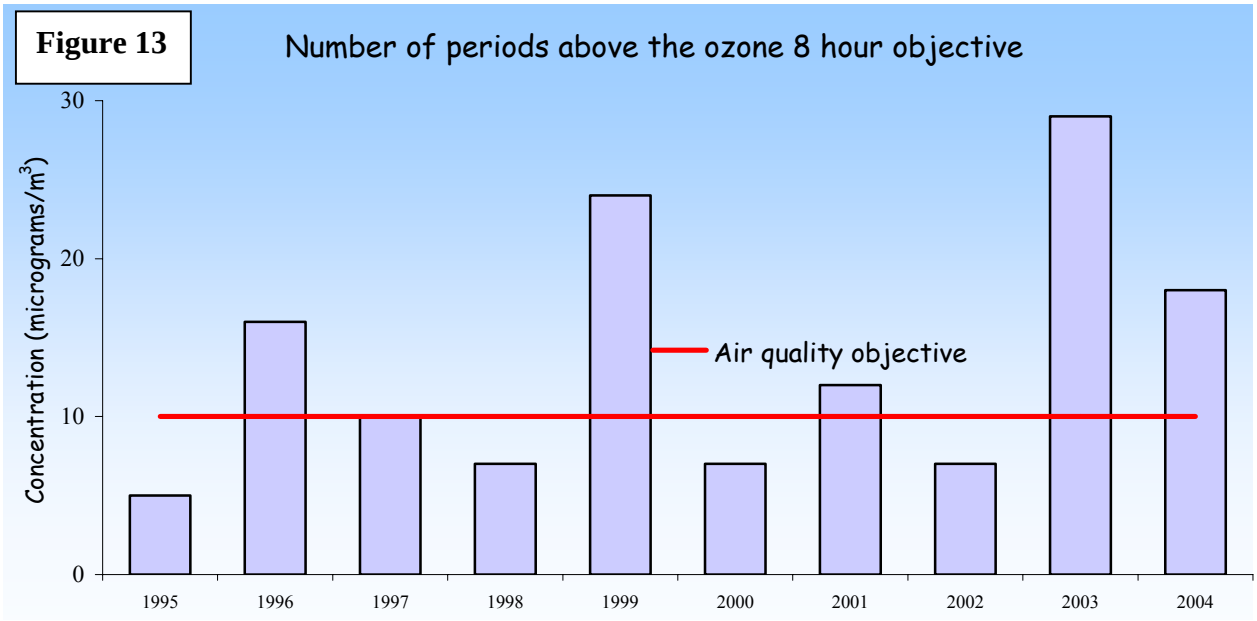
The objective for ozone is 100µg/m^3 not to be exceeded more than 10 times a year (calculated as the daily maximum 8 hour mean) by 2005. As already stated the Borough is not required to work towards the achievement of this because of the difficulty in taking action at a local level. Monitoring is undertaken at one background location in the borough (North Kensington).

Ozone formation is dependant on high temperatures and sunny weather as well as the necessary precursor pollutants such as oxides of nitrogen NO_x and volatile organic compounds. Some of these pollutants may not be locally produced and consequently attempts to control ozone are being undertaken at a European level. However annual mean levels (Figure 12) show a slight overall increase since monitoring began. Unlike most pollutants ozone tends to be higher at background locations away from busy roads. This is because oxides of nitrogen (NO_x) emitted from exhausts will remove oxygen molecules from ozone, reducing its level.

Figure 12



There has been an exceedence of the objective in five out of nine years that monitoring has occurred, these have been in 1996, 1999, 2001–2004 (Figure 13). These will tend to be the years in which temperatures and sunshine hours are highest. Further information on pollution episodes involving ozone that occurred in 2003 can be found in the Annual Air Quality Summary Report 2003, in the Appendix.



Conclusion

Ozone currently exceeds the objective level in the Borough at background locations.

CONCLUSION

In 2000, the Council declared an Air Quality Management Area on the basis that both nitrogen dioxide and particulate matter would not meet the relevant objectives. This progress report comments on monitoring data from 2003 and 2004. The air quality objectives for carbon dioxide, 1,3-butadiene, lead, and sulphur dioxide continue to be met, but we continue to fail to meet the hourly average objective for particulate matter and the hourly and annual objective set for nitrogen dioxide.

One petrol station within the Borough continues to fail the new, more stringent, 2010 objective for benzene, as was reported in our Updating and Screening Assessment last year. However planning permission has been granted to re-develop the site, and the filling station is to close.

With regard to the new objective for PAHs, the minimal monitoring that has been carried out since 1998 suggests that Greater London is not experiencing a significant problem with this group of pollutants. However, this may need to be investigated more thoroughly across London in the future.

Exceedences of the ozone objective should be as much a concern as the exceedences of the NO_2 and PM_{10} objectives. However until the Government decides to take action to reduce particularly the pollution episodes caused by ozone, there is little further that an individual local authority can do to improve the situation.

In 2003, the Council published its Air Quality Action Plan to show the measures it intends to introduce to work towards the air quality objectives. An update on the progress being made in implementing these measures can be found overleaf.

PART TWO

AIR QUALITY ACTION PLAN PROGRESS REPORT

Air Quality Action Plan Progress Report

In this second part of the Local Air Quality Management Report, we look at the progress the Council has made in implementing its Air Quality Action Plan.

Almost two years has passed since the final version of the Council's Air Quality Action Plan was published, and we have made good progress with the majority of the 25 actions set out in it. Implementation of the plan continues to involve liaison across several Council Departments including Highways and Transportation, Planning and Conservation, Waste Management and Environmental Health.

Amongst others, we have made particular progress with actions three, eight, and fifteen and twenty-two. The Council has adopted new powers to ask drivers of stationary vehicles that keep their engines running to turn them off or move on; we have appointed a school travel plan officer who is working with schools to help them develop their school travel plans, encouraging less polluting forms of travel to school; a supplementary planning guidance document titled 'Permit-Free and Car-Free plus Permit-Free Residential Development' has been published and we are on the verge of confirming the Borough wide Smoke Control Order.

Action one, which relates to the implementation of a Low Emission Zone (LEZ) for London, is however causing increasing concern for members. In our Action Plan Progress Report submitted in 2004 we said we remained committed to an LEZ, but raised concerns about the effectiveness of the LEZ approach. Since then we have seen no new evidence to suggest this is a cost effective approach, and we have said in the LAQM report that unless the report that Transport for London's consultants are about to produce shows anything new, we may soon re-consider our position and withdraw our support.

For consistency, we have kept the format of the Action Plan the same as previous years and it shows the progress made with each measure and the latest outcome to date.

No	Action plan	Original timescale	Progress with measure	Outcome to date	Comments	Responsibility
1	We will push for a Londonwide LEZ as soon as is practicable, and ideally by the end of 2006. If there is no support for a Londonwide scheme, we will investigate the possibility of introducing a local or sub-regional LEZ in the Royal Borough.	End of 2006	Following the publication of the 2003 GLA/ALG study, the Council said in its Action Plan Progress Report submitted in 2004 that we remain committed to an LEZ, but have concerns about the effectiveness of the LEZ approach. Since then we have seen no new evidence to suggest this is a cost effective approach, and may soon re-consider our position.	The Mayor is committed to introducing an LEZ by 2007. TFL's consultants have been tasked with reviewing the feasibility study and identifying key risks to the implementation of the LEZ. The Council await the results of this latest study, and will be looking closely at the comparative merits of introducing the 2007 or 2010 scheme, with possibly a view to withdrawing its previous support.	Phase one of the consultants report was originally due for completion in January 2005.	Environmental Services
2	We will work with the Association of London Government, neighbouring authorities, the Metropolitan Police and others to operate a vehicle emission-testing scheme in the Royal Borough from April 2003.	April 2003	10 days testing was completed between Aug 03 and March 04. Testing took place at the 'Bullring' on Chelsea Embankment and Warwick Avenue.	A review of the scheme, including the publicity it attracted, was undertaken by an independent consultant and published in October 2004. It concluded that the scheme had been successful and that the publicity had been effective.	Officers explored the possibility of VOSA (formerly the Vehicle Inspectorate) carrying out testing in the Borough. VOSA have carried out testing using Chelsea Barracks. They are unable to use roadside sites in the borough since a bus stop was placed in the Bull Ring on Chelsea Embankment. Other sites could be considered but they would need exemption from parking tickets.	Environmental Health

No	Action plan	Original timescale	Progress with measure	Outcome to date	Comments	Responsibility
3	This Council supports the use of new powers to require drivers of stationary vehicles to switch off 'idling' engines.		Officers in the Waste Management enforcement have been trained to use these powers; implementation of the scheme was delayed.	A Key Decision Report has been approved and a six month lead-in phase to the scheme has just begun. A leaflet has been produced which publicises the borough's intentions to issue fixed penalty notices if required.	There are no new resources available for this scheme. Enforcement will be carried out by Street Enforcement Officers who will be diverted from other duties to target problem areas in the borough. The number of hours they will be able to devote to this scheme will be limited.	Environmental Services- Waste Management and Leisure
4	From April 2004, contractors will be required to choose the Best Practicable Environmental Option for their vehicle fleet. As a minimum, their vehicles' emissions should be no worse than the previous Euro standard.	April 2004	Informally, the Council has been adopting this approach for some time; the next step is to formalise a policy requiring the BPEO choice. From 2005, when Euro 4 applies, we will raise our threshold to the Euro 3 level. This requirement will apply to all contracts entered into from April 2004 and should be reflected in evaluation criteria, specifications and conditions of contracts accordingly e.g. BPEO has been included in the new waste collection contract.	Where alternative fuels have been impractical we have tried to secure other environmental improvements, e.g. energy-saving tyres.	Formalising a policy will be taken forward in the next few months as part of a wider green contracts initiative. A full review of the Council's "alternative fuels" programme will be undertaken, but has not yet begun. It is anticipated that this will begin during the second quarter of the year.	Corporate Services and Environmental Services
5	i)The Council will work with existing and potential suppliers of alternative fuels to establish fuelling points in the Royal Borough, and	Dec 2003	i) The Council expressed interest in a local biofuel project but this has been slow to progress. There appears to be no interest among suppliers in bringing LPG pumps to the Borough. We will publicise existing London LPG pumps through the website.	i) No material change. We remain interested in this project but must await SITA's actions on this project. They must complete major (cross Europe) vehicle procurement exercise. We suspect they will propose ULSD rather than bio fuel.		i) Corporate Services and Env Services

No	Action plan	Original timescale	Progress with measure	Outcome to date	Comments	Responsibility
	ii) if it is feasible and cost-effective to do so, the Council will install public charging points for electric vehicles in the Town Hall by the end of 2003.		(ii) Feasibility study into electric vehicle charging points completed in spring 2004.	(ii) The study found little demand for electric charging points; advent of mass-produced hybrid petrol-electric cars (which do not require charging) makes charging points less attractive. Although no final decision has been taken, it is unlikely that we will provide public charging points.		ii) Highways and Transportation
6	The Council will help local organisations to green their fleet, primarily by identifying potential suppliers of low and zero emission fuel. We will offer support and practical assistance to local employers wishing to produce Green Travel Plans and participate in environmental management schemes.		Our main role will still be 'signposting', e.g. to the Energy Savings Trust. We did believe that we might be able to undertake a mail-out to businesses, but now take the view that we should try to work with those businesses that show an interest in improving environmental performance first. The Council is in the process of establishing a business panel (like the residents panel), which will help us to identify whether there is general interest in environmental performance improvement, and to identify how the Council can help businesses in the Borough. We have also been engaged in working with businesses on the Safe Driving Plan. As part of this work we intend to hold workshops with interested business on safer driving, This will provide an opportunity for the Council to promote green transport and travel plans. .	No outcomes to report.	We would wish to avoid duplication of effort – the EST provides a wealth of information geared towards businesses already. We need to enhance our contact with businesses generally to enable us to understand their needs and to target our actions appropriately. In addition we can improve the Council website by including appropriate links and identify some of the actions local businesses can adopt.	Highways & Transportation

No	Action plan	Original timescale	Progress with measure	Outcome to date	Comments	Responsibility
7	We will consider using the residents' parking permit scheme to encourage residents to choose less polluting vehicles.		Officers have identified the best means of operating the scheme, and consultation results suggest that the principle would be welcomed by residents. We cannot take this further until the new IT system for residents' parking permits is upgraded in late 2005. IT procurement process has commenced. The target for implementation of the new Residents' Parking Permits software is April 2006. We are unlikely to implement any scheme to encourage residents to choose less polluting vehicles before mid-2006, but sufficient flexibility to incorporate this into the software has been included already.	We know how we could implement the idea, and believe that coupled with the Government's graduated road tax scheme it should be possible to exert some influence on residents' car purchase deci0sions.	The Cabinet Member for Transportation and Planning favours the principle of using the parking permit scheme to encourage less polluting vehicles. He has a number of ideas relating to the CO_2 emissions, fuel types, and limiting the number of permits per household.	Highways and Transportation

No	Action plan	Original timescale	Progress with measure	Outcome to date	Comments	Responsibility
8	i) We will continue to develop our own green travel plan, paying particular attention to flexible working and homeworking, and		i, a) We have improved travel information on the intranet, and currently are planning improvements to our secure cycle storage. We are also hoping to reduce staff taxi use by taking advantage of a Government 'green vehicle' scheme. b) Planned improvements to staff cycle parking have not yet been implemented. However, improvements to the pool bikes scheme within the Environmental Services business group (the business group with the highest percentage of car users) will take place. c) We are also hoping to reduce staff taxi use by taking advantage of a Government 'green vehicle' scheme. Changes are due to be implemented by the end of March 05. d) The feasibility of subscribing to the Government green cars scheme was investigated, with two pilot teams being identified.	i, a) A new staff travel survey in 2003 found a fewer people driving to work and more cycling. b) This will see the number of bikes available increase, and a cycle maintenance programme implemented. In addition key users will adopt responsibility for the bikes helping to instil a better sense of ownership of the scheme. d) However, because of significant changes in one of the teams the timing of this work was no longer appropriate. It was felt that the pilot would only be viable if a significant number of taxi users were able to take part. It was decided that the pilot scheme would be shelved until both teams were able to take part. This is now likely to be re-investigated during Summer/Autumn 05.		i) Environmental Services

No	Action plan	Original timescale	Progress with measure	Outcome to date	Comments	Responsibility
	ii) We will work with all interested schools in the Royal Borough to develop school travel plans and encourage less polluting forms of travel to school.		ii) school travel plan coordinator post created and school travel plan process developed, including an innovative website for schools	ii) school travel plan website and schools engaged in process 11 schools actually developing plans plus 2 schools have submitted documents.	ii) There are two officers working specifically on travel plans. One is a full time post and the other is part time.	ii) Highways and Transportation
9	The London City Car Club scheme will be operational in at least one part of the Royal Borough from Spring 2003.	Spring 2003	RBKC lead borough in the LCCC. First car launched Feb2003, and since then we have opened a second station, with 5 more planned by end April 04.	There are 125 members in the scheme, 45 of which are in RBKC. There are now 8 cars in the Borough, evenly split between north and south.	TfL did not continue funding this project beyond year one of a three programme; this has made it harder for the scheme to succeed.	Highways and Transportation
10	We will produce Supplementary Planning Guidance on air quality. This will explain to developers the Council's requirements and policies in relation to the impacts on air quality of new development proposals. The Council will request that all proposals for developments, if they fall within the scope of the guidance, will include an assessment of the air quality implications.		The SPG was published in September 2003.	There have been no development proposals large enough to be covered by this SPG since it was published. Even so, it is a useful document for all developers.		Planning and Conservation

No	Action plan	Original timescale	Progress with measure	Outcome to date	Comments	Responsibility
11	The Council will work with TfL, Network Rail, the Strategic Rail Authority and others to ensure that the improvements to public transport in the Royal Borough will be delivered as soon as possible. The Council will help TfL to deliver improvements to bus services, for instance through targeting parking enforcement on congested areas, and reviewing loading and waiting restrictions.		There is a new 360 bus route which will use dual-fuelled buses from 2005 with two new bus stops approved for Exhibition Road (this Summer). Work on the LPSA project to improve bus reliability by reviewing loading restrictions has begun. The waiting and loading restrictions on Kensington High Street and Kensington Church Street have been the subject of Key Decision (KD) reports and were approved in Nov 04. There is also a KD being considered by the Cabinet member for Planning Policy and Transportation on the proposed removal of the existing bus lane in Beaufort Street and a short section of the King's Road (near Limerston Street). KDs on Kensington High Street and Kensington Church Street have been approved with future KDs on a site by site basis The location of Parking enforcement is continually being fine-tuned to ensure congested areas are targeted through provision of special response units. Construction work is due to commence on the White City station in March 05 and on Chelsea Harbour station in Summer 05.	The public transport accessibility of the Borough has been improved, and will be again when the 2 new rail stations open. The routes being investigated include the Fulham Road, King's Road, Sloane Street, Kensington High Street, Kensington Church Street, Kensington Park Road, the northern end of Ladbroke Grove and Beaufort Street. Council Officers undertook 'route tests' with representatives of London Buses and the bus operators to identify 'hot spots' where existing waiting and loading restrictions or illegal parking activity delay buses. At these hot spots, parking surveys were undertaken to find out where illegal activity was occurring, and the frequency and times of these occurrences. The type of parking act (waiting or loading) and type of vehicles stopping was also noted. The existing waiting and loading regulations were also checked and recorded. The LPSA review of Kensington Church Street has been bought forward because of resurfacing works and will include improved bus stop arrangements, and rationalising waiting and loading restrictions. Ladbroke Grove (between Elgin Crescent and Kensal Road) is being looked at as part of a road safety scheme. Surveys on the Fulham Road, King's Road and Sloane Street will, likewise, produce proposals for reducing delays and variability to buses, which will be reported in due course.	The 'before' journey times and variability surveys were undertaken between June 2003 and March 2004. They were surveyed using electronic 'beacons' that London Buses attach to lamp columns. The 'after surveys' will be undertaken during February, March, June, September, October and November 2006.	Highways and Transportation

No	Action plan	Original timescale	Progress with measure	Outcome to date	Comments	Responsibility
12	We will set and maintain the highest possible standards of i) urban design and ii) street cleansing as part of an integrated approach to making walking an attractive option in the Royal Borough. In doing so, we will seek to establish a reputation as a centre of excellence for streetscape design.		i) Kensington High Street Scheme implemented Streetscape Manual has been published. Streetscape pilot areas established Work to be completed in 2005. A Key Decision on future areas is being drafted.	Increased levels of walking and cycling on Kensington High Street. Reduced traffic flows. The Mayor of London has included Sloane Square amongst the first ten pilot projects in his public spaces programme for London and wishes to work with the Royal Borough of Kensington and Chelsea to improve the quality of the Square. The options being considered are being consulted on currently.	This approach is being repeated at Sloane Square and Exhibition Road.	i) Highways and Transportation
			ii) LPSA target to improve street cleanliness is making progress: additional street cleaning to began in April/May 2004. By 2005/06 to improve cleansing standards in the north of the borough by 30% against the 2003/04 baseline; and to improve standards by 20% in the south." Work started April 2004 - new cleansing, street washing, and enforcement teams. On target for successful completion.			ii) Waste Management

No	Action plan	Original timescale	Progress with measure	Outcome to date	Comments	Responsibility
13	The Council will continue to encourage responsible cycling through a combination of cycle parking, high quality road surfaces, and where appropriate, traffic management.		Free cycle training available to all who live/work in RBKC Improved cycle parking on Kensington High Street and review of cycle parking underway. High level of road maintenance maintained.	Increase in number of residents and workers trained in cycling. 2003/04 – 100 adults + 24 schools. 2004/05 14 adults, no schools. The low figures were as a result of the training supply contract being terminated. A new contract commences in April 05. Increased numbers of cyclists. New contract has enabled cycle training to be offered to all schools in Borough. The Council has reduced spend on carriageway maintenance by £100k per annum from 02/03 and a further £100k p.a. from 03/04 . Despite this our BVPI 96, 97a and 97b figures are good at 4.9%, 0%, 3.7% respectively. (Jenny can probably quote quartiles/rankings across London if required). An additional £108k from TfL has been invested in carriageway maintenance in 04/05 (see Key Decision report 1st Dec 04).		Highways and Transportation
14	The Council will ensure that its charges for on-street visitor parking spaces are effective in managing demand.		The Council reviews charges annually on the basis of regular occupancy surveys. Last year it increased charges in North Kensington but not in the other tariff areas.	Charges are used to ensure that occupancy levels are not so high as to lead to large numbers of vehicles circulating in search of a space.	A decision on whether to increase on-street parking charges is awaited. If there is an increase it is likely to be in the region of 3.0%. However, officers and members are mindful of the effect of the congestion charge should it be imposed on the Borough.	Highways and Transportation

No	Action plan	Original timescale	Progress with measure	Outcome to date	Comments	Responsibility
15	The Council will use its new powers to require that appropriate new developments are made 'permit-free', as part of the planning consent process.		Council Policy agreed. Traffic order has been amended. A SPG document on 'Permit-Free and Car-Free plus Permit-Free Residential Development' was published in July 2004.	At present there are three permit free agreements that have been sealed. They relate to the following areas: Earl's Court Road Templeton Place/Nevern Place Barlby Road between the Cow Shed pub and Admiral Mews (near the junction of Ladbroke Grove) In addition a unilateral undertaking was signed on 17/8/01 for the Campden Hill Site which included permit restrictions.	We expect the number of permit-free agreements to increase over the next few months as more are being included with grants of planning permission.	Highways and Transportation
16	The Council will review opportunities to designate new taxi ranks in the Royal Borough and will lobby for taxis to be affected by the rules of any LEZ that is established.		i) A taxi rank was installed on the Kings Road, and engineers are considering changes to the taxi rank arrangements as part of a major redesign of Sloane Square. ii) Officers have challenged the study recommendations that taxis be dealt with outside a formal LEZ policy.	i) A new taxi rank has been provided, which should help to reduce the need for taxis to circulate while empty. ii) TFL's consultants have been tasked with reviewing the feasibility study and identifying key risks to the implementation of the LEZ. An emission strategy for taxis has been produced by the Mayor which requires all London Taxis to be Euro 3 by the end of December 2007.		Highways and Transportation
17	The Council will work with Transport for London to use signals to smooth traffic flow, without increasing overall traffic levels.		We changed signal arrangements at Ken High Street and plan to do so on Exhibition Road and Notting Hill Gate	Traffic moving fairly freely on Ken High Street.	Exhibition Road/Sloane Square likely to be considered in the future.	Highways and Transportation

No	Action plan	Original timescale	Progress with measure	Outcome to date	Comments	Responsibility
18	The Council will review coach parking facilities in the Royal Borough.		This has yet to be carried out formally but will be included in the final stage of a parking policy review.	No new arrangements made in the last year.	Since securing off-street coach parking facilities on Warwick Rd, the Council has had no requests for new coach parking.	Highways and Transportation
19	We will consider the recommendations from the London Sustainable Distribution Partnership and we will actively consider joining Freight Quality Partnerships promoted at sub-regional level.		The Council Is not aware of any recommendations prepared by the London Sustainable Distribution Partnership. The work on LPSA reviewing all waiting and loading will assist in improving deliveries to local outlets.	The Council is a member of SWELTRAC (which is part of a Freight Quality Partnership) and takes part in regular meetings.		Highways and Transportation
20	The Council will work with the Building Research Establishment, the Mayor of London, neighbouring boroughs and representatives of the construction industry to create a Green Building Site Code of Practice.		Work is underway on a considerate builder scheme, which should include some environmental elements. We will review the need to produce our own Code of Practice in the light of other agencies' work.	A draft Code of Practice has been produced by APPLE (Air Pollution, Planning and the Environment) a consortium of London Boroughs including the Royal Borough.		Env Health and Planning and Conservation
21	The Council will continue to encourage residents to compost waste rather than burning it in bonfires.		In addition to supplying cut-price composters to residents, the Council has just embarked on a 6 month scheme offering to collect garden waste for municipal composting. Cut-price composters offered as part or WRAP's Home Composting Campaign. Campaign ended in December 2004 due to lack of take-up by residents. 6-month collection scheme extended to end of November.	There are no records of how much home composting is done, but we aim to measure this in the summer. Little evidence of garden bonfires in the Borough. 100+ home composters supplied to residents before campaign finished. 126 tonnes of garden waste collected for composting from 1,568 residences during growing season.	Given that fewer than 1,500 home composters have been purchased via Council subsidised schemes, re-introduction of scheme considered unnecessary for 2005/06 now that garden waste collection service is offered for 6-8 months of year. Council considering signing up for London CRN's Master Composting scheme.	Waste Management

No	Action plan	Original timescale	Progress with measure	Outcome to date	Comments	Responsibility
22	We will work towards re-designating the Smoke Control Zone by 2003.	Dec 2003	A new draft Order is out for consultation until May. If the Cabinet Member approves it, the Order will become operative 6 months later. The old orders remain in force until this time.	The Smoke Control Zone has not yet been redesignated but this will happen shortly. We are waiting for the Secretary of State to give final approval for the new Smoke Control Order. This is expected in April 2005.	The search for the old existing orders proved more difficult than expected, causing the delay. Not all of the old Orders were found, although we were able to find the dates they were made.	Environmental Health
23	The Council will continue to carry out regular and rigorous statutory inspections in accordance with DEFRA guidance, to ensure that emissions from small industrial processes (Part B processes) do not exceed national air quality objectives, and are minimised as far as is practically possible.		All inspections have been completed in accordance with our statutory requirements.	The processes were found to be satisfactory and operating in line with their authorisations.		Environmental Health
24	The council will continue to promote energy-efficiency measures in the homes in the Royal Borough, under its HECA and its Affordable Warmth work. It will also consider and require efficient local energy generating schemes where practicable.		Refurbishment work on the 'flagship' HMO has been completed and publicity for the scheme is continuing. The property is now occupied so a 'virtual walk-through' is going to be added to the scheme's website so it can continued to be viewed. Presentations on the scheme are continuing. Grant-aided work to improve dwellings can now be assessed to see how much the energy rating (NHER) has changed.	Energy saving measures have been installed. Publicity has and continues to raise awareness of possible and practical ways of saving energy among landlords and residents. A statistical survey of grant-aided works is undertaken annually. This shows the amount of energy saved and carbon dioxide emissions reduced annually in the Borough. In 2004 there was a 0.7% improvement in energy efficiency, and a reduction of 3449 tonnes of carbon dioxide.		Environmental Health

No	Action plan	Original timescale	Progress with measure	Outcome to date	Comments	Responsibility
25	The council will maintain its financial commitment to air quality monitoring and modelling and will consider further types of monitoring as the need arises.		Commitment to the air quality monitoring programme has been continued.	A further year's detailed data on pollution concentrations have been collected. These data have been analysed and used to check progress against the objective levels and incorporated into further review and assessment reports. The Defra installed $PM_{2.5}$ monitor at our AURN affiliated site is providing data that will enable us to assess the need for more $PM_{2.5}$ monitoring.		Environmental Health

OVERALL CONCLUSIONS

Two years have passed since the final version of the Council's Air Quality Action Plan was published, and we have made good progress with the majority of the 25 actions. Where actions have not been pursued, it is often the result of a conscious decision for example, with the installation of electric charging points, the feasibility study showed that as technology has already moved on to hybrid vehicles, the market for electric vehicles is not going to be viable for much longer.

Despite the progress in implementing our Action Plan, air quality concentrations of the pollutants of most concern are not significantly improving. This is mainly due to the fact that although a number of actions within the plan seek to reduce traffic volumes, which in turn should result in a reduction in emissions from vehicles, a reduction in emissions, does not give a proportional reduction in pollution concentrations. This is caused by a combination of complex atmospheric reactions, the weather and the way that pollutants behave across boundaries. Whilst some actions, as we know, will have only a limited impact on air quality in the borough there are good reasons for undertaken them such as leading by example. Although they will also reduce the impact of the council's activities, the effect on their own is not directly measurable. Others are designed to encourage visitors, other organisations and businesses to reduce their impact on air quality.

GLOSSARY

Air quality archive	Defra archive of air quality data of government and local authority affiliated monitoring sites
AQMA	Air quality management area designated by an Air quality management order
Air Quality Action Plan	A plan of actions designed to improve air quality
AURN	Defra's air quality monitoring network- Automatic Urban and Rural Network
AURN affiliate	A monitoring site owned and operated by a local authority but included in the AURN
Automatic monitoring sites	Monitoring sites produce high-resolution measurements typically hourly or shorter period averages
Background site	A monitoring site greater than 8 metres from the source/road
Benzene	An aromatic hydrocarbon
1,3-Butadiene	colourless gaseous hydrocarbon
Carbon monoxide	gas formed by the incomplete combustion of carbon containing fuels
Chemiluminescence Method	The emission of absorbed energy as light during a chemical reaction used to determine the concentration of a pollutant
Defra	Department for the Environment, food, and regional affairs
Dft	Department for Transport
Diffusion tube	a small sampling device that passively absorbs the pollutant over a specified time period, and is then collected and analysed
GC-MS	gas chromatography – mass spectrometry
Gravimetric method	a method of sampling particulate matter by collecting it on a filter and weighing it
8 hr running mean	an average taken over successive 8-hour periods
Kerbside site	a site sampling within 1 metre of a busy road
LAQN	London Air Quality Network, a network including local authorities and the Kings environmental research group
Lead	a toxic and cumulative poison
LWEP	London wide surveys offered to local authorities by air quality consultant Casella Stanger
$\mu g/m^3$	a microgram of pollutant in a cubic metre of air
Nitrogen dioxide (NO_2)	a stable brown gas which is toxic at high concentrations
Objective	standards which have a specified timescale for achievement as set out in the Air Quality Strategy for England, Wales and Northern Ireland
PAH	Polycyclic aromatic hydrocarbon
Part A process	Industrial process as defined by Schedule A of the Environmental Protection Act 1990, regulated by the Environment Agency such as a power station
Part B process	Industrial process as defined by Schedule B of the Environmental Protection Act 1990 regulated by the local authority such as filling station
Particles/particulate matter	these are microscopic particles of varying composition, and for the purposes of this report the term 'particles' refers to a range of particle sizes from 10µ to 0.1µ.
PM_{10}	particulate matter with an average diameter of 10 micrometres in diameter
ppb	parts per billion
QA/QC	Quality Audit/Quality Control – procedures to ensure the validity of the monitored data.
Roadside site	a sampling site between 1 – 8 metres of the kerbside of a busy road and the back of the pavement. Typically within 5 metres of the road.
Sulphur dioxide (SO_2)	a colourless gas. It is the main product of the combustion of sulphur contained in fuels
TEOM	Tapered Element Oscillating Microbalance - a fully automated instrument for measuring particles
UKAS	United Kingdom Accreditation Service for laboratories

APPENDIX A

Appendix A

Table 12 Monitoring locations in the Royal Borough of Kensington and Chelsea

Site name	North Kensington	Cromwell Rd/ Cromwell Rd 2	Cromwell Rd 2	West London	Knightsbridge	Chelsea	Earls Court
Site type*	LAQN & AURN affiliate	AURN	LAQN	AURN	LAQN	LAQN	-
Ownership	RBKC	DEFRA	RBKC	DEFRA	RBKC	RBKC	RBKC
Pollutants measured	nitrogen oxides PM_{10} **carbon monoxide** sulphur dioxide	nitrogen oxides carbon monoxide sulphur dioxide	PM_{10}	nitrogen oxides carbon monoxide	nitrogen oxides	nitrogen oxides	PM_{10} gravimetric
Other monitoring undertaken	Gravimetric monitoring PM_{10} & $PM_{2.5}$	Lead and heavy metals					
Grid reference	TQ401821	TQ264789 TQ265790 >1998	TQ265790	TQ251788	TQ527179	TQ527178	TQ525178
Site location and description	Sited in the grounds of Sion Manning school in St Charles Square, North Kensington. Surrounded by a mainly residential area. Height inlet is approx. 3m.	Originally sited at the kerbside of the Cromwell Rd. Traffic density approx. 60,000 vehicles per day. Now located at the rear of the pavement at the Natural History Museum, 3.5m from the Cromwell Road. The height of the inlet is approx. 2m.	Located within the DEFRA monitoring cabin in the grounds of the Natural History Museum. Approx. within 8m of the Cromwell Rd and 5m of Queens Gate. Height inlet is approx. 1.4m.	Located within the Council depot, Pembroke Road. The nearest road is Warwick Rd (50m). The surrounding area is built-up. Height inlet is approx. 30m.	Located on the Kerb of Hans Road and 4m from the Brompton Rd. Height inlet approx 3m.	Located at the building façade of the Chelsea Old Town Hall at the rear of the pavement approx. 8m from the Kings Road. Height inlet approx. 3m.	Sited on the kerb of the Earls Court Road.
Site definition	Urban background	Kerbside < Roadside	Roadside	Urban background	Kerbside/ Roadside	Roadside	Kerbside
Start date	1/4/1995 Affiliated from 1/4/1996	22/2/1973	22/5/1998	1/1/1987	28/03/2000	27/9/2000	29/05/2002
Website for data	www.erg.kcl.ac.uk www.airquality.co.uk	www.airquality.co.uk	www.erg.kcl.ac.uk	www.airquality.co.uk	www.erg.kcl.ac.uk	www.erg.kcl.ac.uk	Currently not available

*LAQN- London Air Quality Network, AURN- Automatic Urban and Rural Network
Kerbside: within 1m of a busy road, Roadside: located 1-5m, Urban background at least 50m from any major pollutant source
All automated monitoring is ratified as part of the AURN or by the Kings ERG and regularly audited by an independent laboratory.

Appendix A

DATA COLLECTION AND QUALITY ASSURANCE/QUALITY CONTROL

Data collection, screening and validation

Monitoring data are stored as 15-minute averages within the analysers. Air quality data, including full instrument status information, are collected hourly via modem by the King's ERG on the Borough's behalf from the monitoring sites via the data loggers within the analysers. These data are stored within the London Air Quality Network database.

Data are validated by a combination of automatic and manual checks. The procedures used comply with the validation requirements of the UK Automatic Urban and Rural Network Management and Co-ordination Units. Manual validation is carried out daily. Data are ratified in three to six month blocks using service records, calibration records, and the results of inter-calibration and audit. Data are passed on to the Defra's Quality Assurance and Quality Control Unit for final ratification.

Quality Control and Audit

Routine calibration and independent checks

Local site visits are undertaken fortnightly at the urban background site and weekly for the roadside TEOM for the purposes of calibration, filter changes and instrument cleaning. Equipment is additionally serviced at regular intervals.

Independent calibration and audit is carried out by AEAT as part of their AURN responsibilities for the North Kensington site and for the Cromwell Rd through a separate contract. Calibration certificates are provided by AEAT.

NPL (National Physical Laboratory) undertake the London affiliate inter-calibration exercise. The following checks are performed for the oxides of nitrogen, sulphur dioxide and carbon monoxide analysers:

Analyser response factors:

The analyser samples a stable 'inter-calibration standard' which has been validated against a network primary standard. The analyser also samples from a certified zero air source.

Analyser linearity

The analyser response to a series of known concentrations covering the analyser range is noted. A linear regression is then performed on the results.

Analyser 'noise' levels

This is the standard error of ten successive spot readings of analyser readings when fully stabilised on zero.

Nitrogen Oxides analyser converter efficiency

NO_x analyser converter efficiency is determined using Gas Phase Titration at a range of concentrations, this uses a high concentration of NO and a known amount of O_3 which is subsequently converted to NO_2.

Estimation of site cylinder concentrations

The concentrations are evaluated by sampling from the site cylinder and comparison to analyser response factors determined from the 'inter-calibration standard'.

For particle analysers the following checks are performed:
Mass transducer calibration
The mass transducer is calibrated by placing pre-weighed filters on it and noting the change in the frequency that is induced.
Analyser flow rates
Flow rates are measured by calibrated flow audit measurement systems. Leak checks are also carried out.