



2009 Air Quality Updating and Screening Assessment for

City of London

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

(June, 2009)

Local Authority Officer	Claire Goddard
--------------------------------	--------------------------------

Department	Environmental Services
Address	Walbrook Wharf, 78-83 Upper Thames Street, London, EC4R 3TD
Telephone	020 7332 1190
e-mail	Claire.goddard@cityoflondon.gov.uk

Report Reference number	
Date	June 2009

Executive Summary

The City of London is an Air Quality Management Area for nitrogen dioxide and fine particles (PM10). Being located at the heart of London, the City has some of the worst air quality in the country with annual average nitrogen dioxide concentrations reaching above $130\mu\text{m}^3$ at busy roadside locations. It is likely that, with business as usual, the daily average PM10 objective will continue to be exceeded in certain parts of the City.

This report presents monitoring data for 2008 and compares it to previous years in order to assess long-term trends. During 2008, air quality was monitored at 13 separate locations focussing on nitrogen dioxide and PM10. Benzene, sulphur dioxide, carbon monoxide and ozone were also monitored to ensure continuing compliance with these objectives.

The main findings of air quality monitoring carried out in the City of London during 2008 are summarised below

- During 2008, the annual average air quality objective for NO_2 was exceeded at all continuous monitoring locations and all but one of the diffusion tube locations. Additionally, two automatic sites exceeded the objective for one-hour means. However, the monitored levels were lower than expected, due to unsettled weather patterns in 2007 and 2008 with higher than average rainfall.
- In 2008, no monitoring sites exceeded the annual mean PM_{10} objective of $40\mu\text{g.m}^{-3}$, and only one site exceeded the 24-hour objective of less than 35 exceedences of $50\mu\text{g.m}^{-3}$. Unsettled weather conditions will have contributed to this, however levels of PM_{10} were the lowest since monitoring began in 1999.
- All three of the SO_2 objectives and the objective for carbon monoxide were met in 2008.
- Benzene concentrations in the City, measured by diffusion tube, continue to be below the annual mean objective.
- The air quality standard for ozone was met in 2008.

Assessments of pollution sources in the borough since the last Updating and Screening Assessment yielded the following results:

- There has been no change in air quality impacts from road traffic sources or other transport sources.
- There continue to be no significant industrial sources of air pollution in the City of London.
- There are also no significant impacts from either commercial and domestic sources or fugitive sources of air pollution.

In conclusion, monitoring results demonstrate that it is necessary to maintain the whole of the City of London as an AQMA for both NO_2 and PM_{10} on the basis that air quality objectives were once again exceeded for both of these pollutants. However, there was no need identified for additional changes to the monitoring programme nor are changes required to the boundary of the AQMA (which currently encompasses the whole region). There is therefore no need to progress to a Detailed Assessment, and as such the next course of action will be a progress report in 2010.

Table of contents

1	Introduction	4
1.1	Description of Local Authority Area	4
1.2	Purpose of Report	4
1.3	Air Quality Objectives	4
1.4	Summary of Previous Review and Assessments	5
2	New Monitoring Data	7
2.1	Summary of Monitoring Undertaken	7
2.2	Comparison of Monitoring Results with AQ Objectives	9
3	Road Traffic Sources	16
3.1	Narrow congested streets with residential properties close to the kerb	16
3.2	Busy streets where people may spend 1-hour or more close to traffic	16
3.3	Roads with high flow of buses and/or HGVs.	16
3.4	Junctions and busy roads	16
3.5	New roads constructed or proposed since the last round of review and assessment	16
3.6	All roads with significantly changed traffic flows.	17
3.7	Bus and coach stations	17
4	Other Transport Sources	18
4.1	Airports	18
4.2	Railways (diesel and steam trains)	18
4.3	Ports (shipping)	18
5	Industrial Sources	19
5.1	New or Proposed Industrial Installations	19
5.2	Major fuel (petrol) storage depots	19
5.3	Petrol stations	19
5.4	Poultry farms	20
6	Commercial and Domestic Sources	21
6.1	Biomass combustion – Individual Installations	21
6.2	Biomass combustion – Combined Impacts	21
6.3	Domestic Solid-Fuel Burning	21
7	Fugitive or Uncontrolled Sources	22
8	Conclusions and Proposed Actions	23
8.1	Conclusions from New Monitoring Data	23
8.2	Conclusions from Assessment of Sources	23
8.3	Proposed Actions	23
9	References	25

The City of London Corporation

Appendices

Appendix 1 QA/QC data

1 Introduction

1.1 Description of Local Authority Area

The City of London is located at the heart of Central London. Geographically, it is a small authority covering the eponymous 'square mile'. The City of London provides local government services for the financial and commercial heart of Britain, the City of London. The residential population is just 8,000. However, approximately 340,000 people commute to the City to work each day. The City draws in approximately 10,000 tourists per day.

The City of London experiences some of the worst air quality in the UK. This is primarily due to the density of development and its geographical location. Road traffic is the main source of pollution, supplemented by commercial and domestic heating. Pollutants generated by traffic largely consist of hydrocarbons, nitrogen oxides, particulates and carbon monoxide. There are no industrial sources of pollution in the City. The City is home to just three dry cleaning operations, which are regulated under the Environmental Permitting (England and Wales) Regulations 2007. Being located at the heart of London, the City is heavily influenced by pollution generated in neighbouring authorities and across London as a whole. The South-East of England is also affected by pollutants, particularly fine particulates, which originate in continental Europe.

1.2 Purpose of Report

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

1.3 Air Quality Objectives

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

The City of London Corporation

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

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	5.00 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	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
Particles (PM₁₀) (gravimetric)	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
Sulphur dioxide	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

The City of London 'Stage 1 and 2 Review and Assessment' was published in September 1998. The review identified three pollutants with potential to exceed the air quality objectives: nitrogen dioxide; fine particles and sulphur dioxide. Further work for Stage 3 of the Review and Assessment process concluded that just nitrogen dioxide and fine particles were likely to exceed the objectives. The whole of the City was consequently declared an Air Quality Management Area in January 2001 for these two pollutants. The need for an Air Quality Management Area was confirmed in the Stage 4 Review and Assessment published in June 2002. The City consequently published an Action Plan in May 2003 detailing the measures that would be taken in the City to improve the air quality. All documents can be viewed on the City web site:

http://www.cityoflondon.gov.uk/Corporation/LG_NL_Services/Environment_and_planning/Pollution/air+quality.htm#manage

The 2006 Updating and Screening Assessment concluded that there was no requirement for a Detailed Assessment for any of the specified pollutants. With regard to nitrogen dioxide and fine particles (PM₁₀), little has changed within the City boundary since the initial air quality review and assessment was undertaken in 1998.

The City of London Corporation

The map below is reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office © Crown copyright 2009. All rights reserved. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. City of London 100023243 2009.



Figure 1.1 – The City of London Air Quality Management Area

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

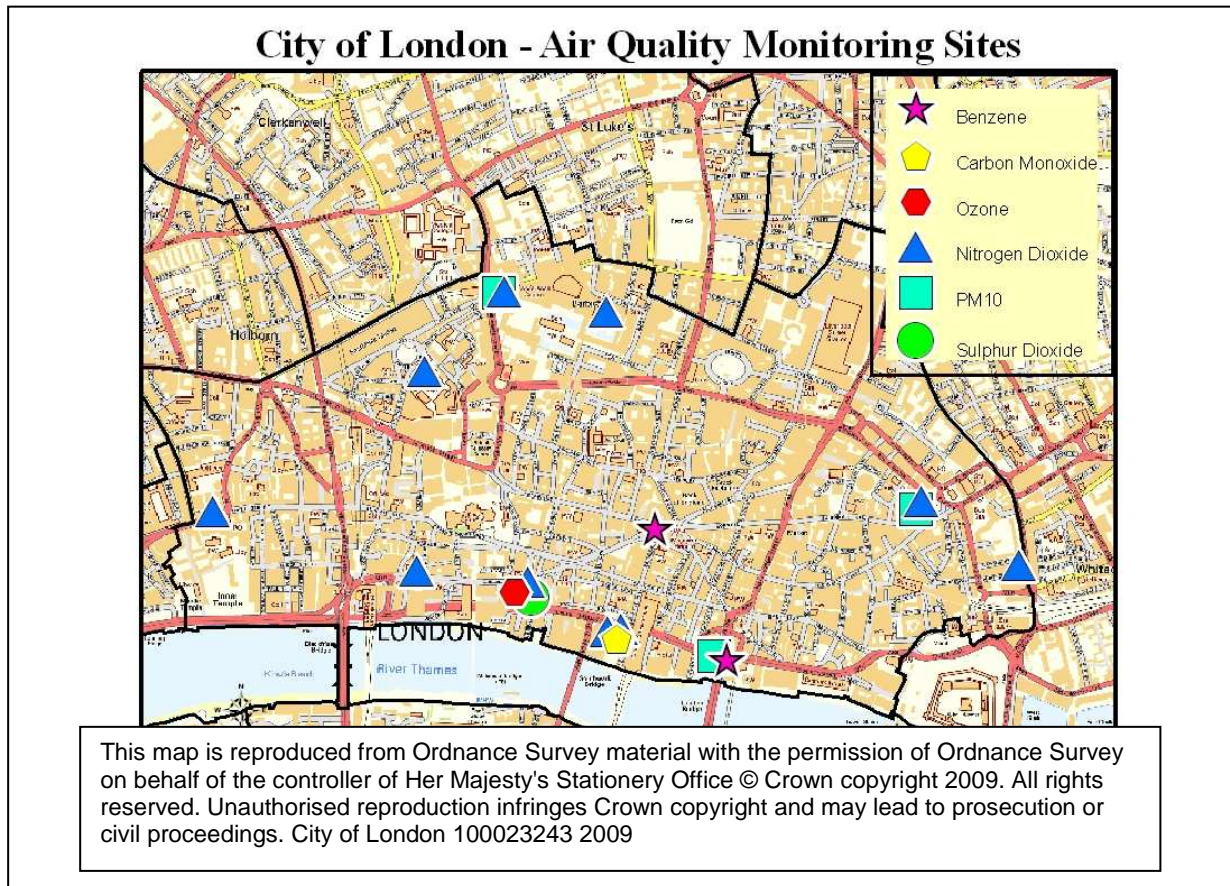


Figure 2.1 – Air quality monitoring sites in the City of London

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location ?
Beech Street	Roadside	X 532191 Y 181866	PM ₁₀ , NO ₂	Y	Yes residential 5m from kerb	1m	Y
Walbrook Wharf	Roadside	X532543 Y180786	NO ₂ , CO	Y	Yes residential 3m from kerb	2m	Y
Senator House	Urban Background	X 532242 Y 180894	NO ₂ , SO ₂ , O ₃	Y	Yes background	N/A	N
Walbrook Wharf Rooftop	Urban Background	X532502 Y180797	NO ₂	Y	Yes background	N/A	N
Sir John Cass School	Urban Background	X 533484 Y 181189	NO ₂ , PM ₁₀	Y	Yes background	N/A	N
Upper Thames Street	Roadside	X 532838 Y 180692	PM ₁₀	Y	Yes residential 3m from kerb	2m	Y

All continuous analysers are calibrated once per fortnight and subject to an external audit once every 6 months by external contractors. Data for Sir John Cass School, Senator House and Walbrook Wharf is validated and ratified by the Environment Research Group, Kings College London and is available on their web site: www.londonair.org.uk/london/asp/default.asp?la_id=&showbulletins=&width=1024 Data from all other sites is validated and ratified in house.

The BAM data has been corrected by multiplying it by 0.8 and the TEOM data using VCM. See Appendix A for further information

2.1.2 Non-Automatic Monitoring

Nitrogen dioxide and benzene are monitored using diffusion tubes. Nitrogen dioxide tubes are exposed for a month, and benzene for two weeks in each month. The tubes are collected and sent away to a laboratory for analysis.

The tubes used are managed by Bureau Veritas as part of the London-Wide Environment Programme. (LWEP). All diffusion tubes employed in the LWEP programme are prepared and analysed by UKAS accredited Gradko International Ltd. Diffusion tubes are prepared using the 50% v/v triethanolamine with acetone method and analysed using UV spectrometry. The diffusion tubes are labelled, and kept refrigerated in plastic bags prior to and after exposure. The laboratory bias adjustment factor is supplied by Bureau veritas. For 2008 the factor was 0.93. See Appendix A for further information

The diffusion tube sites are presented in table 2.2.

The City of London Corporation

Table 2.2 Details of Non- Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Worst-case Location ?
London Bridge	Roadside	X 532848 Y 180724	Benzene, Toluene and Xylene	Y	Y (3m)	2m	Y
St Andrews by the Wardrobe	Roadside	X 531890 Y 180962	NO ₂	Y	Y (4m)	2m	N
St Dunstons, Fleet Street	Roadside	X 531233 Y 181160	NO ₂	Y	Y (4m)	2m	Y
St Bartholeme w's Hospital	Urban Centre	X 531907 Y 181576	NO ₂	Y	Y	N/A	N
Speed House, Barbican	Urban Background	X 532476 Y 181801	NO ₂	Y	Y	N/A	N
Mansion House	Kerbside	X 532639 Y 181100	Benzene, Toluene and Xylene	Y	Y (4m)	1m	Y
Mansell Street	Roadside	X533791 Y181112	NO ₂	Y	Y (3m)	3m	N

2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

In the City of London, nitrogen dioxide is continuously monitored at two roadside/kerbside sites (Beech Street, and Walbrook Wharf) and at three background locations (Senator House, Sir John Cass School and Walbrook Rooftop). Nitrogen dioxide is also monitored using diffusion tubes at five sites across the City.

During 2008, the annual average air quality objective of 40µg.m⁻³ was exceeded at all of the continuously monitored sites and all but one of the diffusion tube locations. This is typical for the City. Additionally, two sites in 2008 exceeded the objective of 18 one-hour means above 200µg.m⁻³ which is again typical for the area.

The monitoring site locations are deemed to be representative of public exposure in their relevant areas.

Automatic Monitoring Data

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

Location	Within AQMA?	Proportion of year with valid data 2008 %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
			2006	2007	2008
Walbrook Wharf	Y	99	139	96	126
Beech Street	Y	99	97	93	85
Senator House	Y	93	48	43	49
Sir John Cass School	Y	98	56	52	55
Walbrook Roof	Y	90	-	76	93

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

Location	Within AQMA?	Data Capture 2008 %	Number of Exceedences of hourly mean ($200 \mu\text{g}/\text{m}^3$) <i>If the period of valid data is less than 90% of a full year, include the 99.8th %ile of hourly means in brackets.</i>		
			2006	2007	2008
Walbrook Wharf	Y	99	-	-	810
Beech Street	Y	99	420	302	106
Senator House	Y	93	0	0	0
Sir John Cass School	Y	98	0	0	0
Walbrook Roof	Y	90	0	0	13

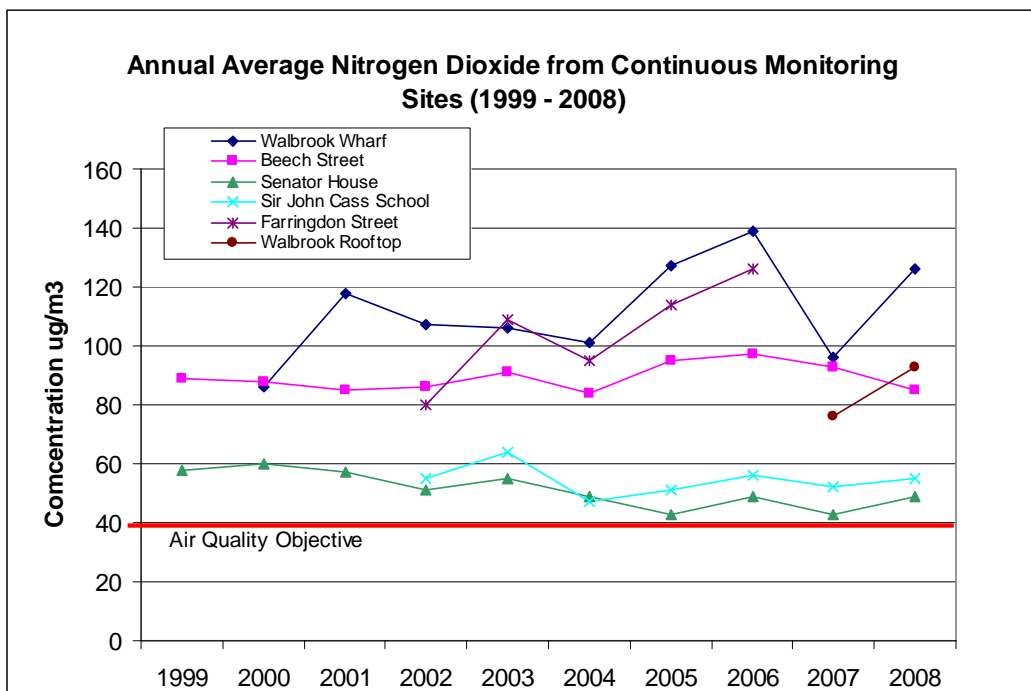


Figure 2.2 – Demonstration of trends in annual average NO₂ concentrations in the City of London from automatic monitoring sites.

The City of London Corporation

Diffusion Tube Monitoring Data

Nitrogen dioxide is monitored using diffusion tubes at 5 locations in the City. Annual average NO₂ concentrations in 2008 were generally above the air quality objective of 40µg m⁻³, with the exception of the Barbican, which was just below the objective for the first time since 2002.

Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Annual mean concentrations (µg/m ³) Adjusted for bias		
			2006	2007	2008
CL05	St Bartholemews Hospital	Y	46	50	43.3
CL38	Queen Victoria Street	Y	67	69	74.8
CL39	Fleet Street	Y	109	108	82.4
CL55	Barbican (Speed House)	Y	42	41	38.2
CL40	Mansell Street	Y	-	76	62

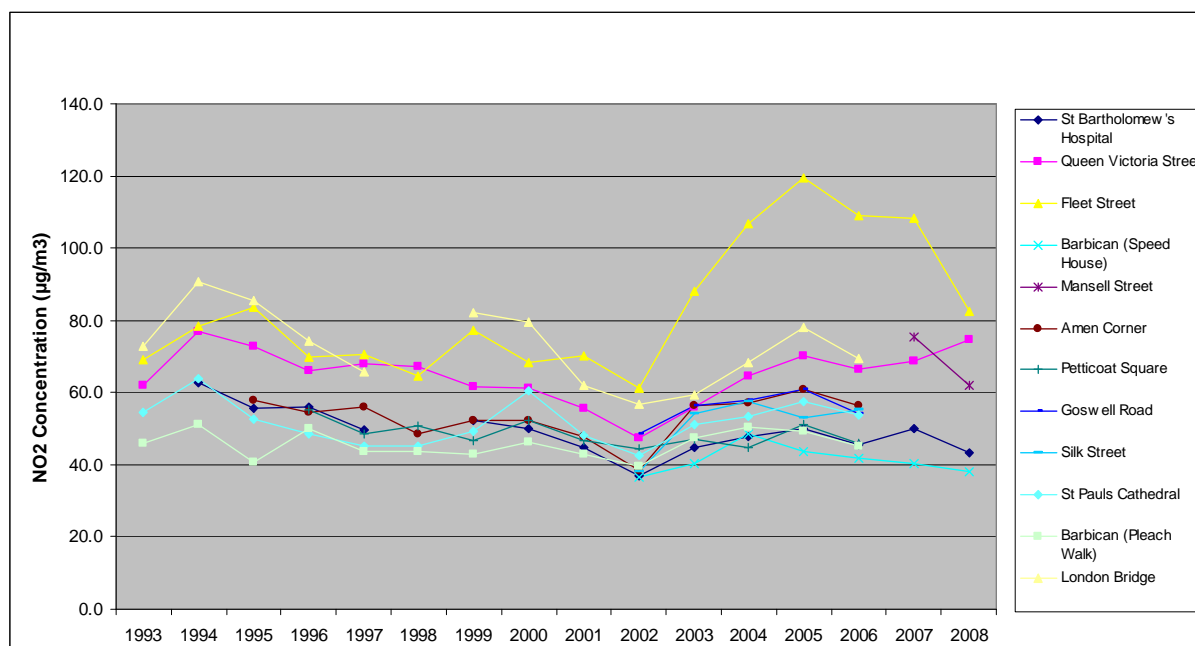


Figure 2.3 - Annual Average NO₂ Concentration (1993-2008) Diffusion Tube Analysis (Bias adjusted Data)

2.2.2 PM₁₀

PM₁₀ is monitored in the City at Beech Street and Upper Thames Street using Tapered Element Oscillating Microbalance (TEOM) analysers, and at the Sir John Cass School using a Beta Attenuation

Monitor (BAM) (Figure 2.1). The TEOM is widely used in the UK for monitoring PM₁₀. However, investigations have shown that the instrument under-reads when compared to conventional gravimetric samplers. The data has been corrected for the loss of volatile components of particulate matter that occur due to the high sampling temperature using data from the following web site www.volatile-correction-model.info. The Beta Attenuation Monitor over reads when compared to conventional gravimetric samplers and consequently the BAM data has been divided by 1.2.

In 2008, no monitoring sites exceeded the annual mean objective of 40µ.m⁻³, and only one site exceeded the 24-hour objective of less than 35 exceedances of 50µ.m⁻³. This is likely to have been due to the unusually wet summer, mild winter and general unsettled weather throughout the year. Concentrations were the lowest since monitoring began in 1999.

Table 2.5a Results of PM₁₀ Automatic Monitoring: Comparison with Annual Mean Objective

Location	Within AQMA?	Data Capture 2008 %	Annual mean concentrations (µg/m ³)		
			2006	2007	2008
Beech Street	Y	98	35.4	34.3	26
Sir John Cass School	Y	92	27.7*	30.4	26
Upper Thames Street	Y	90	-	41.2**	34

* Analyser not operational from end July until beginning September

** Analyser not operational until May 2007

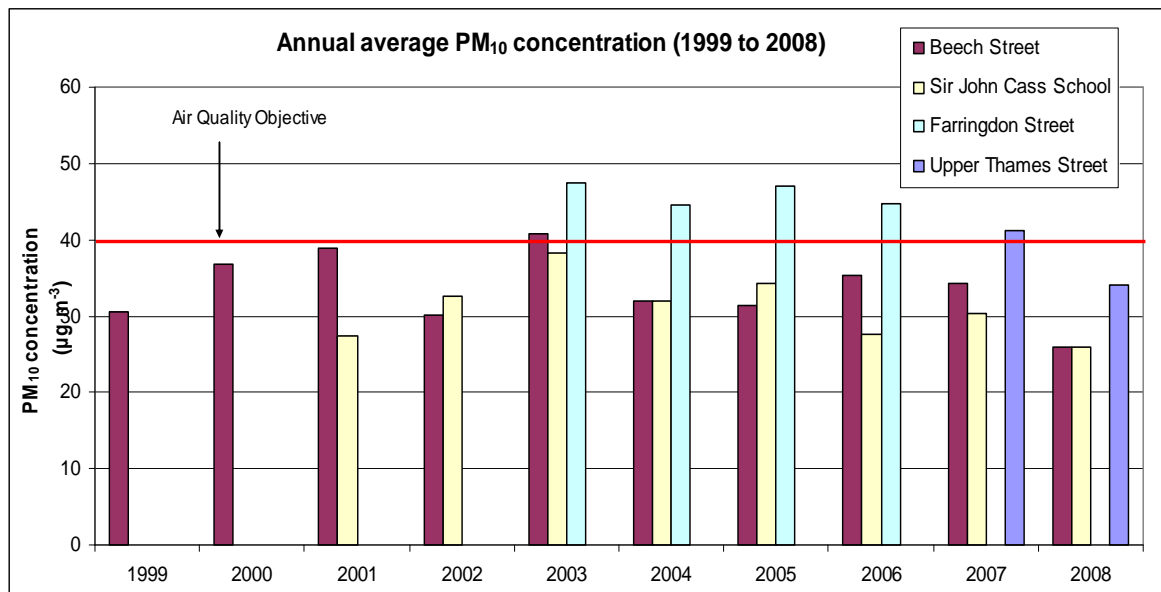


Figure 2.4 – Trends in annual average PM₁₀ concentrations in the City of London from 1999-2008.

Figure 2.4 demonstrates that in 2008 the Air Quality Objective for annual average PM₁₀ concentration was not exceeded in the City of London for the first time since 2002.

The City of London Corporation

Table 2.5b Results of PM₁₀ Automatic Monitoring: Comparison with 24-hour Mean Objective

Location	Within AQMA?	Data Capture 2008 %	Number of Exceedences of daily mean objective (50 µg/m ³) <i>If data capture < 90%, include the 90th %ile of daily means in brackets.</i>		
			2006 *	2007 *	2008
Beech Street	Y	98	53	60	20
Sir John Cass School	Y	92	30	31	15
Upper Thames Street	Y	90	-	49	37

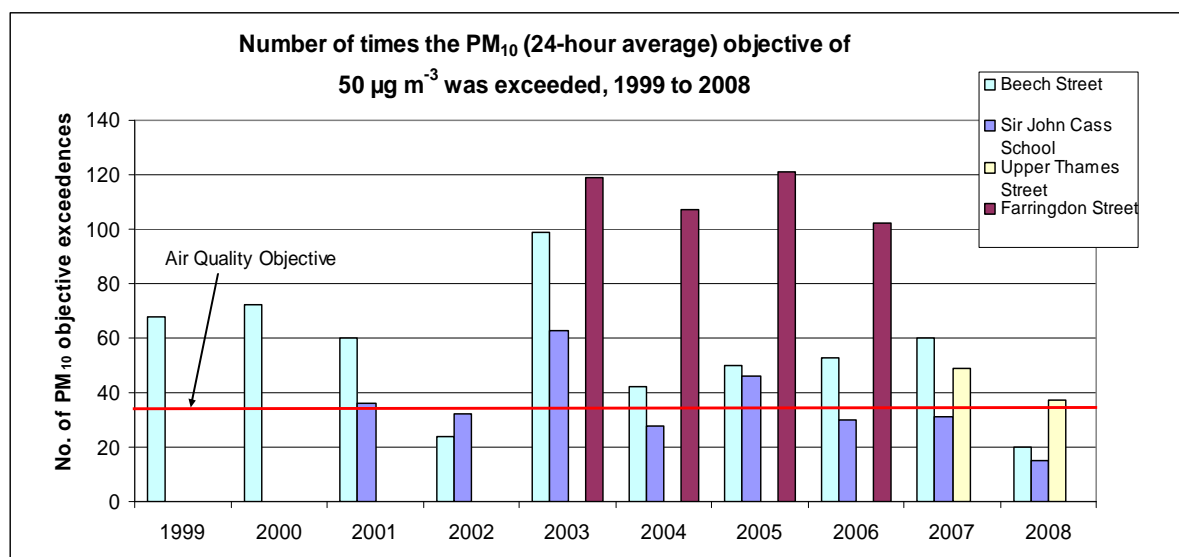


Figure 2.5 – Number of exceedances of the 14-hour PM₁₀ Air Quality Objective from 1999-2008

Figure 2.5 shows the number of times the 24-hour average 50 µg m⁻³ objective has been exceeded at each site from 1999 to 2008. The 50 µg m⁻³ objective was exceeded at Upper Thames Street but not at Sir John Cass School or Beech Street. Concentrations of PM₁₀ were lower than normal in the City due to the unsettled wet weather in 2008.

2.2.3 Sulphur Dioxide

Sulphur dioxide concentrations have generally fallen across London and the rest of the UK as a result of a combination of government policy, for example the 1956 and 1968 Clean Air Acts, and technological advances, such as the use of low-sulphur coal and the introduction of flue gas desulphurisation processes at coal-fired power plants.

Sulphur dioxide is monitored in the City at Senator House. This site provides an indication of background concentrations of the gas and data from Senator House forms part of the London Air Quality Network operated by the Environment Research Group at Kings College, London.

During 2008, all three SO₂ air quality objectives were met. Figure 2.6 displays daily average SO₂ concentrations at the Senator House site. It is clear that, although concentrations fluctuate throughout the year, they are well below the 24-hour average air quality objective of 125 µg m⁻³.

Table 2.6 – Performance against SO₂ Air Quality Objectives During 2008

Air Quality Objective	Result	Objective Achieved?
No more than 24 occurrences of hourly mean >350ug/m ³	0	YES
No more than 3 days where daily mean >125ug/m ³	0	YES
No more than 35 occurrences of 15min mean >267ug/m ³	0	YES

Table 2.6, demonstrates the number of times over the course of 2008 in which the air quality objectives for SO₂ were exceeded, based on monitoring data from the Senator House site. However, it must be noted that the data capture rate for this year was less than 90% (85%), and as such the results may not be representative of the full year and should be used for guidance or as an indication.

None of the 15-minute, 1-hour or 24-hour means have exceeded limit values over the past three years.

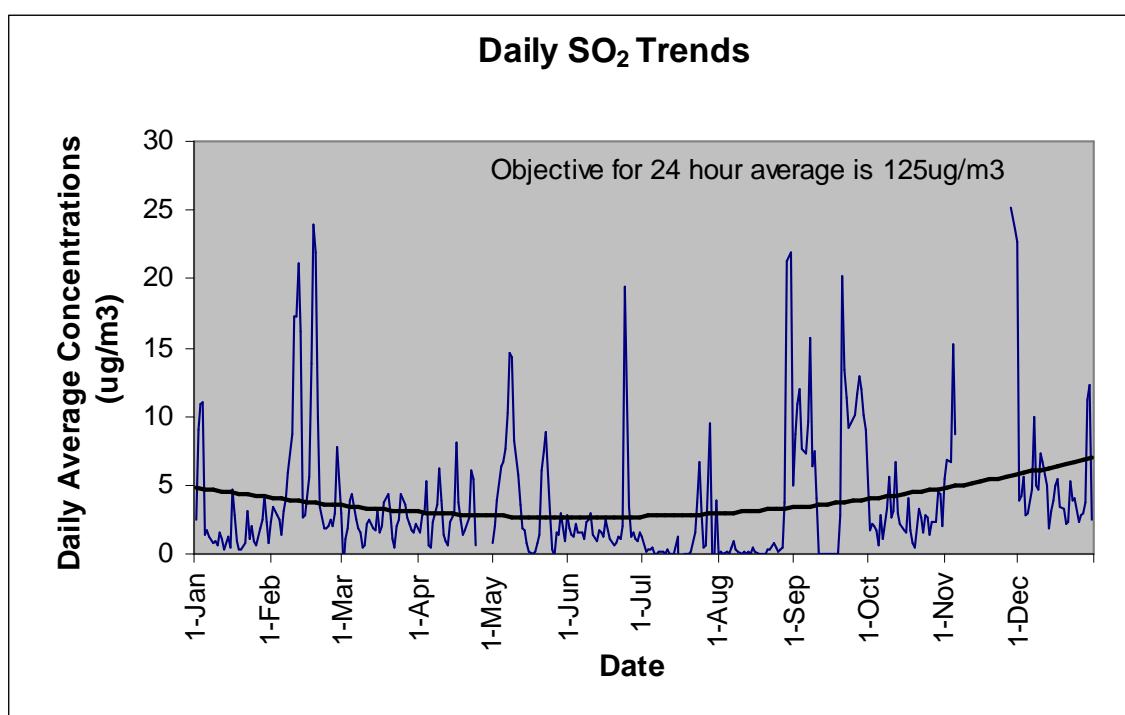


Figure 2.6 – Daily average concentrations of SO₂ at the Senator House monitoring site during 2008

2.2.4 Benzene

Over recent years concentrations of benzene have reduced to levels where they are no longer considered to be a hazard to health, and as such monitoring has been scaled down to just two sites, Mansion House and Lower Thames Street. Benzene is monitored using diffusion tubes, which are exposed for two weeks during each month of the year. This provides an estimate of annual average concentrations of the pollutant.

Benzene concentrations in the City continue to comply with both the 2003 and 2010 objectives. Figure 2.7 shows the long-term trend in benzene concentrations in the City. Running annual means at both of these sites have been below the objective of 5µg/m³ since the year 2000.

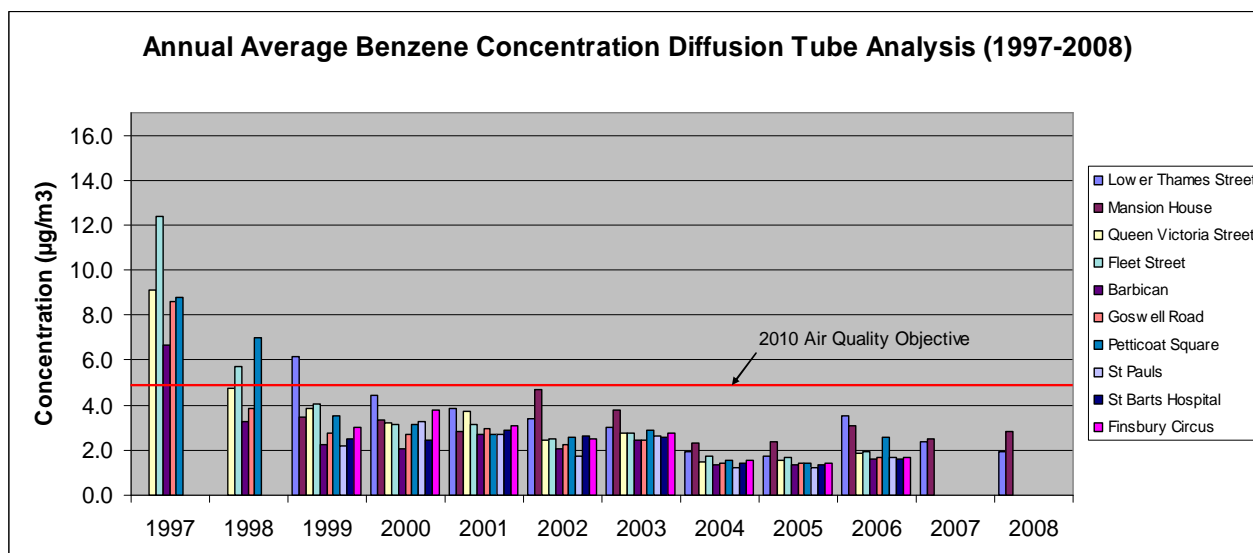


Figure 2.7 – Annual average benzene concentration calculated via diffusion tube analysis, from 1997 to 2008.

2.2.5 Other pollutants monitored

2.2.5.1 Carbon Monoxide

In the City of London, carbon monoxide is predominantly produced by the incomplete combustion of fuel in road vehicles, so concentrations are greatest closer to major roads. During 2008, CO was monitored using a continuous analyser at Walbrook Wharf, Upper Thames Street, the annual average was 0.7mg/m³. This road has one of the highest traffic flow rates in the City. Since 1999, when monitoring began, the carbon monoxide air quality objective has not been exceeded.

2.2.5.2 Tropospheric Ozone

Local objectives for improving ground level ozone are not included in the Air Quality Regulations 2000. However the UK Air Quality Strategy suggests a running 8-hour average of 50ppb (100µg/m³) should not be exceeded more than 10 times per year.

In 2008 there were only 9 days where the rolling 8 hour mean was greater than 100µg/m³. This is lower than average due to the unsettled summer weather. Table 2.7 displays the annual average O₃ concentrations between 2006 and 2008.

Table 2.7: Annual Average O₃ concentration at Senator House, 2006- 2008

Year	Annual average O3 Concentration
2006	34.6
2007	33.5
2008	32.9

The City of London has examined the results from monitoring in the region. Concentrations outside of the AQMA are all below the objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment.

3 Road Traffic Sources

The entirety of the City of London has previously been declared an AQMA for both NO₂ and PM₁₀, and as such there are not any new road traffic sources, which need assessment in these sections.

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

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

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

The City of London confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

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

The City of London confirms that there are no new/newly identified roads with high flows of buses/HGVs in the City.

3.4 Junctions

The City of London confirms that there are no new/newly identified busy junctions/busy roads.

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

The City of London confirms that there are no new /proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

The City of London confirms that there are no new/newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

The City of London has a bus station at Aldgate. This is not a new station. The station is within the City's AQMA therefore a detailed assessment is not necessary.

4 Other Transport Sources

4.1 Airports

The City of London confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

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

4.2.2 Moving Trains

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

4.3 Ports (Shipping)

The City of London confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

5 Industrial Sources

5.1 Industrial Installations

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

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

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

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

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

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

5.2 Major Fuel (Petrol) Storage Depots

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

5.3 Petrol Stations

The City of London confirms that there are no petrol stations meeting the specified criteria.

5.4 Poultry Farms

The City of London confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

The City of London confirms that there are no biomass combustion plant in the Local Authority area.

6.2 Biomass Combustion – Combined Impacts

The City of London confirms that there are no biomass combustion plant in the Local Authority area.

6.3 Domestic Solid-Fuel Burning

The City of London confirms that there are no areas of significant domestic fuel use in the Local Authority area.

7 Fugitive or Uncontrolled Sources

There are many large construction and demolition sites in the City. Emissions are controlled by compliance with the City of London Construction and Deconstruction Code of Practice, which is updated regularly to include current best practice. With the entirety of the City being an AQMA for PM₁₀, these construction sites have already come under consideration in other areas of the report and so do not need to be considered separately in a Detailed Assessment.

The City of London confirms that there are no potential sources of fugitive particulate matter emissions which need to be considered in a detailed assessment in the Local Authority area.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

Pollution levels in the City during 2008 were broadly equivalent to 2007. This was due to the similar weather patterns that existed during both years. Ozone episodes were low due to the absence of prolonged periods of sunny weather. Levels of fine particles were lowest they have been since monitoring began primarily due to the amount of rainfall during the summer.

Exceedences of air quality objectives were identified over 2008 for both NO₂ and PM₁₀. Both the annual average and one-hour mean air quality objectives were exceeded for NO₂, with one site failing the 24 hour objective for PM₁₀.

The trend of an ongoing increase in roadside nitrogen dioxide, since the introduction of the congestion charge, appears to be slowing down. Walbrook Wharf continues to be subject to very high levels of nitrogen dioxide due to the high number of vehicles using Upper Thames Street, and the existence of a street canyon, which results in lower levels of dispersion. Concentrations of nitrogen dioxide are surprisingly high on Walbrook Wharf rooftop, which is not subject to the street canyon effect and is quite a distance from vehicle exhausts.

With regards to PM₁₀, if weather patterns continue to be similar to those seen in 2007 / 8, particulate levels in the City are likely to comply with the objectives by 2011. However if meteorological conditions are similar to those seen in 2003 / 4, roadside particulate levels are likely to be above the objective in 2011.

On the basis of this evidence it is pertinent to maintain the entirety of the City of London as an Air Quality Management Area for both NO₂ and PM₁₀.

Aside from these two key pollutants, SO₂, Benzene, carbon monoxide and tropospheric ozone were also monitored in the borough. No exceedences of air quality objectives were identified for any of these pollutants.

Therefore, a Detailed Assessment is not required for the City of London on the basis of evidence from new monitoring data.

8.2 Conclusions from Assessment of Sources

There have been no developments identified since the last USA, which are deemed likely to significantly influence concentrations of pollutants in the City of London. All potential road transport, other transport, industrial, commercial and domestic sources have remained fairly constant over this time. The only fluctuations in air pollutant sources have been with construction and demolition sites, however ongoing assessments of these have deemed them not to be likely to have any significant impact.

The assessment of potential sources of air pollutants in the City of London has not identified the likelihood of any further exceedences of air quality objectives.

8.3 Proposed Actions

The Updating and Screening Assessment has not identified the need to proceed to a Detailed Assessment for any pollutant, nor has it identified any need for additional monitoring or changes to the monitoring regime. The monitoring needs of the City are reviewed annually.

The City of London Corporation

The evidence presented in this Updating and Screening Assessment demonstrates that it is not necessary to make any changes to the entirety of the region being an Air Quality Management Area for both NO₂ and PM₁₀. The next course of action in the Review and Assessment process will be to submit a progress report in 2010.

9 References

1. Bureau Veritas. 2008. *The London Wide Environment Programme NO2 Diffusion Tube Survey Report*. Report Reference BV/AQ/AGG06501/PB/2599
2. Fuller G., Meston L., Green D., Westmoreland E., Kelly F. 2009. *London Air Quality Network Report 14*. Available at http://www.londonair.org.uk/london/asp/reportdetail.asp?ReportID=lar2006&ReportType=Latest_Report [accessed 30/06/2009].
3. The London Air Quality Network. 2009. Statistics. http://www.londonair.org.uk/london/asp/publicstats.asp?region=0&site=&la_id=&network=All&postcode= [accessed 30/06.2009].
4. The City of London Air Quality Management Documentation. http://www.cityoflondon.gov.uk/Corporation/LGNL_Services/Environment_and_planning/Pollution/air+quality.htm [accessed 30/06/2009]
5. The Volatile Correction Model. <http://www.volatile-correction-model.info/> [accessed 30/06/2009].

Appendices

Appendix A: QA/QC Data

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

NO₂ diffusion tubes are supplied to the City of London by Bureau Veritas, with analysis carried out by UKAS accredited Gradko international. Diffusion tubes are prepared using the 50% v/v triethanolamine with acetone method and analysed using UV spectrometry.

The 2008 LWEF mean bias adjustment factor for NO₂ diffusion tubes was calculated at 0.93. For further information see <http://www.uwe.ac.uk/aqm/review/R&Asupport/diffusiontube050509.xls> and the London Wide Environment Programme 2008 report

Discussion of Choice of Factor to Use

For the NO₂ diffusion tubes, both the national Bias Adjustment Factor and that calculated by Bureau Veritas as part of the LWEF study are available to be applied to the City of London data. The LWEF figure has been used in preference, as this is produced from robust, London-specific data which is more relevant to the situation in the City of London than a national figure. This correction factor (of 0.93) is smaller than the national Bias Adjustment Factor.

PM Monitoring Adjustment

TEOM data has been adjusted in line with correction factors from the Volatile correction Model see <http://www.volatile-correction-model.info/>

BAM data has been divided by 1.2 following the advice from the following web site: www.airquality.co.uk/kb.php?action=showpost&question_id=1377

QA/QC of automatic monitoring

All continuous analysers are calibrated once per fortnight by Air Quality Monitoring Services and undergo an external audit once every 6 months by the National Physics laboratory. The instruments are serviced twice per year by Supporting U and EnviroTechnology. All calibration, audit and service reports are kept in house.

Data for Sir John Cass School, Senator House and Walbrook Wharf is validated and ratified by the Environment Research Group, Kings College London and is available on their web site:

www.londonair.org.uk/london/asp/default.asp?la_id=&showbulletins=&width=1024

Data from all other sites is validated and ratified in house.

QA/QC of diffusion tube monitoring

Gradko International Ltd conducts rigorous quality control and assurance procedures in order to maintain the highest degree of confidence in their laboratory experiments. These are discussed below.

- *Workplace Analysis Scheme for Proficiency (WASP)*

Gradko International Ltd takes place in the Health and Safety Laboratory WASP NO₂ diffusion tube scheme on a monthly basis. The performance for each month of 2007 was rated 'good' which signifies a high level of accuracy for laboratory measurements.

- *Network Field Inter-Comparison Exercise*

Gradko International Ltd also takes part in the NO₂ Network Field Inter-Comparison Exercise, operated by AEA (formerly NETCEN), which complements the WASP scheme in assessing sampling

City of London Corporation

and analytical performance of diffusion tubes under normal operating conditions. This involves the regular exposure of a triplet of tubes at an Automatic Urban Network site (AUN). AEA have established performance criterion for participating laboratories in line with the EU 1st Daughter Directive requirement for indicative monitoring techniques.

Additionally, Bureau Veritas conduct an in-house co-location study to establish an LWEP bias adjustment factor based on triplicate NO₂ diffusion tubes sampling concurrently located with continuous analysers.