2012 Air Quality Updating and Screening Assessment for *London Borough of Lewisham*

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

May 2012

CERC

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Executive Summary

Local authorities are required to review and assess air quality against the objectives in the Air Quality Regulations 2000 and the amendment regulations as part of a rolling three-year cycle. The air quality objectives to be assessed are for the following seven pollutants: carbon monoxide, benzene, 1,3-butadiene, lead, nitrogen dioxide (NO_2), sulphur dioxide and particles (PM_{10}).

The earlier rounds of Review and Assessment of local air quality, undertaken by London Borough of Lewisham (the Council), identified areas with relevant public exposure in which the objectives are likely to be exceeded. As a result, the Council designated Air Quality Management Areas (AQMAs) in parts of the Borough, consisting of four large AQMAs (AQMA 1 to 4) and a series of ribbon roads (AQMA 5).

The conclusions of the Council's subsequent Review and Assessment reports from 2003 to 2010 were that the designation of AQMAs should remain. These were primarily for exceedences of the annual mean objective for NO_2, but also for the daily mean objective for PM_{10} where there is a smaller area that exceeds.

Monitoring in recent reports and air quality modelling in the subsequent Detailed Assessment in 2011, showed predicted areas of exceedences of the annual mean NO_2 objective outside of the existing AQMAs. The Council are currently considering different options for the inclusion of the areas identified within an AQMA.

This report describes the fifth round Updating and Screening Assessment, carried out in order to identify any air quality issues that have changed since the last round of Review and Assessment, which might lead to a risk of the objective being exceeded.

The report makes use of the standardised template and technical guidance LAQM.TG(09) provided by DEFRA for the purpose of Review and Assessment of Air Quality.

The conclusions of the fifth round Updating and Screening Assessment are as follows:

For carbon monoxide, benzene, 1,3-butadiene, lead and sulphur dioxide there is no significant risk of exceeding the objectives within Lewisham.

Monitored NO_2 concentrations are consistent with the currently declared AQMAs and proposed extension due to the findings of the 2011 Detailed Assessment.

Monitored PM_{10} concentrations in Lewisham are below the air quality objectives. However the AQMAs for PM_{10} are retained as a precautionary measure due to a significant number of exceedences of the 24-hour mean concentrations and monitoring results from a neighbouring borough.

The assessment of sources did not identify the requirement to proceed to a Detailed Assessment. However major developments planned for Lewisham will lead to significant changes to traffic flows in the borough as well as increased exposure which will need to be monitored in future rounds of Review and Assessment.

Prior to the production of a progress report in 2013, it is expected that modifications of the existing AQMAs will be finalised. In addition, a new roadside monitoring site will be installed along A20 Loampit Vale to monitor relevant exposure within a street with relatively high traffic flows and where new and proposed developments could potentially create a street canyon.

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1 Introduction

1.1 Description of Local Authority Area

The London Borough of Lewisham is situated in southeast London. It is bordered to the west by Southwark, to the east by Greenwich and Bromley to the south. It has a small frontage on to the River Thames in the north. It is an inner London Borough comprising a densely populated area with an estimated population in 2010 of approximately 261,600. The Borough is mostly residential with areas of employment around the main commercial centres of Lewisham, New Cross, Catford, Deptford and Sydenham. However, compared to other London boroughs, Lewisham is relatively green with approximately one fifth of the borough being open space. The Borough has a broad socio-economic range combining a mix of wealthier wards and wards with more concentrated areas of deprivation. Some of the most deprived wards are New Cross, Evelyn, Deptford and Downham. In these areas health and the quality of housing are poorer.

The main sources of air pollutants are the busy and congested roads. Only 31% of the borough workforce are employed in the borough (Lewisham Employment Land Study, 2008) with the majority travelling outside the borough to work (2001 Census). 70 per cent of local people commute out of Lewisham to work, mainly to other parts of London but private vehicle ownership is relatively low. The main roads that run through the Borough include the A2, A20, A21 and the South Circular (A205). There are currently 71 minor industrial processes that are regulated by the Council and one Part A installation (SELCHP) regulated by the Environment Agency.

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.

The objective of this Updating and Screening Assessment is to identify any matters that have changed which may lead to risk of an air quality objective being exceeded. A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment. The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

1.3 Air Quality Objectives

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

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

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu g/m^3$	Running annual mean	31.12.2003
	5.00 $\mu g/m^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu g/m^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu g/m^3$	Annual mean	31.12.2004
	0.25 $\mu g/m^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005

	40 μg/m^3	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 μg/m^3, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 μg/m^3	Annual mean	31.12.2004
Sulphur dioxide	350 μg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 μg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 μg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

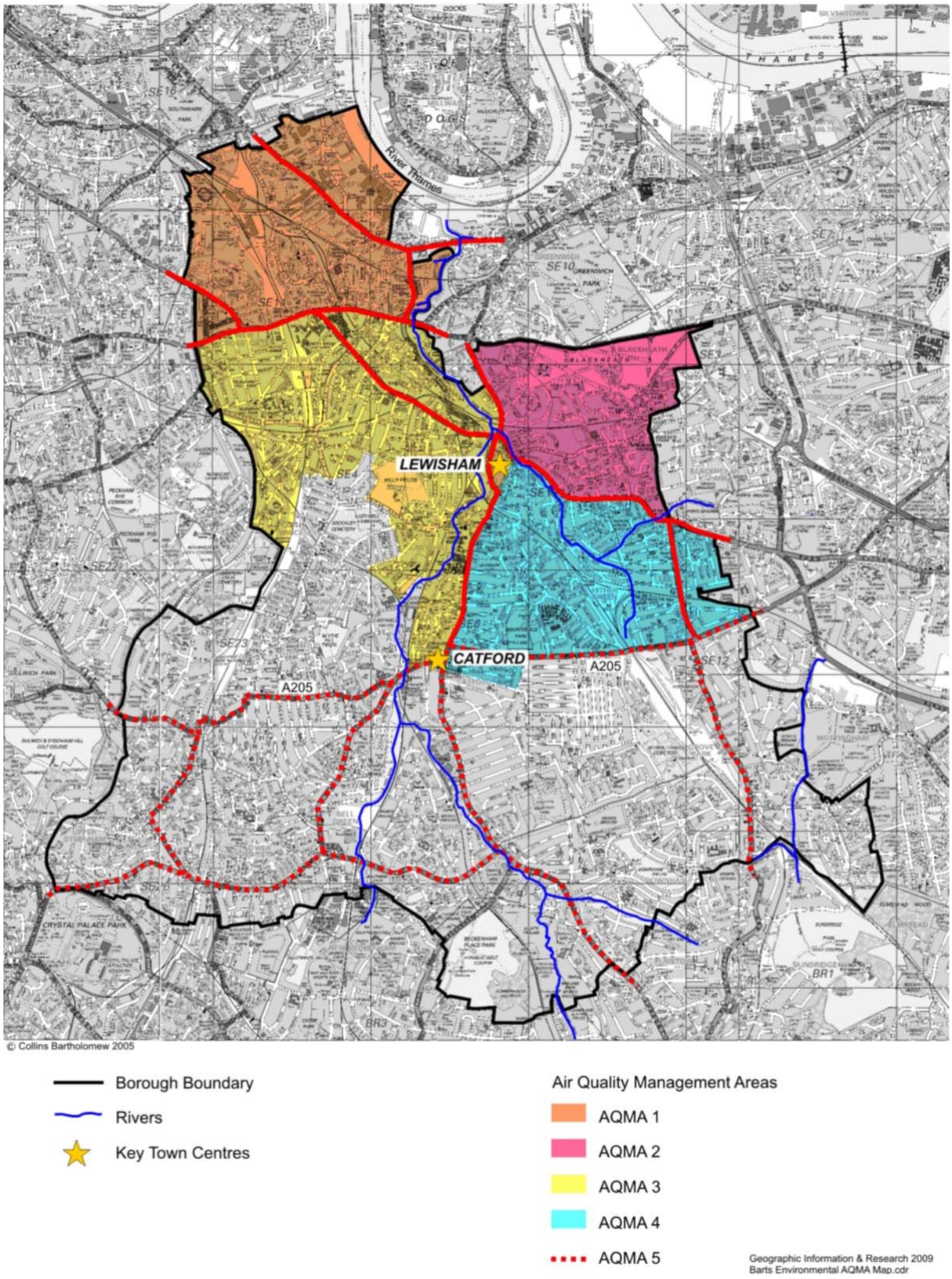
London Borough of Lewisham (the Council) undertook previous rounds of review and assessment of air quality in line with the system of Local Air Quality Management reporting requirements. The main issue following the first round, with respect to local air quality, was found to be emissions (NO_2 and PM_{10}) emanating from road vehicles. As a result, the Council designated Air Quality Management Areas (AQMAs) in parts of the Borough. These are shown in Figure 1.1 and consist of four large AQMAs (AQMA 1 to 4) and a series of ribbon roads (AQMA 5).

The conclusions of the Council's subsequent Review and Assessment reports from 2003 to 2010 were that the designation of AQMAs should remain. These were primarily for exceedences of the annual mean objective for NO_2, but also for the daily mean objective for PM_{10} where there is a smaller area that exceeds.

The reports produced in 2009 and 2010, included monitoring data that showed exceedences of the annual objective for NO2 were occurring outside of the existing AQMAs. Air quality modelling carried out as part of the subsequent Detailed Assessment in 2011, produced by Cambridge Environmental Research Consultants (CERC) on behalf of the Council, predicted areas of exceedences of the annual mean NO_2 objective at residential properties outside the existing AQMAs, along Brockley Road, Stondon Park, Brockley Rise and Honor Oak Park. Based on these findings, the Council are considering different options for the inclusion of the areas identified in the Detailed Assessment within an AQMA.

Monitoring data shows that both the annual mean and daily mean objectives for PM_{10} are being met in recent years. The monitoring data is consistent with the borough-wide air quality modelling by CERC on behalf the Council which predicted that the PM_{10} objectives are met throughout the Borough. However due to the year-to-year variability in the number of days of exceedence for the daily mean PM_{10} objective, the AQMAs for PM_{10} were retained as a precautionary measure.

Figure 1.1 Map of AQMA Boundaries



2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

The Council undertakes continuous monitoring at three fixed sites:

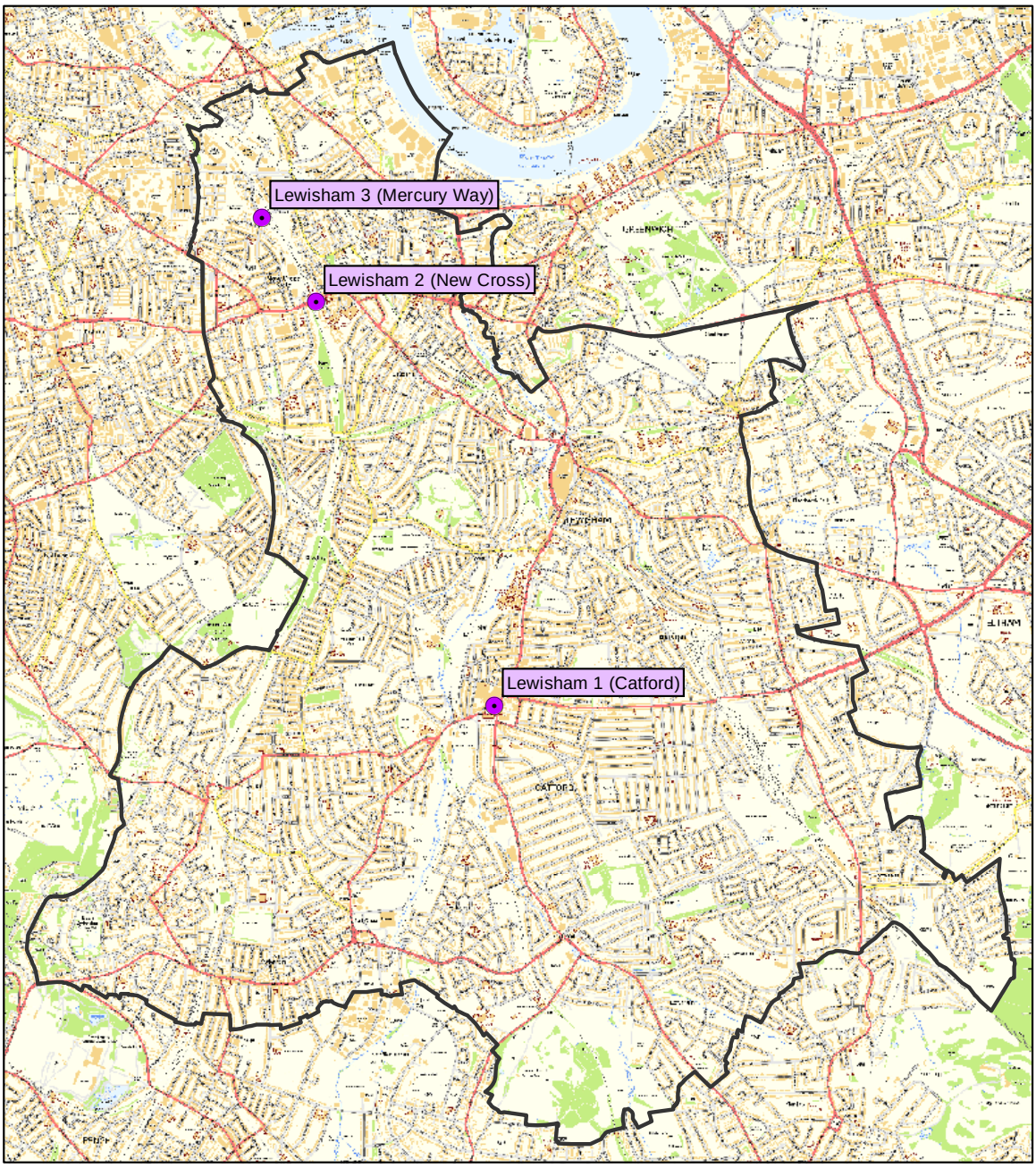
- Lewisham 1 – Catford is an urban background monitoring site located in the centre of the Borough. The site opened in 1996 and monitors nitrogen dioxide (NO_2), sulphur dioxide (SO_2) and ozone (O_3);
- Lewisham 2 – New Cross is a roadside monitoring site located in the north of the Borough closer to Central London. The site opened in 2002 and monitors NO_2, particles (PM_{10}) using TEOM and SO_2; and
- Lewisham 3 – Mercury Way is an industrial monitoring site approximately 10m south of a strip of industrial premises and 2m from the kerb of a residential road that provides access to the industrial area. The site opened in 2010 and monitors PM_{10} using BAM.

Details of the sites are presented in Table 2.1 and their locations are shown in Figure 2.1. All three sites are part of the London Air Quality Network (LAQN) and therefore the standards of QA/QC are similar to those of the government's AURN sites. Regular calibrations are carried out, with subsequent data ratification undertaken by ERG at King's College London. The QA/QC process for the New Cross station includes the conversion of PM_{10} data from TEOM (Tapered Element Oscillating Microbalance) analyser to gravimetric reference equivalent using the VCM (Volatile Correction Method). No conversion is required for the PM_{10} data from the Mercury Way monitoring site as the pollutant is measured using a BAM (Beta Attenuation Mass Monitor).

As reported in the Council's 2011 Progress Report the Crystal Palace site, on the Borough boundary with three neighbouring London boroughs (Southwark, Croydon and Bromley), closed in July 2010.

A new roadside monitoring site is planned for the A20 Loampit Vale, within AQMA 3. The monitor is planned for a roadside site adjacent to the A20 which has relatively high traffic flows and where residential towers have recently been built along one side. Permission is now being sought to develop the land opposite the block of flats which has the potential to create a street canyon where relevant exposure would exist.

Figure 2.1 Map of Automatic Monitoring Sites



Legend

Automatic monitors

Borough boundary

0 500 1000 2000 3000 4000 Metres

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	X OS GridRef	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
Lewisham 1 (Catford)	Urban background	537675	173689	NO_2 SO_2 O_3	Y (AQMA 3)	Chemiluminescent UV fluorescence UV photometer	Y (short-term)	N/A	N
Lewisham 2 (New Cross)	Roadside	536241	176932	NO_2 SO_2 PM_{10}	Y (AQMA 3)	Chemiluminescent UV fluorescence TEOM	Y	6m	Y
Lewisham 3 (Mercury Way)	Industrial	535806	177612	PM_{10}	Y (AQMA 1)	BAM	Y	2m	Y

2.1.2 Non-Automatic Monitoring Sites

The Council monitors NO_2 using diffusion tubes at 49 locations across the Borough, including 12 additional locations (L1 to L12) since the 2010 Progress Report and 21 school locations (SCH001 to SCH021), sited as part of an air quality monitoring project with local schools. Note that existing non-school sites have been re-numbered (L13 to L28). Details of these diffusion tubes are presented in Table 2.2 and their locations are shown in Figure 2.2.

To avoid vandalism, two diffusion tubes were moved:

- In October 2011, L10 Whitburn Road was moved from the façade of Bentley Court to lamp post number 2 in Whitburn Road; and
- In November 2011, SCH006 Forster Park School was moved from inside the school area to lamp post 28 on Waters Road.

The diffusion tubes are supplied and analysed by Gradko International Ltd a UKAS accredited laboratory. Gradko participate in the Workplace Analysis Scheme for Proficiency (WASP). In the last five rounds of WASP NO_2 Proficiency Testing Scheme, Rounds 111 to 115 covering the period from October 2010 to December 2011, 87.5% of the laboratory's results were deemed to be satisfactory.

A local co-location study using triplicate tubes was undertaken over 12 months at the Lewisham 2 roadside site in New Cross. The diffusion tubes were located within 0.5m of the inlet sampler of the chemiluminescent analyser at the continuous site. The study compared equivalent exposure periods, although the continuous results are provisional. The results from the study indicate that there was good precision for the diffusion tube monitoring and also good data capture for the continuous analyser.

The diffusion tube results presented in this report are bias adjusted using the national factor for the laboratory and preparation method from the National Diffusion Tube Bias Adjustment Factor Spreadsheet (v03-12), downloaded from Defra's LAQM web page.

A bias adjustment factor of 0.94 is used for 2011. This is the national factor, based on 20 co-location studies nationwide, including the results for Lewisham 2 – New Cross.

A local factor, based on just the results of the New Cross co-location study, gives a value of 0.59. This has not been used because the low value has raised concerns about the positioning of the co-located tubes relative to the inlet of the automatic monitor.

Figure 2.2 Map of Non-Automatic Monitoring Sites

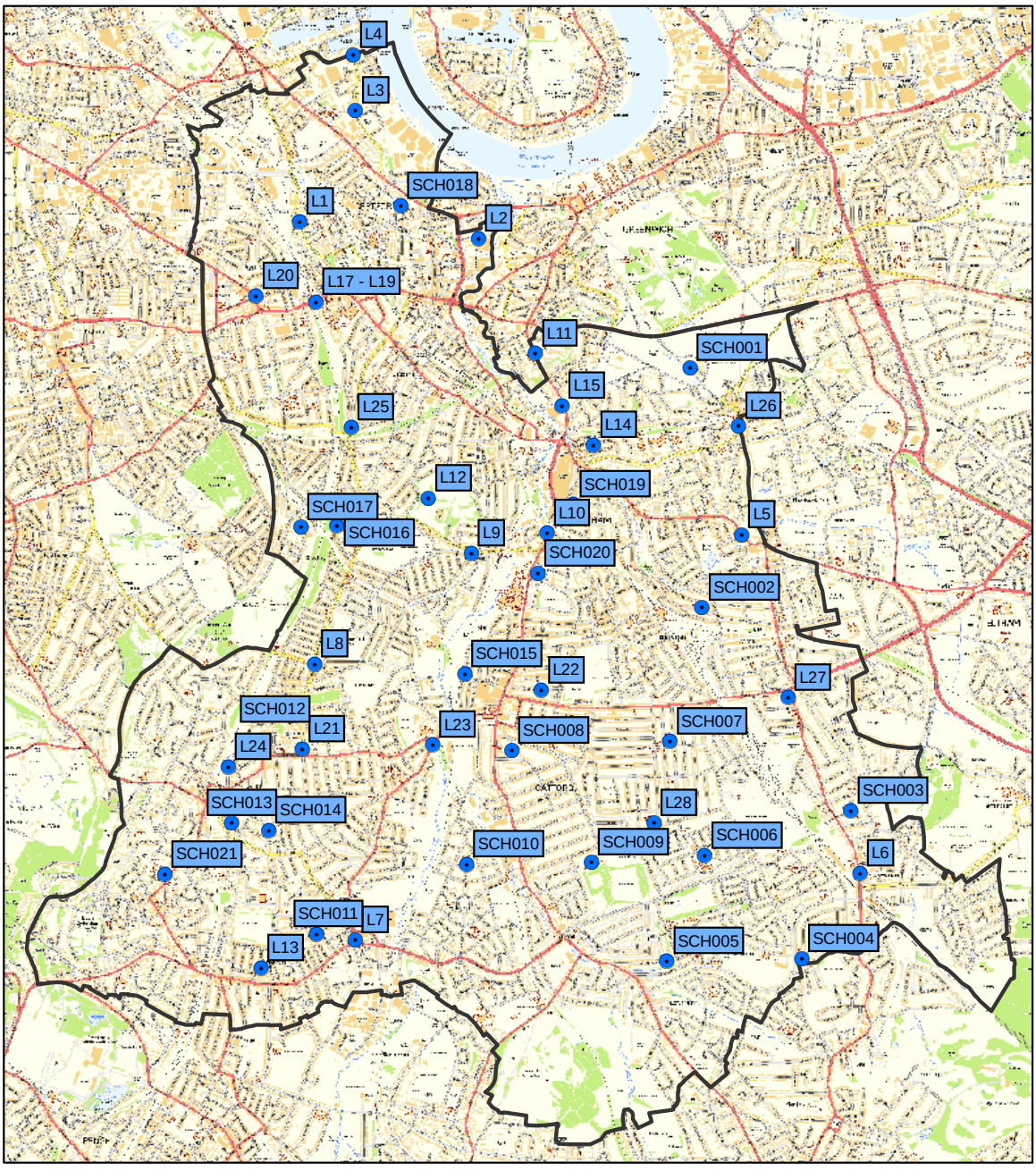


Table 2.2 Details of Non-Automatic Monitoring Sites

Site ID	Location	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
L1	Chubworthy Street	Roadside	536111	177579	NO_2	Y	N	Y	2	Y
L2	Bronze Street	Urban Background	537549	177444	NO_2	Y	N	Y	6	Y
L3	Grove Street	Urban Background	536558	178470	NO_2	Y	N	Y	2	Y
L4	Plough Way	Urban Background	536542	178921	NO_2	Y	N	Y	2	Y
L5	Lee High Road	Roadside	539664	175061	NO_2	Y	N	Y	5	Y
L6	Le May Avenue	Urban Background	540618	172340	NO_2	N	N	Y	5	Y
L7	Bell Green	Roadside	536555	171804	NO_2	Y	N	Y	3	Y
L8	Stondon Park	Roadside	536229	174021	NO_2	N	N	Y	5	Y
L9	Ladywell Road	Roadside	537491	174913	NO_2	Y	N	Y	3	Y
L10	Whitburn Road	Roadside	538101	175073	NO_2	Y	N	Y	1	Y
L11	Sparta Street	Roadside	538007	176517	NO_2	Y	N	Y	3	Y
L12	Hilly Fields	Urban Background	537147	175353	NO_2	Y	N	N	N/A	N
L13	Mayow Rd (Old ID: LWS053)	Urban Background	535798	171576	NO_2	N	N	Y	5	Y

Site ID	Location	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
L14	Boyne Rd (Old ID: LWS002)	Urban Background	538475	175785	NO_2	Y	N	Y	1	N
L15	Lewisham Rd (Old ID: LWS003)	Roadside	538220	176100	NO_2	Y	N	Y	10	N
L16	Loampit Vale (Old ID: LWS004)	Roadside	537740	155920	NO_2	Y	N	N	1.5	Y
L17 - L19	New Cross Monitoring Station (Old IDs: LWS005 - LWS007)	Roadside	536241	176932	NO_2	Y	Y	Y	6	Y
L20	Hatcham Park Rd (Old ID: LWS008)	Roadside	535759	176982	NO_2	Y	N	Y	15	Y
L21	Brockley Rise (Old ID: LWS009)	Roadside	536130	173337	NO_2	N	N	Y	3	Y
L22	Ringstead Rd (Old ID: LWS010)	Urban Background	538055	173810	NO_2	Y	N	Y	0.5	N
L23	Catford Hill (Old ID: LWS011)	Roadside	537180	173370	NO_2	Y	N	N	0.5	Y
L24	Hazelbank Rd (Old ID: LWS018)	Urban Background	538960	172740	NO_2	N	N	Y	2	N
L25	Stanstead Rd (Old ID:	Roadside	535536	173192	NO_2	N	N	Y	10	N

Site ID	Location	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
	LWS014)									
L26	Shardloes Rd (Old ID: LWS015)	Roadside	536523	175925	NO_2	Y	N	Y	0.5	Y
L27	Lawn Terrace (Old ID: LWS016)	Roadside	539640	175934	NO_2	Y	N	Y	0.5	Y
L28	Baring Rd (Old ID: LWS017)	Urban Background	540037	173748	NO_2	Y	N	Y	0.5	Y
SCH001	All Saints	Urban Background	539250	176402	NO_2	Y	N	N	25	N
SCH002	Lee Manor	Urban Background	539348	174477	NO_2	Y	N	Y	5	N
SCH003	Cooper's Lane	Urban Background	540545	172840	NO_2	N	N	Y	5	N
SCH004	Launcelot	Urban Background	540149	171652	NO_2	N	N	N	10	N
SCH005	Bonus Pastor	Urban Background	539063	171632	NO_2	N	N	Y	8	N
SCH006	Forster Park	Urban Background	539369	172480	NO_2	N	N	Y	6	N
SCH007	Sandhurst	Urban Background	539089	173398	NO_2	N	N	Y	8	N
SCH008	Holy Cross	Roadside	537817	173323	NO_2	Y	N	Y	5	Y
SCH009	Catford High	Urban Background	538456	172426	NO_2	N	N	N	10	N
SCH010	Athelney	Urban Background	537453	172410	NO_2	N	N	N	20	N

Site ID	Location	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Does this location represent worst-case exposure?
SCH011	St Michael's	Urban Background	536245	171849	NO_2	N	N	Y	8	N
SCH012	St William of York	Urban Background	536241	173493	NO_2	N	N	N	20	N
SCH013	Christchurch	Roadside	535563	172740	NO_2	N	N	Y	5	Y
SCH014	Perrymount	Urban Background	535862	172685	NO_2	N	N	Y	8	N
SCH015	Holbeach	Urban Background	537438	173941	NO_2	N	N	Y	5	N
SCH016	St Mary Magdalen's	Urban Background	536412	175131	NO_2	N	N	Y	2	N
SCH017	Turnham	Urban Background	536118	175119	NO_2	Y	N	Y	5	N
SCH018	Grinling Gibbons	Urban Background	536924	177707	NO_2	Y	N	Y	2	N
SCH019	St Saviour's	Urban Background	538311	175304	NO_2	Y	N	Y	3	N
SCH020	St Mary's	Roadside	538025	174749	NO_2	Y	N	N	2	N
SCH021	Sydenham	Urban Background	535028	172327	NO_2	N	N	Y	5	N

2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

Tables 2.3 and 2.4 present NO_2 data for the Lewisham 1 and Lewisham 2 automatic monitoring sites for comparison against air quality objectives. Exceedences of the objectives are highlighted in **bold** type. The monitoring data for 2011 are not fully ratified.

Annual mean concentrations exceed the air quality objective of 40 µg/m^3 at both sites for all five years. There is a downward trend in annual mean concentrations over the last three years for both sites.

The hourly average NO_2 objective of no more than 18 exceedences of 200 µg/m^3 was met at both sites for all five years.

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

Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring %[a]	Valid Data Capture 2011 % [b]	Annual Mean Concentration μg/m^3				
					2007	2008	2009	2010	2011
Lewisham 1 (Catford)	Urban background	Y (AQMA 3)	-	99	**53**	**53**	**57**	**55**	**51**
Lewisham 2 (New Cross)	Roadside	Y (AQMA 3)	-	94	**60**	**64**	**64**	**59**	**51**

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

Table 2.4 Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring %[a]	Valid Data Capture 2011 % [b]	Number of Exceedences of Hourly Mean (200 μg/m^3)				
					2007	2008	2009	2010	2011
Lewisham 1 (Catford)	Urban background	Y (AQMA 3)	-	99	8	1	5	1	0
Lewisham 2 (New Cross)	Roadside	Y (AQMA 3)	-	94	11	5	9	0	0

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

Diffusion Tube Monitoring Data

Bias adjusted diffusion tube monitoring results are presented in Table 2.5. Exceedences of the annual mean objective are highlighted in **bold** type and annual mean concentrations of 60 µg/m^3 or above, representing sites where the hourly average NO_2 objective may also be exceeded, are highlighted in **red bold** type.

Annual mean NO_2 concentrations exceed the objective of 40 µg/m^3 throughout the Borough, within the existing AQMAs and areas identified in the 2011 Detailed Assessment. The objective is met outside of these areas. The annual mean objective is met at most urban background locations and exceeded at the majority of the roadside locations.

The annual mean concentration is predicted to exceed 60 µg/m^3 at diffusion tubes co-located with the New Cross automatic monitor, indicating possible exceedence of the hourly average NO_2. However results from the more accurate automatic monitor show that the objective is met.

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2011

Site ID	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 1.03)	Annual mean concentration (Bias Adjustment factor = 0.94)
							2010 (μg/m^3)	2011 (μg/m^3)
L1	Roadside	Y	-	100	N	N	-	36
L2	Urban Background	Y	-	83	N	N	-	30
L3	Urban Background	Y	-	100	N	N	-	35
L4	Urban Background	Y	-	100	N	N	-	37
L5	Roadside	Y	-	100	N	N	-	37
L6	Urban Background	N	-	83	N	N	-	36
L7	Roadside	Y	-	100	N	N	-	**48**
L8	Roadside	N	-	92	N	N	-	**44**
L9	Roadside	Y	-	100	N	N	-	**40**
L10	Roadside	Y	-	75	N	N	-	**43**
L11	Roadside	Y	-	83	N	N	-	**45**
L12	Urban Background	Y	-	100	N	N	-	31
L13	Urban Background	N	-	100	N	N	35	30
L14	Urban Background	Y	-	100	N	N	33	33
L15	Roadside	Y	-	100	N	N	**48**	**44**
L16	Roadside	Y	-	100	N	N	**61**	**49**
L17 - L19	Roadside	Y	Triplicate & Collocated	92	N	N	**75**	**75**

Site ID	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 1.03) 2010 (μg/m^3)	Annual mean concentration (Bias Adjustment factor = 0.94) 2011 (μg/m^3)
L20	Roadside	Y	-	83	N	N	**56**	**42**
L21	Roadside	N	-	92	N	N	**61**	**53**
L22	Urban Background	Y	-	100	N	N	33	35
L23	Roadside	Y	-	100	N	N	**56**	**54**
L24	Urban Background	N	-	100	N	N	33	29
L25	Roadside	Y	-	83	N	N	31	28
L26	Roadside	Y	-	100	N	N	**54**	**50**
L27	Roadside	Y	-	92	N	N	39	35
L28	Urban Background	N	-	92	N	N	**61**	**52**
SCH001	Urban Background	Y	-	100	N	N	30	26
SCH002	Urban Background	Y	-	92	N	N	30	26
SCH003	Urban Background	N	-	100	N	N	26	23
SCH004	Urban Background	N	-	92	N	N	28	23
SCH005	Urban Background	N	-	100	N	N	22	23
SCH006	Urban Background	N	-	67	N	N	25	27
SCH007	Urban Background	N	-	100	N	N	31	27
SCH008	Roadside	Y	-	100	N	N	35	30

Site ID	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = 1.03)	Annual mean concentration (Bias Adjustment factor = 0.94)
							2010 (μg/m^3)	2011 (μg/m^3)
SCH009	Urban Background	N	-	92	N	N	30	26
SCH010	Urban Background	N	-	83	N	N	26	24
SCH011	Urban Background	N	-	83	N	N	26	25
SCH012	Urban Background	N	-	100	N	N	29	25
SCH013	Roadside	N	-	100	N	N	33	28
SCH014	Urban Background	N	-	92	N	N	30	25
SCH015	Urban Background	N	-	100	N	N	32	28
SCH016	Urban Background	N	-	92	N	N	31	23
SCH017	Urban Background	Y	-	100	N	N	32	24
SCH018	Urban Background	Y	-	92	N	N	35	30
SCH019	Urban Background	Y	-	100	N	N	32	29
SCH020	Roadside	Y	-	100	N	N	**55**	**47**
SCH021	Urban Background	N	-	100	N	N	33	28

2.2.2 PM_{10}

Tables 2.7 and 2.8 present PM_{10} data from the Lewisham 2 and Lewisham 3 automatic monitoring sites for comparison against air quality objectives. Data from the Lewisham 2 TEOM analyser is corrected to gravimetric equivalent using the VCM.

The air quality objectives for PM_{10} are met at both sites for all years. However the number of times the 24-hour mean concentrations exceed 50 µg/m^3 is higher for 2011 compared to 2010. A similar trend is observed at PM_{10} monitoring stations across London.

King's College London analysed the monitoring data from the Mercury Way site for the 19-month period from 15th February 2010 to 19th September 2011. The analysis indicates that over the study period, the industrial complex north-east of the monitor location contributes 27% of the mean PM_{10} concentration and increased the number of exceedences of 50 µg/m^3 of 24-hour mean concentration from 5 to 25.

The LAQN Greenwich – Blackheath roadside monitor is located on a section of the A2 Blackheath Hill which makes up part of the boundary between Lewisham and Greenwich, the southern side of the road is in Lewisham, within AQMA 1, and the northern side where the monitor is located is in Greenwich. Monitored concentrations from this location may be indicative of concentrations at relevant locations on the Lewisham side of Blackheath Hill.

Monitored PM_{10} concentrations from Greenwich – Blackheath show that the 24-hour objective was breached in both 2010 and 2011, indicating that the objective may also be beached at relevant locations in Lewisham. However concentrations are expected to be higher on the Greenwich side of the Blackheath Hill because the road gradient means traffic emissions are higher for the uphill (eastbound) Greenwich side of the road, where the monitor is located, compared with the downhill (westbound) Lewisham side. There is also significant traffic queuing on the uphill section of the road during peak hours.

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

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2011 %[b]	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration μg/m^3				
						2007	2008	2009	2010	2011
Lewisham 2 (New Cross)	Urban background	Y (AQMA 3)	-	94	Y	27	25	25	25	26
Lewisham 3 (Mercury Way)	Industrial	Y (AQMA 1)	-	91	NA	-	-	-	23 [c]	23

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

Table 2.8 Results of Automatic Monitoring for PM_{10}: Comparison with 24-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2011 %[b]	Confirm Gravimetric Equivalent	Number of Exceedences of 24-Hour Mean (50 μg/m^3)				
						2007	2008	2009	2010[c]	2011
Lewisham 2 (New Cross)	Urban background	Y (AQMA 3)	-	94	Y	27	16	12	6	19
Lewisham 3 (Mercury Way)	Industrial	Y (AQMA 1)	-	91	NA	-	-	-	4 (39)	22

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

2.2.3 Sulphur Dioxide

Table 2.9 presents SO_2 data from the Lewisham 1 and Lewisham 2 automatic monitoring sites for comparison against air quality objectives.

The air quality objectives for SO_2 are met at both locations.

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

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period %[a]	Valid Data Capture 2011 %[b]	Number of Exceedences (percentile in bracket μg/m³)[c]		
					15-minute Objective (266 μg/m³)	1-hour Objective (350 μg/m³)	24-hour Objective (125 μg/m³)
Lewisham 1 (Catford)	Urban background	Y (AQMA 3)	-	99	0	0	0
Lewisham 2 (New Cross)	Roadside	Y (AQMA 3)	-	93	0	0	0

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

2.2.4 Ozone

The UK Air Quality Strategy sets an 8-hour rolling mean objective for O_3 of no more than 10 exceedences of 100 µg/m^3.

Table 2.10 presents O_3 data from the Lewisham 1 automatic monitoring sites for comparison against the air quality objective. The objective is met for all five years.

Table 2.10 Results of Automatic Monitoring for Ozone: Comparison with 8-Hour Rolling Mean Objective

Site ID	Site Type	Valid Data Capture for period of monitoring %[a]	Valid Data Capture 2011 % [b]	Number of Exceedences of 8- Hour Rolling Mean (100 μg/m^3)				
				2007	2008	2009	2010	2011
Lewisham 1 (Catford)	Urban Background	-	99	3	6	0	0	0

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

2.2.5 Summary of Compliance with AQS Objectives

Air quality monitoring results show that annual mean NO_2 concentrations exceed the objective throughout the London Borough of Lewisham, within the existing AQMAs and areas identified in the 2011 Detailed Assessment. The objective is met outside of these areas. The hourly mean NO_2 objective is met across the borough.

PM_{10} air quality objectives are met at monitoring locations in Lewisham, however the number of times the 24-hour mean concentrations exceeds of 50 µg/m^3 has increased in 2011. In addition monitoring from the neighbouring borough, Greenwich, indicate that the 24-hour mean objective may have been breached at relevant locations in Lewisham within AQMA 1.

Monitoring of SO_2 and O_3 shows compliance with the relevant air quality objectives.

The monitoring results are consistent with the currently declared AQMAs and proposed extension as a result of the 2011 Detailed Assessment. The AQMAs for PM_{10} are also retained as a precautionary measure.

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

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

A Detailed Assessment was carried out for narrow congested streets with residential properties close to kerb identified in Lewisham's 2009 USA. As a result various options are being considered for the extension of the Council's AQMAs.

No further roads have been identified meeting the criteria in Box 3.2 (A.1) of TG(09) guidance.

London Borough of Lewisham 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

No busy streets where people may spend an hour or more close to traffic were identified in the 2009 USA. There has been no change to these findings.

London Borough of Lewisham 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.

No roads with a high flow of buses and / or HGVs were identified in the 2009 USA. There has been no change to these findings.

London Borough of Lewisham confirms that there are no new/newly identified roads with high flows of buses/HDVs.

3.4 Junctions

There are no new or newly identified busy junctions in Lewisham since the last round of Review and Assessment.

London Borough of Lewisham 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 Council's 2010 Progress Report identified two road developments in Lewisham: Lewisham Centre roundabout; and Kender Street Triangle.

The Lewisham Centre roundabout plans to replace the existing roundabout with an H-shaped junction, as part of the Lewisham Gateway development. This development has outline planning approval since 2007 and detailed planning approval for the first phase is expected in late 2012. Consequently the works for redesigning the road layout have not yet started.

Kender Street Triangle is a major Transport for London (TfL) traffic scheme that was completed in the autumn of 2010. The scheme involved the removal of a gyratory system between A2 New Cross Road and A202 Queen's Road / Kender Street and returning the roads to two-way traffic, as well as associated junction upgrades.

Changes in traffic flows due to this development are included in the London Atmospheric Emission Inventory (LAEI) 2008, the latest version. Data from the LAEI

indicate that the scheme will significantly increase traffic flow on the section of A2 New Cross Road between Kender Street and Queen's Road.

Borough-wide air quality modelling by CERC, using traffic data from LAEI 2008 indicate that annual average NO_2 concentrations will continue to breach the air quality objective of 40 µg/m^3 around major roads in the Kender Street Triangle. The nearest diffusion tube (L20) situated a couple of metres from the A2 on the new two-way flow shows that nitrogen dioxide concentrations fell significantly in 2011. All other air quality objectives are expected to be met in the area.

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

3.6 Roads with Significantly Changed Traffic Flows

In addition to part of the A2 New Cross Road making up the Kender Street Triangle, discussed in Section 3.5, comparison of traffic flows for roads in Lewisham in LAEI 2008 with a previous version, LAEI 2006, also identified the following three roads with traffic flows of more than 10,000 vehicles per day which have experienced an increase of more than 25%:

- A20 Lewisham Way, between Parkfield Road and Amersham Way;
- Ladywell Road; and
- Kirkdale, between Dartmouth Road and Sydenham Hill

Both Lewisham Way and Ladywell Road are located in AQMA 3. The section of Kirkdale identified, north of the junction with Dartmouth Road, is outside of the AQMAs. Both Dartmouth Road and the southern section of Kirkdale are part of AQMA 5.

Borough-wide air quality modelling by CERC, using traffic data from the LAEI 2008 indicate that the hourly average NO_2 and both PM_{10} objectives will be met at relevant locations around the three roads with significantly increased flows.

The objective of 40 µg/m^3 for annual average NO_2 concentrations is expected to be breached at relevant locations around Lewisham Way and Ladywell Way, consistent with the designation of AQMA 3. At relevant locations on the section of Kirkdale, north of Dartmouth Road, annual average NO_2 concentrations are predicted to be up to 36 µg/m^3, indicating an extension of the AQMA to cover this road is not required.

London Borough of Lewisham has assessed new/newly identified roads with significantly changed traffic flows, and concluded that it will not be necessary to proceed to a Detailed Assessment.

3.7 Bus and Coach Stations

Assessment of bus and coach stations in previous USAs concluded that there are no relevant bus stations in Lewisham. There is no change to this position.

London Borough of Lewisham confirms that there are no relevant bus stations in the Local Authority area.

4 Other Transport Sources

4.1 Airports

London Borough of Lewisham confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

Assessment of diesel and steam trains in the Council's 2009 USA concluded there was no relevant exposure to emissions from diesel and steam trains in the borough. There is no change to this position.

4.2.1 Stationary Trains

London Borough of Lewisham 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

London Borough of Lewisham 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)

In the 2009 USA, no ports or shipping meeting the specified criteria were identified.

There is no change to this position.

London Borough of Lewisham 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

There are no new or proposed industrial installations in Lewisham.

In the neighbouring authority, London Borough of Tower Hamlets, a Part A application was submitted to the Environment Agency for an Energy Centre at Riverside South, a major office block development in Canary Wharf.

This proposed Energy Centre was reviewed in Tower Hamlets' 2009 USA, which concluded that it will not be necessary to proceed to a Detailed Assessment.

London Borough of Lewisham has assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

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

Environment Agency data for the Part A process at South East London Heat and Power (SELCHP) Limited shows an increase in NO_x emissions from 369 tonnes per year to 450 tonnes per year, between 2008 and 2010. This is equivalent to a 22% increase, below the TG(09) criteria of greater than 30% for a "substantial" increase, therefore no further assessment is required for this industrial installations.

London Borough of Lewisham 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

Since the last round of Review and Assessment there are no new or significantly changed installations requiring an air quality assessment.

London Borough of Lewisham 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

Assessment in previous rounds of Review and Assessment found there were no major fuel storage depots in Lewisham. This position has not changed.

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

5.3 Petrol Stations

No petrol stations meeting the criteria specified in the TG(09) were identified in previous rounds of Review and Assessment. This position has not changed.

London Borough of Lewisham confirms that there are no petrol stations meeting the specified criteria**.**

5.4 Poultry Farms

There are no poultry farms in Lewisham.

London Borough of Lewisham confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

Lewisham's 2010 & 2011 Progress Reports identified six planning applications where approval was granted for a biomass boiler:

- Loampit Vale SE13, 500 kW wood pellet boiler;
- Goldsmiths College, New Cross Road SE14, 550 kW wood pellet boiler;
- Heathside & Lethbridge, Lethbridge Close, SE13; 400 kW wood pellet boiler;
- Deptford Green School, Amersham Vale SE14, 425 kW wood pellet boiler;
- Tidemill School / Deptford Lounge, Frankham Street SE8, 160 kW wood pellet boiler
- Gordonbrook Primary School, Gordonbrock Road

Air quality assessments were carried out for all the proposed biomass boilers as part of the planning submissions, therefore there is no need to proceed to a Detailed Assessment.

The development at Heathside & Lethbridge subsequently opted not to progress with its plans for a biomass boiler. Mitigation measures for NO_x emissions have been proposed for the Goldsmiths College and Deptford Green School biomass boilers.

London Borough of Lewisham has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.2 Biomass Combustion – Combined Impacts

As reported in the 2010 Progress Report, the locations and types of biomass boilers receiving planning consent in Lewisham are being recorded and mapped by the

Council. There was an increasing number of biomass boiler applications in the north of the borough due to redevelopment of Deptford and New Cross, together with the Building Schools for the Future Programme. However, over the past year, the number of new biomass boiler applications has dropped significantly as alternative sources of renewable energy and other means of achieving carbon reduction are being implemented.

Currently there are no areas where concentrations from of biomass boilers are likely to cause concern.

London Borough of Lewisham has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.3 Domestic Solid-Fuel Burning

London Borough of Lewisham is designated a Smoke Control Area and there are no known areas within the borough where domestic fuel burning is an issue.

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

7 Fugitive or Uncontrolled Sources

The Lewisham 3 – Mercury Way automatic monitor was installed to investigate fugitive dust emissions from a nearby waste transfer station, for which complaints had been received.

There are no quarries or landfill sites in the borough. All major developments in Lewisham include dust emissions assessment and / or dust management plan, as part of the planning application.

London Borough of Lewisham confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

Monitored NO_2 concentrations are consistent with the currently declared AQMAs and proposed extension due to the findings of 2011 Detailed Assessment.

Monitored PM_{10} concentrations in Lewisham are below the air quality objectives. However the AQMAs for PM_{10} are retained as a precautionary measure due to the significant number of exceedences of the 24-hour mean concentrations and monitoring results from a neighbouring borough.

8.2 Conclusions from Assessment of Sources

The assessment of sources did not identify the requirement to proceed to a Detailed Assessment.

A number of planned major developments in Lewisham will lead to significant changes to traffic flows in the borough, as well as a potential increase in biomass usage. These sources will continue to be monitored in future rounds of Review and Assessment.

8.3 Proposed Actions

The Updating and Screening Assessment has not identified a need to proceed to a Detailed Assessment for any pollutant. For all pollutants not requiring a Detailed Assessment, the LAQM guidance requires no further action to be taken other than for the London Borough of Lewisham to produce annual air quality progress reports by the end of April 2013 and 2014, respectively, prior to undertaking the next Updating and Screening Assessment by the end of April 2015.

Prior to the production of a progress report in 2013, it is expected that modifications of the existing AQMAs will be finalised and a new roadside monitoring site will be installed along A20 Loampit Vale. The station will monitor NO_2 and PM_{10} at a site where a new street canyon may be created depending on the size and scale of proposed development in the area which receives approval.

9 References

2010 Air Quality Progress Report for the London Borough of Lewisham, London Borough of Lewisham, October 2010

Local Air Quality Management Technical Guidance LAQM.TG(09), February 2009, Department for Environment, Food and Rural Affairs

Fourth Round of Updating and Screening Assessment for the London Borough of Lewisham, Kings College London, June 2009

Air Quality Modelling for the London Borough of Lewisham, CERC, January 2011

2011 Detailed Assessment for London Borough of Lewisham, CERC, February 2011

Fourth Round Updating and Screening Assessment for London Borough of Tower Hamlets; October 2009; London Borough of Tower Hamlets

Summary of Laboratory Performance in WASP NO_2 proficiency Testing Scheme for Rounds 108-115, March 2012, Health & Safety Laboratory (HSL): http://laqm.defra.gov.uk/documents/WASP-Rounds-108-115-(January-2010-December-2011).pdf]

Diffusion tubes national bias adjustment factor spreadsheet 03/12: http://laqm.defra.gov.uk/documents/Diffusion_Tube_Bias_Factors-v03_12.xls

Defra Local Air Quality Management website: http://www.defra.gov.uk/environment/quality/air/air-quality/laqm/

London Air Quality Network (LAQN) website: http://www.londonair.org.uk/LondonAir/Default.aspx

Chracterization of the PM_{10} contribution from waste treatment industrial sources, Kings College London, April 2012: http://www.londonair.org.uk/london/reports/PM10_from_waste_sites_Mercury_Way.pdf

Appendix A: QA:QC Data

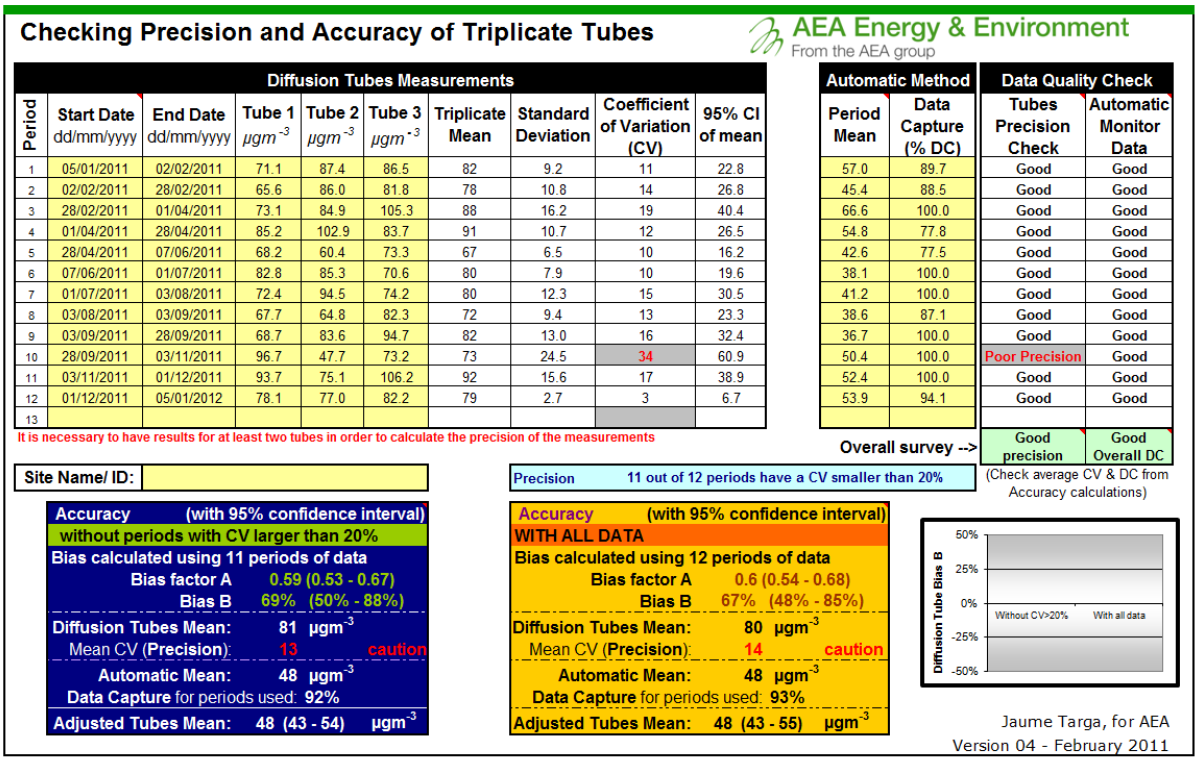
Most of the QA/QC information for monitoring data is provided in the main text. Additional information provided in this appendix.

Factor from Local Co-location Studies

Figure A1 shows the precision and accuracy of diffusion tube monitoring at the triplicate sites collocated with the Lewisham 2 – New Cross automatic monitor for 2011. The values are calculated using Defra's LAQM spreadsheet tool *2011_AEA_DifTPAB_v04.xls*.

A local bias adjustment factor of 0.59 is calculated using these data. This low value has raised concerns about the positioning of the triplicate tubes relative to the automatic monitor, therefore the data presented in the report uses a national bias adjustment factor. For 2011, the Bias Adjustment Factor used was 0.94 as obtained from the National Diffusion Tubes Bias Adjustment Factor Spreadsheet version 03/12. For 2010, the Bias Adjustment Factor used was 1.03 obtained from the 06/11 version of the spreadsheet. This is different to the factor of 0.99 used in the 2011 Progress Report based on the 04/11 issue.

Figure A1: Diffusion tube precision and accuracy, Lewisham 2 collocated



Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean	Automatic Method: Period Mean	Automatic Method: Data Capture (% DC)	Data Quality Check: Tubes Precision Check	Data Quality Check: Automatic Monitor Data
1	05/01/2011	02/02/2011	71.1	87.4	86.5	82	9.2	11	22.8	57.0	89.7	Good	Good
2	02/02/2011	28/02/2011	65.6	86.0	81.8	78	10.8	14	26.8	45.4	88.5	Good	Good
3	28/02/2011	01/04/2011	73.1	84.9	105.3	88	16.2	19	40.4	66.6	100.0	Good	Good
4	01/04/2011	28/04/2011	85.2	102.9	83.7	91	10.7	12	26.5	54.8	77.8	Good	Good
5	28/04/2011	07/06/2011	68.2	60.4	73.3	67	6.5	10	16.2	42.6	77.5	Good	Good
6	07/06/2011	01/07/2011	82.8	85.3	70.6	80	7.9	10	19.6	38.1	100.0	Good	Good
7	01/07/2011	03/08/2011	72.4	94.5	74.2	80	12.3	15	30.5	41.2	100.0	Good	Good
8	03/08/2011	03/09/2011	67.7	64.8	82.3	72	9.4	13	23.3	38.6	87.1	Good	Good
9	03/09/2011	28/09/2011	68.7	83.6	94.7	82	13.0	16	32.4	36.7	100.0	Good	Good
10	28/09/2011	03/11/2011	96.7	47.7	73.2	73	24.5	34	60.9	50.4	100.0	Poor Precision	Good
11	03/11/2011	01/12/2011	93.7	75.1	106.2	92	15.6	17	38.9	52.4	100.0	Good	Good
12	01/12/2011	05/01/2012	78.1	77.0	82.2	79	2.7	3	6.7	53.9	94.1	Good	Good
13													

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Overall survey --> Good precision | Good Overall DC

Site Name/ ID:

Precision: 11 out of 12 periods have a CV smaller than 20%

(Check average CV & DC from Accuracy calculations)

Accuracy (with 95% confidence interval) without periods with CV larger than 20%
Bias calculated using 11 periods of data
Bias factor A: 0.59 (0.53 - 0.67)
Bias B: 69% (50% - 88%)
Diffusion Tubes Mean: 81 µgm^{-3}
Mean CV (Precision): 13 caution
Automatic Mean: 48 µgm^{-3}
Data Capture for periods used: 92%
Adjusted Tubes Mean: 48 (43 - 54) µgm^{-3}

Accuracy (with 95% confidence interval) WITH ALL DATA
Bias calculated using 12 periods of data
Bias factor A: 0.6 (0.54 - 0.68)
Bias B: 67% (48% - 85%)
Diffusion Tubes Mean: 80 µgm^{-3}
Mean CV (Precision): 14 caution
Automatic Mean: 48 µgm^{-3}
Data Capture for periods used: 93%
Adjusted Tubes Mean: 48 (43 - 55) µgm^{-3}

Jaume Targa, for AEA
Version 04 - February 2011

Short-term to Long-term Data adjustment

Annual data capture for Lewisham 3 – Mercury Way was 72% for 2010. As the data capture is less than 90%, the annual mean concentration presented in the report is "annualised" using the methodology in Box 3.2 of TG(09). Two LAQN automatic monitors were used for this process, Newham 3 – Wren Close and Croydon 3 – Thornton Heath. The calculated ratio for "annualising" monitoring data from Lewisham 3 for 2010 is presented in Table A1.

Table A1: Calculated "annualising" ratio for 2010 Lewisham 3 PM_{10} monitoring

Site	Site Type	Annual Mean	Period Mean	Ratio
NM3	Urban background	21.8	22.3	0.97
CR3	Suburban	20.2	20.9	0.97
			Average	0.97