



London Borough of Lewisham
Air Quality Annual Status Report for 2016
Date of publication: April 2017



This report provides a detailed overview of air quality in London Borough of Lewisham during 2016. It has been produced to meet the requirements of the London Local Air Quality Management statutory process¹.

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¹ LLAQM Policy and Technical Guidance 2016 (LLAQM.TG(16)). <https://www.london.gov.uk/what-we-do/environment/pollution-and-air-quality/working-boroughs>

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Abbreviations

AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AQO	Air Quality Objective
BEB	Buildings Emission Benchmark
CAB	Cleaner Air Borough
CAZ	Central Activity Zone
EV	Electric Vehicle
GLA	Greater London Authority
LAEI	London Atmospheric Emissions Inventory
LAQM	Local Air Quality Management
LLAQM	London Local Air Quality Management
NRMM	Non-Road Mobile Machinery
PM ₁₀	Particulate matter less than 10 micron in diameter
PM _{2.5}	Particulate matter less than 2.5 micron in diameter
TEB	Transport Emissions Benchmark
TfL	Transport for London

Table A. Summary of National Air Quality Standards and Objectives

Pollutant	Objective (UK)	Averaging Period	Date¹
Nitrogen dioxide - NO ₂	200 µg m ⁻³ not to be exceeded more than 18 times a year	1-hour mean	31 Dec 2005
	40 µg m ⁻³	Annual mean	31 Dec 2005
Particles - PM ₁₀	50 µg m ⁻³ not to be exceeded more than 35 times a year	24-hour mean	31 Dec 2004
	40 µg m ⁻³	Annual mean	31 Dec 2004
Particles - PM _{2.5}	25 µg m ⁻³	Annual mean	2020
	Target of 15% reduction in concentration at urban background locations	3 year mean	Between 2010 and 2020
Sulphur Dioxide (SO ₂)	266 µg m ⁻³ not to be exceeded more than 35 times a year	15 minute mean	31 Dec 2005
	350 µg m ⁻³ not to be exceeded more than 24 times a year	1 hour mean	31 Dec 2004
	125 µg m ⁻³ not to be exceeded more than 3 times a year	24 hour mean	31 Dec 2004

Note: ¹by which to be achieved by and maintained thereafter

1. Air Quality Monitoring

1.1 Locations

The London Borough (LB) of Lewisham currently monitors air quality at 3 continuous monitoring stations. The newest monitoring station (LW4) was commissioned in 2012. A fourth monitoring station (LW3) was operational until the end of 2015 when it was decommissioned. The details of the monitoring stations in 2016 (including the decommissioned monitor LW3) are given below in Table B.

Monitoring of NO₂ with diffusion tubes was carried out at 32 sites in 2016, including one triplicate site co-located with the LW2 continuous monitor at New Cross. In January 2017, two new diffusion tube locations were added to the network at Kender Primary School and Deptford Park Primary School, details of which will be provided in next year's ASR for the 2017 monitoring year. Details of all diffusion tube sites in 2016 are given in Table C.

Table B. Details of Automatic Monitoring Sites for 2016

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA?	Distance from monitoring site to relevant exposure (m)	Distance to kerb of nearest road (N/A if not applicable) (m)	Inlet height (m)	Pollutants monitored	Monitoring technique
LW1*	Lewisham1 (Catford)	537675	173689	Urban background	Y-AQMA3	n/a	3m	3.0m	NO ₂ SO ₂ O ₃	Chemiluminescence UV fluorescence UV photometer
LW2*	Lewisham 2 (New Cross)	536241	176932	Roadside	Y-AQMA3	0	6m	2.5m	NO ₂ SO ₂ PM ₁₀ PM _{2.5}	Chemiluminescence UV fluorescence TEOM-FDMS TEOM-FDMS
LW3*	Lewisham 3 (Mercury Way)	535806	177612	Industrial	Y-AQMA4	n/a	2m	2.0m	PM ₁₀	BAM
LW4	Lewisham 4 (Loampit Vale)	537912	175838	Roadside	Y-AQMA3	0	7m	2.5m	NO ₂ PM ₁₀	Chemiluminescence TEOM

*Notes: LW1 - SO₂ and O₃ monitoring end Oct 2016. LW2 – O₃ monitoring end Oct 2016. LW3 was decommissioned at end of 2015

Table C. Details of Non-Automatic Monitoring Sites for 2016

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA?	Distance from monitoring site to relevant exposure (m)	Distance to kerb of nearest road (N/A if not applicable) (m)	Inlet height (m)	Pollutants monitored	Tube co-located with an automatic monitor? (Y/N)
L1	Chubworthy St	536109	177580	Roadside	Y	5	2	2.5	NO ₂	N
L2	Bronze St	537540	177439	Urban Background	Y	0	6	2.5	NO ₂	N
L3	Grove St	536561	178471	Urban Background	Y	n/a	2	2.5	NO ₂	N
L4	Plough Way	536534	178926	Urban Background	Y	n/a	2	2.5	NO ₂	N
L5	Lee High Rd	539678	175050	Roadside	Y	0	5	2.5	NO ₂	N
L6	Le May Ave	540615	172337	Urban Background	N	0	5	2.5	NO ₂	N
L7	Bell Green	536556	171810	Roadside	Y	0	3	2.5	NO ₂	N
L8	Stondon Park	536229	174032	Roadside	Y	0	5	2.5	NO ₂	N
L9	Ladywell Rd	537500	174925	Roadside	Y	0	3	2.5	NO ₂	N
L10	Whitburn Rd	538062	175085	Roadside	Y	1	1	2.5	NO ₂	N
L11	Sparta St	538007	176517	Roadside	Y	3	3	2.5	NO ₂	N
L12	Montague Avenue, Hilly Fields	537132	175353	Urban Background	Y	n/a	60	2.5	NO ₂	N
L13	Mayow Rd	535804	171567	Urban Background	N	0	5	2.5	NO ₂	N
L14	Boyne Rd	538482	175792	Urban Background	Y	3	1	2.5	NO ₂	N
L15	Lewisham Rd	538237	176101	Roadside	Y	0	10	2.5	NO ₂	N
L16	Loampit Vale	537740	175930	Roadside	Y	0	1.5	2.5	NO ₂	N

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA?	Distance from monitoring site to relevant exposure (m)	Distance to kerb of nearest road (N/A if not applicable) (m)	Inlet height (m)	Pollutants monitored	Tube co-located with an automatic monitor? (Y/N)
L17	New Cross Monitoring Station (Triplicate)	536246	176934	Roadside	Y	0	6	2.5	NO ₂	Y
L18		536246	176934	Roadside	Y	0	6	2.5	NO ₂	Y
L19		536246	176934	Roadside	Y	0	6	2.5	NO ₂	Y
L20	Hatcham Park Rd	535746	176969	Roadside	Y	1	4	2.5	NO ₂	N
L21	Brockley Rise	536133	173341	Roadside	Y	0	3	2.5	NO ₂	N
L22	Ringstead Rd	538060	173816	Urban Background	Y	3	0.5	2.5	NO ₂	N
L23	Catford Hill	537178	173365	Roadside	Y	6	0.5	2.5	NO ₂	N
L24	Hazelbank Rd	538930	172713	Urban Background	N	4	2	2.5	NO ₂	N
L25	Stanstead Rd	535530	173198	Urban Background	Y	0	10	2.5	NO ₂	N
L26	Shardloes Rd	536527	175935	Roadside	Y	3	0.5	2.5	NO ₂	N
L27*	Montpelier Vale	539604	176090	Roadside	Y	2	0.5	2.5	NO ₂	N
L28	Baring Rd	540051	173769	Roadside	Y	5	0.5	2.5	NO ₂	N
L29	Holy Cross, Sangley Rd	538165	173406	Roadside	Y	0	5	2.5	NO ₂	N
L30	Christchurch, Perry Vale	535535	172679	Roadside	N	1	5	2.5	NO ₂	N
L31	St Mary Magdalen's RC, Howson Rd	536399	175150	Urban Background	Y	2	2	2.5	NO ₂	N
L32	Grinling Gibbons, Clyde St	536944	177665	Urban Background	Y	0	2	2.5	NO ₂	N
L33	St Mary's CE, Lewisham High St	537979	174792	Roadside	Y	0	2	2.5	NO ₂	N
L34	Sydenham, Dartmouth Rd	535071	172346	Urban Background	N	0	5	2.5	NO ₂	N

*Diffusion tube relocated from Lawn Terrace to Montpelier Vale in 2015

1.2 Comparison of Monitoring Results with AQOs

The results of nitrogen dioxide monitoring carried out by LB of Lewisham are presented in Table D. Data from the 3 automatic monitoring stations have been fully ratified. Raw data from diffusion tube monitoring sites have been adjusted for bias using a local bias adjustment factor, based on the triplicate tubes co-located with LW2 continuous monitoring station.

Data capture for the LW1 and LW2 continuous monitoring stations was greater than 75%; however, data capture for LW4 was lower than 75% and so the annual mean NO₂ concentration for this site was annualised. All diffusion tube locations reported data capture rates greater than 75%, except L6, for which the annual mean concentration has also been annualised. Details of the annualisation calculations are presented in Appendix A.

Table D. Annual Mean NO₂ Ratified and Bias-adjusted Monitoring Results (µg m⁻³)

Site ID	Site type	Valid data capture for monitoring period % ^a	Valid data capture 2016 % ^b	Annual Mean Concentration (µg m ⁻³)						
				2010 (Bias Adjustment Factor = 1.03)	2011 (Bias Adjustment Factor = 0.94)	2012 (Bias Adjustment Factor = 1.01)	2013 (Bias Adjustment Factor = 1.00)	2014 (Bias Adjustment Factor = 0.97)	2015 (Bias Adjustment Factor = 1.02)	2016 (Bias Adjustment Factor = 1.03)
LW1 (CM)	Urban Background (Automatic)	85	85	55	51	50	48	54	43	44
LW2 (CM)	Roadside (Automatic)	98	98	59	51	50	51	42	47	46
LW4 (CM)	Roadside (Automatic)	68	68	-	-	64 ^c	57	56 ^c	51	58 ^c
L1	Roadside	100	100	-	36.4	37.8	38.6	38.0	33.1	34.3
L2	Urban Background	92	92	-	29.7	31.0	29.6	29.2	28.1	30.3
L3	Urban Background	100	100	-	34.7	37.9	37.1	35.9	34.3	36.3
L4	Urban Background	100	100	-	37.2	34.9	37.3	34.9	34.4	33.6

Site ID	Site type	Valid data capture for monitoring period % ^a	Valid data capture 2016 % ^b	Annual Mean Concentration ($\mu\text{g m}^{-3}$)						
				2010 (Bias Adjustment Factor = 1.03)	2011 (Bias Adjustment Factor = 0.94)	2012 (Bias Adjustment Factor = 1.01)	2013 (Bias Adjustment Factor = 1.00)	2014 (Bias Adjustment Factor = 0.97)	2015 (Bias Adjustment Factor = 1.02)	2016 (Bias Adjustment Factor = 1.03)
L5	Roadside	100	100	-	36.6	39.0	43.3	37.7	33.4	36.1
L6	Urban Background	42	42	-	35.9	37.5	38.3	36.0	35.2	34.8 ^c
L7	Roadside	100	100	-	48.3	53.4	53.8	55.4	48.3	49.2
L8	Roadside	100	100	-	44.5	44.8	48.6	42.2	42.2	42.4
L9	Roadside	100	100	-	39.9	40.6	40.5	40.8	37.5	39.6
L10	Roadside	100	100	-	43.2	44.0	46.2	40.3	39.4	41.5
L11	Roadside	100	100	-	44.9	40.0	47.4	38.6	36.1	37.4
L12	Urban Background	83	83	-	30.7	33.7	34.9	30.5	26.9	27.9
L13	Urban Background	100	100	34.9	29.7	32.3	33.3	28.3	27.3	27.3
L14	Urban Background	100	100	33.3	33.5	34.5	34.7	31.2	29.9	31.1
L15	Roadside	92	92	47.8	43.6	44.3	47.6	46.5	46.6	45.2
L16	Roadside	100	100	<u>61.3</u>	48.7	55.0	58.6	52.5	48.7	50.5
L17	Roadside (Triplicate)	100	100							
L18				<u>75.2</u>	<u>75.4</u>	59.2	53.7	50.0	49.8	51.1
L19										
L20	Roadside	92	92	54.1	42.4	45.4	44.7	43.6	43.2	42.8
L21	Roadside	100	100	<u>60.9</u>	52.6	54.0	54.0	54.6	50.3	51.5

Site ID	Site type	Valid data capture for monitoring period % ^a	Valid data capture 2016 % ^b	Annual Mean Concentration ($\mu\text{g m}^{-3}$)						
				2010 (Bias Adjustment Factor = 1.03)	2011 (Bias Adjustment Factor = 0.94)	2012 (Bias Adjustment Factor = 1.01)	2013 (Bias Adjustment Factor = 1.00)	2014 (Bias Adjustment Factor = 0.97)	2015 (Bias Adjustment Factor = 1.02)	2016 (Bias Adjustment Factor = 1.03)
L22	Urban Background	100	100	33.1	35.4	34.3	33.5	32.2	30.3	31.3
L23	Roadside	100	100	56.1	54.0	56.5	59.9	55.1	51.8	49.9
L24	Urban Background	100	100	33.4	29.0	35.1	36.3	35.6	32.4	34.6
L25	Urban Background	100	100	30.8	28.3	28.3	27.5	25.5	23.3	25.0
L26	Roadside	100	100	53.8	49.7	48.0	51.9	53.7	47.2	46.4
L27a*	Roadside	-	-	38.5	34.6	37.3	37.2	36.2	-	-
L27b*		92	92	-	-	-	-	-	57.1	55.3
L28	Roadside	100	100	<u>60.7</u>	51.9	59.3	<u>61.9</u>	51.0	58.6	58.1
L29	Roadside	92	92	35.1	29.9	32.1	33.3	33.0	28.6	30.3
L30	Roadside	83	83	33.0	27.8	31.1	34.3	31.3	32.3	31.3
L31	Urban Background	100	100	30.7	23.2	25.4	29.6	25.7	23.5	26.2
L32	Urban Background	92	92	35.3	29.7	29.6	31.6	30.6	28.6	33.0
L33	Roadside	100	100	54.7	47.1	51.4	51.0	44.6	41.8	44.6
L34	Urban Background	92	92	32.7	27.6	30.4	34.0	31.8	27.0	27.6

Notes: Exceedance of the NO₂ annual mean AQO of 40 $\mu\text{g m}^{-3}$ are shown in **bold**.

NO₂ annual means in excess of 60 $\mu\text{g m}^{-3}$, indicating a potential exceedance of the NO₂ hourly mean AQS objective are shown in bold and underlined for diffusion tube measurements.

^a data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

^b 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 have been "annualised" in accordance with LLAQM Technical Guidance, as valid data capture is less than 75%

*Site L27 was relocated from Lawn Terrace (denoted by L27a) to Montpelier Vale (denoted by L27b) in 2015

The 2016 annual mean NO₂ concentrations at the three continuous monitoring stations all exceeded the annual mean NO₂ AQO of 40 µgm⁻³. The highest concentration was 58 µgm⁻³ at LW4. Between 2010 and 2016 there has generally been a downward trend in annual mean NO₂ concentrations at the automatic monitoring stations, although the NO₂ concentration increased in 2016 at LW4 (Loampit Vale). At LW1 annual mean NO₂ concentrations have decreased from 55 µgm⁻³ in 2010 to 44 µgm⁻³ in 2016. A similar trend is seen in the data from LW2 where annual mean NO₂ concentrations have decreased from 59 µgm⁻³ in 2010 to 46 µgm⁻³ in 2016.

The annual mean NO₂ AQO of 40 µgm⁻³ was exceeded at 13 diffusion tube monitoring locations in 2016. The highest concentration was measured at site L28 (58.1 µgm⁻³), which also recorded the highest concentration in 2015. In terms of temporal trends there is considerable variability between the diffusion tube monitoring locations over the 2010 to 2016 period, although there was a decrease in concentrations between 2010 and 2011. The triplicate tubes co-located with the LW2 continuous monitor at New Cross (L17, L18, L19) showed evidence of generally decreasing NO₂ concentrations from 2010 to 2016, although most of the reduction occurred between 2010 and 2013. There is slight evidence of a decrease in NO₂ concentrations at sites L20 and L33. The L27 site recorded one of the highest NO₂ concentrations in 2015 and 2016, in contrast to the lower concentrations of previous years, but this is due to the site having been re-located to a worst-case location in early 2015.

Over the last 7 years annual mean NO₂ concentration measured at all urban background sites have remained below the annual mean NO₂ AQO of 40 µgm⁻³ whereas roadside locations have exceeded the AQO. On average, annual mean NO₂ concentrations at roadside and urban background monitoring locations decreased between 2010 and 2015. Annual mean NO₂ concentrations tended to fluctuate somewhat from year to year without significantly increasing or decreasing, particularly between 2011 and 2013. Between 2013 and 2015 annual mean NO₂ concentrations at these locations tended to decrease. Concentrations in 2016 exhibit a slight increase relative to 2015 concentrations.

Trends in annual mean nitrogen dioxide concentrations between 2010 and 2016 are presented graphically in Appendix A.

Table E. NO₂ Automatic Monitor Results: Comparison with 1-hour Mean Objective

Site ID	Valid data capture for monitoring period % ^a	Valid data capture 2016 % ^b	Number of Hourly Means > 200 µgm ⁻³						
			2010	2011	2012	2013	2014	2015	2016
LW1	85	85	1	0	2	3	0	0	0
LW2	98	98	0	0	0	0	0	7	0
LW4	68	68	-	-	16 (221) ^c	26	5 (180) ^c	0	9 (184) ^c

Notes: Exceedance of the NO₂ short term AQO of 200 µgm⁻³ over the permitted 18 days per year are shown in **bold**.

Where the period of valid data is less than 90% of a full year, the 99.8th percentile is shown in brackets after the number of exceedances.

^a data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

^b 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 have been “annualised” in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

In 2016, no exceedances of the hourly mean NO₂ AQO value (200 µgm⁻³) were recorded at the LW1 and LW2 automatic monitoring locations. At LW4, 9 exceedances of the hourly mean NO₂ AQO value were recorded during the year, which is within the 18 permitted hours for compliance with the hourly NO₂ AQO. For LW4 in 2016, the 99.8th percentile of hourly means has been presented in parentheses due to low data capture. As this value is less than 200 µgm⁻³, it is unlikely that the 1-hour NO₂ objective would have been exceeded. In the last 7 years, at all of the automatic monitoring sites, there has been considerable variability in the numbers of hours of exceedances from one year to the next with no clear upward or downward trend.

At LW1, the urban background site, there have been three or fewer exceedances of the hourly NO₂ AQO value in any one year since 2010, with no exceedances recorded in 2011, 2014, 2015 and 2016. At LW2, during the 2010 to 2016 period, hourly averaged NO₂ concentrations greater than 200 µgm⁻³ have only been recorded in 2015 (7 hours). The results for LW1 and LW2 are within the permitted 18 hours of exceedance per year in all years and so the 1-hour mean objective has been achieved in all years in the 2010 to 2016 period.

At LW4, in 2013 there were 26 hours exceeding the hourly NO₂ AQO value and so the 1-hour mean objective was not achieved. In 2012, the first year of monitoring at this location, there were 16 hours exceeding the hourly NO₂ AQO value; due to data capture being below 75% in 2013 the 99.8th percentile of hourly NO₂ concentrations was calculated for comparing against the 1-hour mean objective. The 99.8th percentile result was 221 µgm⁻³, indicating that the 1-hour mean objective was likely to have been exceeded. These are the only recorded exceedances of the 1-hour mean NO₂ objective since 2010. The results for 2014 to 2016 indicate that the 1-hour mean NO₂ objective was achieved in these years at LW4.

Table F. Annual Mean PM₁₀ Automatic Monitoring Results (µg m⁻³)

Site ID	Valid data capture for monitoring period % ^a	Valid data capture 2016 % ^b	Annual Mean Concentration (µg m ⁻³)						
			2010	2011	2012	2013	2014	2015	2016
LW2	93	93	25	26	26	23	23 ^c	23	24
LW3	-	-	23	23	22	24	24	22	-
LW4	72	72	-	-	24	28	25 ^c	17	26 ^c

Notes: Exceedance of the PM₁₀ annual mean AQO of 40 µg m⁻³ are shown in **bold**.

^a data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

^b 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 have been “annualised” in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

The results of PM₁₀ monitoring carried out by LB of Lewisham are presented in Table F (annual mean results) and Table G (24-hour mean results).

Monitoring of PM₁₀ at LW3 ceased at the end of 2015. The annual mean PM₁₀ concentrations recorded at the two remaining automatic monitoring stations that measure particulate matter were well below the AQO of 40 µg m⁻³ in 2016, and for all years since 2010 (including LW3) prior to 2016. The highest annual mean PM₁₀ concentration in 2016 was 26 µg m⁻³ at LW4, which marks a large increase from 2015 (annual mean 17 µg m⁻³). It should be noted that the result for LW4 has been annualised due to data capture of less than 75% being achieved. Details of the annualisation calculation can be found in Appendix A. The highest recorded annual mean PM₁₀ concentration during the 2010 to 2016 period was 28 µg m⁻³ at LW4 in 2013.

Over the last 7 years annual mean PM₁₀ concentrations at LW2 and LW3 automatic monitoring stations have been quite stable with only small changes from one year to the next. At LW4, where monitoring commenced in 2012, there have been larger variations in concentrations from year to year, with a notable decrease in 2015 compared to 2014 and 2016.

Table G. PM₁₀ Automatic Monitor Results: Comparison with 24-Hour Mean Objective

Site ID	Valid data capture for monitoring period % ^a	Valid data capture 2016 % ^b	Number of Daily Means > 50 µgm ⁻³						
			2010	2011	2012	2013	2014	2015	2016
LW2	93	93	6	19	15 (47) ^c	15	14 (38) ^c	8	9
LW3	-	-	4 (39) ^c	22	20	13	27	16	-
LW4	72	72	-	-	3 (36) ^c	19	13 (41) ^c	1	18 (47) ^c

Notes: Exceedance of the PM₁₀ short term AQO of 50 µgm⁻³ over the permitted 35 days per year or where the 90.4th percentile exceeds 50 µgm⁻³ are shown in **bold**.

Where the period of valid data is less than 90% of a full year, the 90.4th percentile of daily means is shown in brackets after the number of exceedances.

^a data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

^b 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 have been “annualised” in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

Both LW2 and LW4 achieved the 24-hour mean PM₁₀ AQO in 2016. In all years since 2010 all of the PM₁₀ monitoring locations have achieved the 24-hour mean PM₁₀ AQO. The highest numbers of exceedances of the daily mean PM₁₀ objective value (50 µgm⁻³) in 2016 was 18 days at LW4. This is well within the 35 permitted exceedances per year for compliance with the AQO. However, due to data capture at LW4 in 2016 being less than 75%, the 90.4th percentile of daily mean PM₁₀ concentrations was calculated (47 µgm⁻³). This value, which is less than 50 µgm⁻³, indicates the AQO was likely to have been achieved.

Table H. Annual Mean PM_{2.5} Automatic Monitoring Results

Site ID	Valid data capture for monitoring period % ^a	Valid data capture 2016 % ^b	Annual Mean Concentration (µgm ⁻³)						
			2010	2011	2012	2013	2014	2015	2016
LW2	93	93	-	-	-	17.6	16.5	15.5	18.9

Notes: Exceedance of the PM_{2.5} annual mean AQO of 25 µgm⁻³ are shown in **bold**.

^a data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

^b 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 have been “annualised” in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

The results of PM₁₀ monitoring carried out by LB of Lewisham are presented in Table H.

Since 2013, the LB of Lewisham has monitored PM_{2.5} concentrations at site LW2. In 2016, the annual mean PM_{2.5} concentration measured was 18.9 µg m⁻³, which is below the annual mean PM_{2.5} target value of 25 µg m⁻³; however, this is an increase from the value of 15.5 µg m⁻³ recorded in 2015, and is the highest annual mean PM_{2.5} concentration at this site since monitoring began in 2013. The annual mean PM_{2.5} concentration has been below the annual mean PM_{2.5} target value in all years since monitoring commenced.

Table I. SO₂ Automatic Monitor* Results for 2016: Comparison with Objectives

Site ID	Valid data capture for monitoring period % ^a	Valid data capture 2016 % ^b	Number of: ^c		
			15-minute means > 266 µgm ⁻³	1-hour mean > 350 µgm ⁻³	24-hour mean > 125 µgm ⁻³
LW1	73	73	0	0	0
LW2	78	78	0	0	0

Exceedances of the SO₂ AQOs are shown in **bold** (15-min mean = 35 allowed a year, 1-hour mean = 24 allowed a year, 24-hour mean = 3 allowed / year)

^a data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

^b 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 have been “annualised” as in Box 3.2 of TG(09) (<http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38>), if valid data capture is less than 75%

*Automatic monitoring of SO₂ ended October 2016.

Automatic monitoring of SO₂ is carried out at 2 locations in the LB of Lewisham. The results of the monitoring during 2016 are summarised in Table I. There were no exceedances of any of the AQOs or standards relating to SO₂ during 2016. It should be noted that automatic monitoring of SO₂ ended October 2016 at LW1 and LW2.

2. Actions to Improve Air Quality

LB Lewisham contains eight Air Quality Focus Areas (AQFAs), which are areas with some of the poorest air quality in London, and are the focus of targeted actions to improve air quality. The AQFAs in LB Lewisham are:

125. Brockley Cross
126. Catford Road and Catford Gyratory
127. Deptford Town Centre
128. Forest Hill and Perry Vale Junction
129. St Mildreds Road (A205) from Hither Green Lane to Burnt Ash Hill (A2212)
130. Honor Oak Park junction Brockley Road
131. Lewisham Loampit Vale and Lewisham High Street
132. New Cross Gate and New Cross
133. Brockley Road (B218) between Adelaide Avenue and Wickham Road

A map of the focus areas can be found in Appendix A, Figure A.6.

A summary of specific commitments to tackling poor air quality in LB Lewisham can be found in Table J below.

Table J. Commitment to Cleaner Air Borough Criteria

Theme	Criteria	Achieved (Y/N)	Evidence
1. Political leadership	1.a Pledged to become a Cleaner Air for London Borough (at cabinet level) by taking significant action to improve local air quality and signing up to specific delivery targets.	Y	No evidence required
	1.b Provided an up-to-date Air Quality Action Plan (AQAP), fully incorporated into LIP funding and core strategies.	Y	The AQAP for 2016-2021 has replaced the 2008 AQAP, and is available online at: https://www.lewisham.gov.uk/myserVICES/environment/air-pollution/Documents/LewishamAirQualityActionPlanDec2016.pdf The AQAP has been incorporated into LIP process/public health
2. Taking action	2.a Taken decisive action to address air pollution, especially where human exposure and vulnerability (e.g. schools, older people, hospitals etc.) is highest.	Y	LB Lewisham has produced a Joint Strategic Needs Assessment (JSNA), with Public Health and Environmental Protection collaboration. Encouraging schools to join TfL STARS accredited travel planning programme, of which 80% of total schools within the Borough are now accredited.
	2.b Developed plans for business engagement (including optimising deliveries and supply chain), retrofitting public buildings using the RE:FIT framework, integrating no engine idling awareness raising into the work of civil enforcement officers, (etc).	Y	Business engagement projects are due to be carried out as part of the requirements under the JSNA. Engine idling abatement awareness campaigns have been implemented at a number of schools, and anti-idling signs being installed outside school entrances.
	2.c Integrated transport and air quality, such as: improving traffic flows on borough roads to reduce stop/start conditions, improving the public realm for walking and cycling, and introducing traffic reduction measures.	Y	Evelyn Street Corridor major regeneration project, including major changes to road network to improve traffic conditions and congestion. Lewisham Gateway road layout improvements were completed in late 2016. Completion of North Lewisham Links project, which improved walking and cycling routes across Deptford and New Cross, including the Quietway 1 cycling project. 20 mph speed limits were introduced on all Borough highways as of September 2016. Implementing road closures around schools at peak hours, pilot scheme already in place at Kelvin Grove Primary School, 3 more schools to join in 2017. Electric vehicle charging points (EVCP) roll-outs at major site

				developments and on residential streets, with continued expansion of the network ongoing. Provision of new green spaces – Charlottenberg Park and Surrey Canal Linear Park both opened in 2016.
	2.d	Made additional resources available to improve local air quality, including by pooling its collective resources (s106 funding, LIPs, parking revenue, etc).	Y	The Borough has won funding for schemes to improve air quality from the Mayor's Air Quality Fund (MAQF), with funding matched as part of the LIP programme.
3. Leading by example	3.a	Invested sufficient resources to complement and drive action from others.	Y	One full time post equivalent with an increase to one and half post during the MAQF R2 2016-2019.
	3.b	Maintained an appropriate monitoring network so that air quality impacts within the borough can be properly understood	Y	Two new diffusion tube locations adjacent to the Kender and Deptford Park Primary Schools were added at the start of 2017, bringing the current total to 34 diffusion tube locations and 3 automatic monitors across the Borough.
	3.c	Reduced emissions from council operations, including from buildings, vehicles and all activities.	Y	Reductions in Borough's own vehicle fleet emissions through selection of lower emission vehicles.
	3.d	Adopted a procurement code which reduces emissions from its own and its suppliers activities, including from buildings and vehicles operated by and on their behalf (e.g. rubbish trucks).	Y	48 trucks to be upgraded to Euro VI standard by April 2017.
4. Using the planning system	4.a	Fully implemented the Mayor's policies relating to air quality neutral, combined heat and power and biomass.	Y	All approved planning applications must meet the Mayor's requirements relating to Air Quality Neutral assessments.
	4.b	Collected s106 from new developments to ensure air quality neutral development, <i>where possible</i> .	N/A	Where AQ Neutral has not been met, compliance has been achieved by changes to schemes, so s106 funds have not been required.
	4.c	Provided additional enforcement of construction and demolition guidance, with regular checks on medium and high risk building sites.	Y	Sites are visited periodically based on risk. An increase in visits will occur from the end of 2016 as MAQF money becomes available to resource. Zonal Construction Logistic Framework for Evelyn Street Corridor in Air Quality Focus Area (AQFA) to improve communication and transport planning and strategy.
5. Integrating air quality into the public health system	5	Included air quality in the borough's Health and Wellbeing Strategy and/or the Joint Strategic Needs Assessment.	Y	Air quality is currently being considered and drafted for consideration and inclusion into the HWB Strategy.

<p>6. Informing the public</p>	<p>6.a</p>	<p>Raised awareness about air quality locally.</p>	<p>Y</p>	<p>A public art project was developed to raise air quality issues along the Brockley Corridor (www.tompearman.co.uk/brockley-corridor-arts), completed in February 2017.</p> <p>The “Healthy Lung” campaign at the ‘OnBlackheath’ festival gave over 500 people a free lung test.</p> <p>150 subscribers to the airTEXT service, encouraging local health stakeholders to share relevant resources including airTEXT to patient groups.</p>
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2.1 Air Quality Action Plan Progress

Table K provides a summary of LB Lewisham’s progress against the Air Quality Action Plan, showing progress made this year. New actions which commenced in 2016 are shown at the bottom of the table, or if related to a previous action, are indicated with an “A” appended to the action ID.

Table K. Delivery of Air Quality Action Plan Measures

A comprehensive list of actions targeting air quality issues throughout the borough, taken from the LB Lewisham AQAP, is given in Table K below. Although there are no specific measures targeting the reduction of PM_{2.5} currently, it is expected that the combination of actions and that are currently in force or coming into force will help to bring about a reduction of PM_{2.5}. However, discussions are being held with Public Health to devise policies that will specifically target the reduction of PM_{2.5}.

ID	Action Category	Action	Progress presented in 2015 ASR	Progress during 2016 and since last ASR	Further information
1	Emissions from developments and buildings	Ensuring emissions from construction are minimised	<p style="text-align: center;">IN PROGRESS</p> <ul style="list-style-type: none"> • Already in operation. • Benefits potentially significant but unquantifiable. • Impact of reduction will be ongoing. 	<p>Number of applications for the discharge of the Construction Logistics Plan and the Construction Environmental Management Plan approved:</p> <p><i>10 x applications for Approval of construction Logistics plan & 47 x applications for approval of construction management/Environmental plans</i></p>	Local Policy and Local List requirement.

ID	Action Category	Action	Progress presented in 2015 ASR	Progress during 2016 and since last ASR	Further information
2	Emissions from developments and buildings	Ensuring enforcement of Non Road Mobile Machinery (NRMM) air quality policies	<p>IN PROGRESS</p> <ul style="list-style-type: none"> • Condition already introduced. • Benefits potentially significant but unquantifiable. • Impact of reduction will be ongoing. 	<p>Number of NRMM conditions recorded, and all sites checked on the NRMM database once construction begins: See Table L.1 for more details</p>	<p>Only used for Major sites.</p>
3	Emissions from developments and buildings	Enforcing alternative clean and efficient energy supplies (to replace Enforcing CHP and biomass air quality policies)	<p>IN PROGRESS</p> <ul style="list-style-type: none"> • In operation however continuing to consider best practice and alternative heat and power supplies. • Benefits potentially significant but unquantifiable. • Abatement conditions review via planning. 	<p>Planning to review abatement conditions in 2017 and report in 2017 ASR.</p>	<p>Only used in limited circumstances, where the tests for conditions are met.</p>
4	Emissions from developments and buildings	Enforcing Air Quality Neutral policies	<p>IN PROGRESS</p> <ul style="list-style-type: none"> • Already in operation. • Impact of reduction will be ongoing. • Benefits potentially significant but unquantifiable 	<p>Air Quality Neutral Assessments reviewed: See Table L.1 for more details</p>	<p>Considered on a site by site basis as new development is proposed. (<u>Core Strategy Policy 12</u>)</p>

ID	Action Category	Action	Progress presented in 2015 ASR	Progress during 2016 and since last ASR	Further information
5	Emissions from developments and buildings	Ensuring adequate, appropriate, and well located green space and infrastructure is included in new developments	<p style="text-align: center;">IN PROGRESS</p> <ul style="list-style-type: none"> • Considered as part of the design of schemes that come forward. • Benefits potentially significant but unquantifiable 	<p>To review a list of appropriate tree/planting species which aid Air Quality in 2017.</p> <p>Greenspace provision: See Table L.1 for details</p>	<p>Urban greening strategies. Considered on a site by site basis as new development is proposed. (<u>Core Strategy Policy 12</u>)</p>
6	Emissions from developments and buildings	Ensuring that Smoke Control Zones are appropriately identified and fully promoted and enforced	<p style="text-align: center;">COMPLETED</p> <ul style="list-style-type: none"> • Whole of borough is already a Smoke Control Area. (<u>Smoke Control Order 2010</u>) • There was specific publicity promotion at the time of the order in 2010 <p style="text-align: center;">IN PROGRESS</p> <ul style="list-style-type: none"> • Respond and report on complaints and action taken. • Further publicity, will review in April 2017 	<p>Council Wide Publicity Campaign to be organised for late Spring/early Summer 2017 where information on Smoke Control Areas and requirements will be promoted.</p>	

ID	Action Category	Action	Progress presented in 2015 ASR	Progress during 2016 and since last ASR	Further information
7	Emissions from developments and buildings	Promoting and delivering energy efficiency retrofitting projects in workplaces and homes, including through using the GLA RE:NEW and RE:FIT programmes, where appropriate, to replace old boilers /top-up loft insulation in combination with other energy conservation measures.	<p>IN PROGRESS</p> <ul style="list-style-type: none"> The biannual Home Energy Conservation Act report is due in 2017 which will provide progress on measures. <p><i>FOLLOW UP: HECA report due to be submitted by the end of March 2017 but it now won't be providing this kind of information for monitoring progress.</i></p>	<p>Individual projects will establish their own monitoring in line with the requirements of funders and the availability of data. Ongoing delivery of the Warm Homes, Healthy People scheme which is currently scheduled to run until August 2017. Publicising the Mayor of London's 'Better Boilers' scheme to residents. Seeking to access the new round of ECO funding when it is released in April 2017.</p>	<p>Lewisham Council Corporate Sustainability Use of Resources Statement is provided on a periodic basis and could be used to provide input to monitoring.</p>
7A	Emissions from developments and buildings	Introduce a requirement for a minimum EPC rating for privately rented sector HMOs covered by both the mandatory and additional licensing schemes	<p>IN PROGRESS</p> <ul style="list-style-type: none"> Timescale for implementation is April 2017, with monitoring of action considered after this date. 	<p>Ongoing.</p>	
7B	Emissions from developments and buildings	Introduce a requirement for any works covered by the Disabled Facilities Grant or discretionary housing improvement grants to meet level D EPC rating in privately owned accommodation	<p>IN PROGRESS</p> <ul style="list-style-type: none"> Timescale for implementation is December 2016, with monitoring of action considered after this date. 	<p>Still considering monitoring of action. Which will be updated on the 2017 ASR submission.</p>	

ID	Action Category	Action	Progress presented in 2015 ASR	Progress during 2016 and since last ASR	Further information
8	Public health and awareness raising	Ensure that Directors of Public Health (DsPHs) have been fully briefed on the scale of the problem in the local authority area, what is being done, and what is needed.	<p style="text-align: center;">COMPLETED</p> <ul style="list-style-type: none"> • Already provided as part of the consultation for the draft Air Quality Action Plan 	This ASR in draft form was reviewed at Lewisham’s Health Protection Committee in March 2017 where actions were considered and approved.	
8A	Public health and awareness raising	The Council’s political leadership will champion the issue of air quality inside and outside of the borough	ADDED Action since AQAP 2016-2021 approved	Dedicated Communication officer currently reviewing all publicity and campaigns in relation to Air Quality for 2017.	
9	Public health and awareness raising	Public Health Teams should be supporting engagement with local stakeholders (businesses, schools, community groups and healthcare providers). They should be asked for their support via the DsPH when projects are being developed.	<p style="text-align: center;">IN PROGRESS</p> <ul style="list-style-type: none"> • Different initiatives being considered and developed over period of Air Quality Action Plan. 	In 2017 will be reviewing development of Healthy Weight Strategy and synergy with sustainable transport and potential for air quality improvements with reduction in car use being considered.	
10	Public health and awareness raising	Director of Public Health to have responsibility for ensuring their Joint Strategic Needs Assessment (JSNA) has up to date information on air quality impacts on the population	<p style="text-align: center;">ONGOING</p> <ul style="list-style-type: none"> • Already have a JSNA. • Health Protection Committee will review at time of sign off 	Public Health element of the JSNA is currently being refreshed. Public Health intelligence team is awaiting updated data from GLA. JSNA refresh is planned to be completed in May 2017.	

ID	Action Category	Action	Progress presented in 2015 ASR	Progress during 2016 and since last ASR	Further information
11	Public health and awareness raising	Strengthening co-ordination with Public Health by ensuring that at least one Consultant-grade public health specialist within the borough has air quality responsibilities outlined in their job profile	<p>IN PROGRESS</p> <ul style="list-style-type: none"> • This is part of the health protection remit of one of the Consultants in Public Health. • Health and Wellbeing Strategy delivery plan will be reviewed for 2018 – 2020 to incorporate air quality. 	The Health and Wellbeing Strategy for 2018-2020 being reviewed in 2017. Air Quality is being considered and drafted for consideration and inclusion in strategy.	
12	Public health and awareness raising	Director of Public Health to sign off Statutory Annual Status Reports and all new Air Quality Action Plans		This ASR in draft form was reviewed at Lewisham's Health Protection Committee in March 2017 where actions were considered and approved.	
13	Public health and awareness raising	Ensure Head of Transport fully briefed along with all Directors responsible for delivering air quality actions. Briefing to disseminate amongst transport team.	The AQAP was approved by Mayor and Cabinet Committee in December 2016	Briefing through Steering Group that meets every 6 months. This ASR in draft form was reviewed by the DMT where actions were considered and approved. Also regular working groups set up with Transport teams to consider potential for further Air Quality initiatives.	

ID	Action Category	Action	Progress presented in 2015 ASR	Progress during 2016 and since last ASR	Further information
14	Public health and awareness raising	Engagement with businesses	<p style="text-align: center;">IN PROGRESS</p> <ul style="list-style-type: none"> • Different initiatives being considered and developed over period of Action Plan. Cost will be dependent on project initiated. • ADDED: Delivery and Servicing Plans (DSP) delivered through Planning Process 	<p>Number of applications for the discharge of the DSP condition approved: 10 applications.</p> <p>Condition wording:</p> <p>(a) The development shall not be occupied until a Delivery and Servicing Plan has been submitted to and approved in writing by the local planning authority.</p> <p>(b) The plan shall demonstrate the expected number and time of delivery and servicing trips to the site, with the aim of reducing the impact of servicing activity.</p> <p>(c) The approved Delivery and Servicing Plan shall be implemented in full accordance with the approved details from the first occupation of the development and shall be adhered to in perpetuity.</p> <p>Reason: In order to ensure satisfactory vehicle management and to comply with Policy 14 Sustainable movement and transport of the Core Strategy (June 2011).</p>	

ID	Action Category	Action	Progress presented in 2015 ASR	Progress during 2016 and since last ASR	Further information
15	Public health and awareness raising	Promotion of availability of airTEXT	<p>IN PROGRESS</p> <ul style="list-style-type: none"> Reviewing opportunities for communication by April 2017. 	<ul style="list-style-type: none"> Raise awareness of air quality at strategic groups such as the Lewisham CYP Asthma Network Influence local health economy stakeholders (including Lewisham CCG & UHL) to encourage clinicians to sign up to resources such as the airTEXT which they can share with relevant patient groups Ensure frontline healthcare workers are aware of, and respond to air quality alerts, by promoting key public health messages to their vulnerable patients/service users Total of 150 subscribers to airTEXT within Lewisham in 2016. Last half of 2016, 21 new subscribers included. Over 500 people had a lung test during the Healthy Lung campaign at the OnBlackheath festival in 2016, part funded by the Council. The airTEXT service was actively promoted during the two day festival. 101 e-mail contacts to respondents of AQAP consultation, requesting details on airTEXT 	

ID	Action Category	Action	Progress presented in 2015 ASR	Progress during 2016 and since last ASR	Further information
16	Public health and awareness raising	Encourage schools to join the TfL STARS accredited travel planning programme by providing information on the benefits to schools and supporting the implementation of such a programme	<p>IN PROGRESS</p> <ul style="list-style-type: none"> Already in operation with 78.5% of schools in the borough having an accreditation 	80% of schools in the borough having an accreditation in 15/16. Work ongoing.	
17	Public health and awareness raising	Air quality at schools	<p>IN PROGRESS</p> <ul style="list-style-type: none"> Review opportunities for School engagement by April 2017. 	Offer an air quality/ sustainability play for year 6 pupils at 28 schools. Riot Act arranged for 14 schools for 2017. http://theriotact.co.uk/ This is a school engagement project using theatre to promote sustainable travel to school and raise awareness of the effects of poor air quality.	
17 A	Public health and awareness raising	Air quality at schools	ADDED Action since AQAP 2016-2021 approved.	Offer Cycle training to schools and appoint Lollipop personnel to provide proficiency and safety for cycling and walking to school.	New Action will report back progress in 2017 ASR.
18	Delivery servicing and freight	Update local authority Procurement policies to include a requirement for suppliers with large fleets to have attained silver Fleet Operator Recognition Scheme (FORS) accreditation	<p>IN PROGRESS</p> <ul style="list-style-type: none"> Already part of policy. Review of PPQ and ITT by April 2017 for implementation. 	Procurement reviewing in April 2017	

ID	Action Category	Action	Progress presented in 2015 ASR	Progress during 2016 and since last ASR	Further information
19	Delivery servicing and freight	Update Procurement policies to ensure sustainable logistical measures are implemented (and include requirements for preferentially scoring bidders based on their sustainability criteria)	<p>IN PROGRESS</p> <ul style="list-style-type: none"> Asset Management Strategy 2015-2020 produced. Procurement to review by April 2017 	Procurement reviewing in April 2017 to ensure sustainable and localized air quality issues are considered. The Asset Management Strategy will have benefits as to the energy uses, particularly in relation to low NOx boilers etc.	
20	Delivery servicing and freight	Re-organisation of freight to support consolidation (or micro-consolidation) of deliveries, by setting up or participating in new logistics facilities, and/or requiring that council suppliers participate in these	<p>IN PROGRESS</p> <ul style="list-style-type: none"> Review construction freight consolidation by April 2017 for MAQF area. Review sites available for Council suppliers by April 2017 	MAQF2 project at Evelyn Street Corridor, evaluated possibility of freight consolidation to support construction sites in the area but not seen as viable. Although Lewisham is not part of the Low Emission Logistics project we are being kept up to date on the review of a delivery consolidation area in the South/South East of London.	
21	Delivery servicing and freight	Virtual Loading Bays and priority loading for ultra-low emission delivery vehicles	<p>IN PROGRESS</p> <p>To be considered at next Parking review in 2017</p>	This has been reviewed but is not currently seen as being appropriate given the logistics of delivery and servicing areas within the borough.	
22	Borough fleet actions	Join the Fleet Operator Recognition Scheme (FORS) for the borough's own fleet and obtain Gold accreditation	<p>IN PROGRESS</p> <ul style="list-style-type: none"> Applied for FORS membership. Reviewing accreditation April 2017 	Ongoing.	

ID	Action Category	Action	Progress presented in 2015 ASR	Progress during 2016 and since last ASR	Further information
23	Borough fleet actions	Increasing the number of hydrogen, electric, hybrid, bio-methane and cleaner vehicles in the boroughs' fleet	<p>IN PROGRESS</p> <ul style="list-style-type: none"> Working with LoCITY to increase the availability and uptake of low emission commercial vehicles. 	All lease cars are hybrid/electric. Continuing to work with LoCity to consider further uptake of vehicles.	
24	Borough fleet actions	Accelerate uptake of new Euro VI vehicles in borough fleet	<p>IN PROGRESS</p> <ul style="list-style-type: none"> 49 trucks to be changed to Euro VI by April 2017. 	REVISED: 48 trucks will be upgraded to Euro VI during 17/18. Procurement in process.	
25	Borough fleet actions	Smarter Driver Training, or equivalent, for drivers of vehicles in Borough Own Fleet i.e. through training of fuel efficient driving and providing regular re-training of staff	<p>ONGOING</p> <ul style="list-style-type: none"> Already provided through 'Safe City Driving' course. 	Driver training is on-going in order to comply with driver CPC regulations.	
26	Localised solutions	Improvement and Introduction of green spaces in new developments through the Planning process by conditions and S106 obligations.	<p>ONGOING</p> <ul style="list-style-type: none"> Already in operation. Impact of reduction will be ongoing. Greenspace provision is proportionate to scale of development and will be monitored through the approval & discharge of conditions & obligations. 	Charlottenberg Park in New Cross and Surrey Canal Linear Park in Deptford have both opened in 2016	Urban greening strategies. Considered on a site by site basis as new development is proposed. (Core Strategy Policy 12)
27	Localised solutions	Low Emission Neighbourhoods (LENs)	Not being considered for 2016-2021 AQAP unless resources available.	N/A	To be reviewed for future Round 3 MAQF bidding 2019-2022.

ID	Action Category	Action	Progress presented in 2015 ASR	Progress during 2016 and since last ASR	Further information
28	Cleaner transport	Discouraging unnecessary idling by vehicles near schools	<p>IN PROGRESS</p> <ul style="list-style-type: none"> Install 'anti idling signs' at schools and review any possible campaign in April 2017 	Advice and guidance about anti-idling and impact on poor air quality provided to school head teachers in January 2017 for inclusion in their bulletins. Follow up planned for April 2017. The anti-idling participation piloted at one school and will be rolled out at priority schools to be identified before Summer 2017 in time for campaign.	
28 A	Cleaner transport	Carry out a Council wide anti-idling campaign discouraging unnecessary idling by idling vehicles	ADDED after recommendation from Mayor and Cabinet Committee Dec 2016	Dedicated Communication officer currently reviewing all publicity and campaigns in relation to Air Quality for 2017.	
29	Cleaner transport	Speed control measures e.g. lowering the legal speed limit to 20mph in built up residential areas	<p>IN PROGRESS</p> <ul style="list-style-type: none"> All Lewisham Roads to introduce 20 mph zone September 2016 	All Lewisham Roads included in 20 mph zones from September 2016. <i>See 'AQFA integration with LIP' for details on streetscape schemes to assist with 20 mph.</i>	
30	Cleaner transport	Expanding car clubs and Increasing the proportion of electric, hydrogen and ultra-low emission vehicles in Car Clubs	<p>IN PROGRESS</p> <ul style="list-style-type: none"> Work with car clubs towards compliment of electric vehicles. Review April 2017. 	<p>Car club bays provided via Planning in 2016: <i>See Table L.1 for more details</i></p> <p>A strategy for the provision of Electric Vehicle Charging Points is currently being formulated. This action will be considered within the strategy. We are increasing the number of electric vehicle charge points across the borough which would also facilitate the increase of car club activity, such as Blue City.</p>	Introduced as part of Travel Plans for new development

ID	Action Category	Action	Progress presented in 2015 ASR	Progress during 2016 and since last ASR	Further information
31	Cleaner transport	Very Important Pedestrian Days (e.g. no vehicles on certain roads on a Sunday) and similar initiatives	<p>IN PROGRESS</p> <ul style="list-style-type: none"> Review opportunities through community groups by April 2017. 	Investigating road closures around school times at appropriate school locations. Three pilot schools Tidemill, Lucas Vale and All Saints for 2017. Already happens at Kelvin Grove Primary School.	
32	Cleaner transport	Free or discounted parking charges at existing parking meters for zero emission cars	<p>IN PROGRESS</p> <ul style="list-style-type: none"> Only achieved through the cashless meter's model. To be considered at next Parking review in 2017 	This will be considered within the Parking review which is planned for later in the 2017.	
33	Cleaner transport	Free or discounted residential parking permits for zero emission cars	<p>ONGOING</p> <ul style="list-style-type: none"> Discounted residential parking permits already available for zero emission vehicles. 	<p>During the year (2015/2016) a total of 9,428 resident and business parking permits were issued, an increase of 4.5% on last year. Permits issued to lower emission vehicles and sold at a concessionary rate, represent 1.5% of the total which is a slight increase of 0.8% from that of last year.</p> <p>Further information see http://www.lewisham.gov.uk/myservices/parking/Pages/default.aspx</p>	The annual parking report provides a percentage against total permits issued.
34	Cleaner transport	Surcharge on diesel vehicles below Euro 6 standards for Resident and Controlled Parking Zone permits	<p>IN PROGRESS</p> <ul style="list-style-type: none"> To be considered at next Parking review in 2017 	Given the potential for the London Mayor to expand the ULEZ to include all areas of Lewisham, north of the South Circular (where the majority of resident and controlled parking zones are based), it is not considered appropriate to increase any financial burden further.	

ID	Action Category	Action	Progress presented in 2015 ASR	Progress during 2016 and since last ASR	Further information
35	Cleaner transport	Installation of residential electric charge points	<p>IN PROGRESS</p> <ul style="list-style-type: none"> For all planning major site developments 20% active charging points and 20% passive installed. Through Source London, Blue Point maintain EVCPs and expanding network from 10 sites. By April 2017 to include at least an additional 14 locations. 	<p>A strategy for the provision of Electric Vehicle Charging Points is currently being formulated. This action will be considered further after the production of this strategy. It will consider residential, car club and rapid charging provision.</p> <p>14 Additional residential on street sites have been approved for installation. Date of installation now planned for Summer 2017.</p>	Local Policy and Local List requirement.
35 A	Cleaner transport	Carry out a campaign to promote the use of electric charge points within the borough.	ADDED after recommendation from Mayor and cabinet Committee Dec 2016	A campaign will be coordinated after the production of the strategy and after the EVCPs expansion. It is likely that this will take place during the Summer 2017. See above.	
36	Cleaner transport	Installation of rapid chargers to help encourage the take-up of electric taxis, cabs and commercial vehicles (in partnership with TfL and/or OLEV)	<p>IN PROGRESS</p> <ul style="list-style-type: none"> Already in communication with TfL in potential for establishing points. 	Working with TfL on where spaces can be allocated within Lewisham. This will be considered within the strategy being drawn up. This is also being considered within the Council's strategy for EVCPs provision.	

ID	Action Category	Action	Progress presented in 2015 ASR	Progress during 2016 and since last ASR	Further information
37	Cleaner transport	Reprioritisation of road space; reducing parking at some destinations and/or restricting parking on congested high streets and A-roads to improve bus journey times, cycling experience, and reduce emissions caused by congested traffic	<p>IN PROGRESS</p> <ul style="list-style-type: none"> The proposed Controlled Parking Zone (CPZ) Programme will be approved annually at Executive Director level in line with its Parking policy 	<p>See link for the Annual Parking report: http://www.lewisham.gov.uk/myservices/parking/Pages/default.aspx</p> <p>The 2016 report will soon be available to review on-line.</p>	Lewisham's Annual Parking Report will provide progress and delivery of CPZs
38	Cleaner transport	Provision of infrastructure to support walking and cycling	<p>IN PROGRESS</p> <ul style="list-style-type: none"> The North Lewisham links project which is improving walking and cycling routes across Deptford and New Cross, which also includes the Quietways project (cycle routes through quieter side streets and parks, aimed at encouraging less-confident cyclists) 	<p>Quietway 1 completed and further work on linking the existing cycle route – Waterlink Way – to the Q1 is ongoing.</p> <p>Details are to be reported to TfL through a LiP yearly report.</p>	

ID	Action Category	Action	Progress presented in 2015 ASR	Progress during 2016 and since last ASR	Further information
39	Cleaner transport	Develop a 'stand-alone' Cycling Strategy for the borough.	<p>ADDED Action during consultation of AQAP</p> <p>February 2017, commissioned Project centre to draft up Lewisham's first standalone cycle strategy.</p> <p>First draft expected Autumn 2017 with final adopted document Spring 2018</p>	<p>Being developed 2016/17 and to be published in 2018.</p> <p>Internal reporting and LiP yearly reporting.</p>	<p>Responsibility with Transport department.</p> <p>Expected to deliver large benefit to emissions / concentration benefit</p>
40	Cleaner transport	Increasing cycle parking	<p>ADDED Action during consultation of AQAP</p> <p>Working with Southwark Council on a joint tender to deliver residential cycle parking in the Borough. Contractor to be appointed by July 17</p>	<p>Ongoing initiative.</p> <p>Already being provided but will be increased year on year. Internal reporting and LiP yearly reporting on increase in parking.</p>	<p>Responsibility with Transport department.</p> <p>Expected to deliver large benefit to emissions / concentration benefit</p>
41	GLA AQ FOCUS AREA 127 & parts of 132 Cleaner Transport	Development of a Zonal Construction Logistic Framework for the Evelyn Street Corridor	<p>IN PROGRESS</p> <ul style="list-style-type: none"> • Quarterly review with GLA on progress. Air Quality benefits to be quantified during progress. • £305,250 over 3 years 2016-2019. funded through MAQF R2 and part match funded by Lewisham Transport 	<p>Scoping report completed and drafting of the Zonal CLP. Contact made with all construction sites and relevant stakeholders to provide effective communication and transport planning/strategy. Monitoring location and provision being considered. 2016 Progress Report currently being reviewed by Stephen Inch from TfL.</p>	

ID	Action Category	Action	Progress presented in 2015 ASR	Progress during 2016 and since last ASR	Further information
42	GLA AQ FOCUS AREA 125, 130 & 133 Public health and awareness raising	Provision of public art along the Brockley Corridor to raise awareness on air quality	IN PROGRESS <ul style="list-style-type: none"> • Consultation with Local Assembly and local community, to be installed by the end of 2016 • £17,000 provided as part of the MAQF R1 fund 	Installation of public art being progressed and to be completed February 2017. Publicity to be produced and update to Local Assembly in March 2017.	
43	GLA AQ FOCUS AREA 130 & 133 Cleaner Transport	Road Layout changes along the Crofton Park area of the Brockley corridor	IN PROGRESS <ul style="list-style-type: none"> • Works planned for 2017/18 • Originally part of the MAQF R1 funding, but now through Local Transport Fund 	Ongoing. Reporting back to Local Assembly in March 2017.	
44	GLA AQ FOCUS AREA 125 to 133 Cleaner Transport	LiP projects	NEW Action	See Table K.1	

Table K.1 below provides a summary of projects funded by the Local Implementation Plan (LIP) within Air Quality Focus Areas, some of which are referred to in the AQAP in Table K.

Table K.1. Summary of LIP funded projects

	Location	Project 1	Project 2	Project 3	Project 4	Project 5	Project 6
1	Deptford Church Street	Quietway 1 (Implemented)	Cycle Superhighway 4 (in design) *	Quietway 2 (in design)	S106 New Bus Services	New EVCP Sites	New 20mph limits
2	New Cross	Bakerloo Line Extension (Consultation)	A2 Corridor Study – TfL *	Old Kent Road OA work with LB Southwark & GLA	S106 New Bus Services	New EVCP Sites	New 20mph limits
3	Brockley Cross	Rail Strategy inc Overground proposals	B218 Corridor Study	New EVCP Sites	New 20mph limits		
4	Honor Oak Park	New speed camera at Stondon Park Junction(implemented) *	B218 Corridor Study	New EVCP Sites	New 20mph limits		
5	Loampit Vale & L.High St	Bakerloo Line Extension (Consultation)	Quietway 2 (in design)	New EVCP Sites	New 20mph limits		
6	Catford Road	Major regeneration programme, including A205 alignment (feasibility)	Quietway 2 (in design)	New EVCP Sites	New 20mph limits		
7	A205 Brownhill Road	A205 Brownhill Road Corridor improvements * (in design)	New EVCP Sites	New 20mph limits			
8	Forest Hill	A205 junction with Devonshire Rd minor junction improvement (implemented)	Dartmouth Road streetscape improvements (incl. 20mph measures) *	New EVCP Sites	New 20mph limits	Air Quality Assessment commissioned with recommendations. Report in late Spring 2017	

3. Planning Update and Other New Sources of Emissions

Table L gives a summary of planning requirements relating to air quality in LB Lewisham in 2016, with Table L.1 presenting additional information on developments in 2016 relating to the number of car club spaces to be provided, AQ neutral assessment and provision of public space.

Table L. Planning requirements met by planning applications in LB Lewisham in 2016

Condition	Number
Number of planning applications reviewed for air quality impacts	19
Number of planning applications required to monitor for construction dust	47
Number of CHPs/Biomass boilers refused on air quality grounds	0
Number of CHPs/Biomass boilers subject to GLA emissions limits and/or other restrictions to reduce emissions	0
Number of AQ Neutral building and/or transport assessments undertaken	17
Number of AQ Neutral building and/or transport assessments not meeting the benchmark and so required to include additional mitigation	0
Number of planning applications with S106 agreements including other requirements to improve air quality	3
Number of planning applications with CIL payments that include a contribution to improve air quality	0
* NRMM: Greater London (excluding Central Activity Zone and Canary Wharf) Number of conditions related to NRMM included. Number of developments registered and compliant. Developments have been registered at www.nrmm.london and where marked as such all NRMM used on-site is compliant with Stage IIIA of the Directive and/or exemptions to the policy.	3 conditions included. 15 registered and 15 compliant and 3 non-compliant and being chased.

* To form a comprehensive list of both registered and non-registered current and upcoming construction sites, Lewisham have joined the MAQF scheme managed by Merton. The officer visits the site to check that plant meets the required standard and provides advice regarding the NRMM website and compliance requirements.

Table L.1. Auxiliary Information on Developments in LB Lewisham in 2016

Site	No of Car Club spaces	Free membership	Was there an ES?	Public Space	AQ Neutral Assessment
Oxestalls (The Wharves)	Up to 4	1 year	Yes	Circa 5,000 sq. m	Yes. Received 2015 Decided 2016
Arklow Trading Estate	1	3 years	No	Circa 2,000 sq. m	Yes. Received 2015 Decided 2016
Forster House	No	2 years	No	No	N/A
Astra House	No	1 year	No	No	Yes. Received 2015 Decided 2016
87-89 Loampit Vale	No	2 years	No	Public route through site	Yes, Received & Decided 2016
65-71 Lewisham High St	No	15 years	No	No	N/A
Bond House	No	2 years	No	Yes, continuation of Batavia development	Yes. Received 2015 Decided 2016
Riverdale House, Molesworth Street	No	2 years	No	£25,000 for park improvements	N/A
Malpas Road	No	No	No	£30,000 for park improvements	N/A
Marine Wharf East	1	2 years	Yes	Circa 3,000 sq. m	Yes. Received 2015 Decided 2016
43-49 Pomeroy St	1	3 years	No	No	Yes. Received 2015 Decided 2016
29 Pomeroy St	1	2 years	No	No	Yes. Received 2015 Decided 2015
Stephen James BMW, Lee Terrace	No	3 years	No	No	Yes, Received & Decided 2016
Sir Francis Drake Primary school					Comments made
Axion House, 1 Silver Road					Pre Application advice provided.
Catford Green					Yes, Received & Decided 2016
Deptford Green School, Amersham Vale					Yes, Received & Decided 2016
347 Lewisham High Street					Comments made. Awaiting decision
Land North of Reginald Road / Frankham Street					Comments made. Awaiting decision
Creekside Village East					Comments made. Awaiting decision
Lewisham Gateway Phase 1B					Comments made. Awaiting decision

3.1 New or significantly changed industrial or other sources

In 2016, the LB of Lewisham has not identified any new or significantly changed road traffic or industrial sources of emissions. However, there are a number of developments identified as emission sources from construction works in the 2016 Annual Status Report that are still ongoing. The most significant of these include:

- Lewisham Gateway – a large development scheme aiming to better connect Lewisham town centre with nearby residential communities, the DLR and mainline rail stations. The scheme involves a major realignment of the A20/A21 roundabout – completed in late 2016 – and the construction of a number of new homes.
- Plough Way (a.k.a. Surrey Wharves), which incorporates four separate development sites. Marine Wharf West includes 532 new homes plus space for shops and businesses. Cannon Wharf includes 679 new homes (including two tall buildings of 20 and 23 storeys), a purpose-built business centre which is expected to create at least 80 new jobs on the site (25% more than previously), a children's nursery, and landscaping along the former route of the Surrey Canal. 7-17 Yeoman Street, where planning has been granted for 33 new homes.
- Convoys Wharf – The largest development site within the borough consisting of up to 3,500 new homes, retail space, public open areas and transport improvements in the area received approval, and by the end of 2015 was at the early stage with some demolition. The redevelopment of the site has the potential to provide public access to a major part of the borough's riverfront for the first time in centuries.

Appendix A Details of Monitoring Site QA/QC

A.1 Automatic Monitoring Sites

Calibrations of continuous gas monitors are carried out with certified calibration gases for each analyser. Routine calibrations are undertaken manually every 2 weeks by the Local Authority Officer for LW1 and LW4. At LW2, a nightly auto-calibration is invoked.

The calibration data are sent to ERG-King's College London, who are responsible for data management, data validation and ratification. Site audits are carried out annually, and includes UKAS accredited on-site gas cylinder certification and on-site testing of sampling system efficiency.

PM₁₀ Monitoring Adjustment

TEOM PM₁₀ measurements are corrected using the Volatile Correction Model (VCM) by ERG-King's College London.

A.2 Diffusion Tube Quality Assurance / Quality Control

Diffusion tubes for NO₂ in LB of Lewisham are provided by Gradko International Ltd, using a preparation method of 50% Triethanolamine (TEA) in acetone.

Gradko participate in the AIR PT scheme. AIR is an independent analytical proficiency-testing (PT) scheme, operated by LGC Standards and supported by the Health and Safety Laboratory (HSL). AIR PT is a new scheme, started in April 2014, which combines two long running PT schemes: LGC Standards STACKS PT scheme and HSL WASP PT scheme.

AIR NO₂ PT forms an integral part of the UK NO₂ Network's QA/QC, and is a useful tool in assessing the analytical performance of those laboratories supplying diffusion tubes to Local Authorities for use in the context of Local Air Quality Management (LAQM). Defra and the Devolved Administrations advise that diffusion tubes used for LAQM should be obtained from laboratories that have demonstrated satisfactory performance in the AIR PT scheme.

The percentage of results submitted by Gradko International Ltd that were subsequently determined to be satisfactory was 100% for all tests in AIR-PT Rounds AR012-AR016 (January 2016-October 2016).

National Bias Adjustment Factor

The national bias adjustment factor for 2016 is available from the Defra website². The results of multiple co-location studies are collated, and the average bias adjustment factor is taken for studies using the 50% TEA/acetone preparation method, analysed by Gradko. The national bias adjustment factor for 2016 is 1.03, based on 16 studies, details are shown in Figure A.1 below.

Figure A.1. National bias adjustment factor

National Diffusion Tube Bias Adjustment Factor Spreadsheet							Spreadsheet Version Number: 03/17			
Follow the steps below in the correct order to show the results of relevant co-location studies Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet This spreadsheet will be updated every few months; the factors may therefore be subject to change. This should not discourage their immediate use.							This spreadsheet will be updated at the end of June 2017 LAQM Helpdesk 2016/17			
The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.							Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.			
Step 1:		Step 2:		Step 3:		Step 4:				
Select the Laboratory that Analyses Your Tubes from the Drop-Down List		Select a Preparation Method from the Drop-Down List		Select a Year from the Drop-Down List		Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor ³ shown in blue at the foot of the final column.				
If a laboratory is not shown, we have no data for this laboratory.		If a preparation method is not shown, we have no data for this method at this laboratory.		If a year is not shown, we have no data.		If you have your own co-location study then see footnote ³ . If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQM-helpdesk@uk.bureauveritas.com or 0800 0327953				
Analysed By ¹	Method	Year	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m ³)	Automatic Monitor Mean Conc. (Cm) (µg/m ³)	Bias (B)	Tube Precision	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	50% TEA in acetone	2016	R	LB Newham	12	36	44	-18.0%	G	1.22
Gradko	50% TEA in acetone	2016	UB	London Borough of Camden	12	42	43	-1.3%	G	1.01
Gradko	50% TEA in acetone	2016	R	London Borough of Richmond upon Thames	12	36	36	2.4%	G	0.98
Gradko	50% TEA in acetone	2016	B	London Borough of Richmond upon Thames	11	24	26	-7.6%	G	1.08
Gradko	50% TEA in acetone	2016	R	Royal Borough of Greenwich	11	51	45	13.3%	G	0.88
Gradko	50% TEA in acetone	2016	SU	Royal Borough of Greenwich	12	20	21	-5.9%	G	1.06
Gradko	50% TEA in acetone	2016	R	Royal Borough of Greenwich	11	45	45	0.9%	G	0.99
Gradko	50% TEA in acetone	2016	R	Royal Borough of Greenwich	12	69	61	13.1%	G	0.88
Gradko	50% TEA in acetone	2016	R	Royal Borough of Greenwich	9	40	41	-2.6%	G	1.03
Gradko	50% TEA in acetone	2016	R	Royal Borough of Greenwich	12	41	38	8.4%	P	0.92
Gradko	50% TEA in acetone	2016	R	West Berkshire Council	12	38	42	-8.9%	G	1.10
Gradko	50% TEA in acetone	2016	R	East Hampshire District Council	12	21	23	-6.2%	G	1.07
Gradko	50% TEA in acetone	2016	B	City of London	12	38	42	-8.6%	G	1.09
Gradko	50% TEA in acetone	2016	R	City of London	12	83	90	-8.7%	G	1.10
Gradko	50% TEA in acetone	2016	UI	Middlesbrough	12	17	18	-7.7%	G	1.08
Gradko	50% TEA in acetone	2016	KS	Marylebone Road Intercomparison	11	80	78	2.3%	G	0.98
Gradko	50% TEA in acetone	2016		Overall Factor³ (16 studies)					Use	1.03

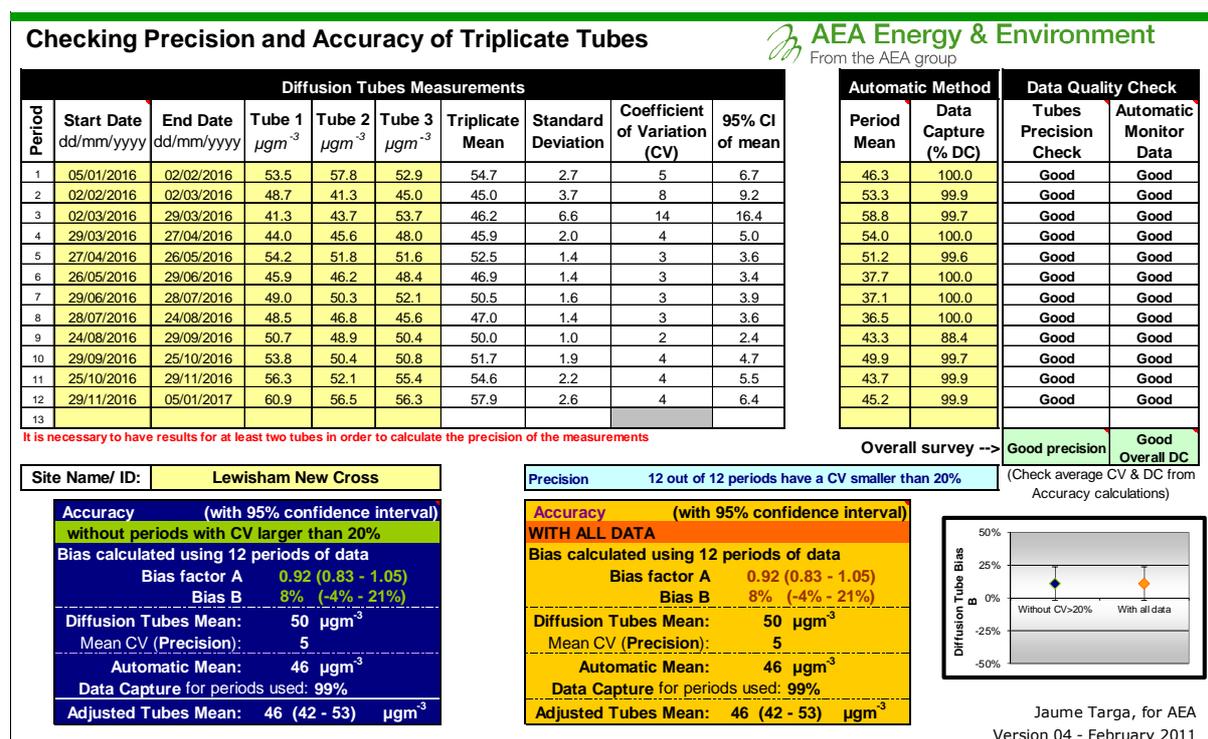
Factor from Local Co-Location Studies (if available)

LB Lewisham has one co-location site at New Cross (LW2), where triplicate diffusion tubes are co-located adjacent to the inlet of the continuous monitor, so that diffusion tube concentrations can be adjusted for bias by comparing to the more accurate continuous monitoring dataset. A spreadsheet tool for calculating the locally-derived bias adjustment factor for triplicate tubes co-located at a continuous monitor is available from the Defra website³. Figure A.2 below shows the calculation.

² Diffusion tube bias adjustment spreadsheet March 2017, available at: <https://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>

³ Local bias adjustment factor tool available at: <https://laqm.defra.gov.uk/bias-adjustment-factors/local-bias.html>

Figure A.2. Local bias adjustment calculation for New Cross (LW2)



Discussion of Choice of Factor to Use

Based on the fact that the national bias adjustment factor is slightly greater than the local bias adjustment factor, to be more conservative when reporting annual mean NO₂ concentrations, it has been decided to use the national bias adjustment factor. This is also the factor that has been used predominantly in the last seven years – Table M details the bias adjustment factors for this year and previous years in LB Lewisham, including the choice of factor used for each year.

Table M. Bias adjustment factors for LB Lewisham between 2010 – 2016

Year	Local factor	National factor	Factor used
2010	0.69	<u>1.03</u>	National
2011	0.59	<u>0.94</u>	National
2012	0.78	<u>1.01</u>	National
2013	0.93	<u>1.00</u>	National
2014	0.82	<u>0.97</u>	National
2015	<u>1.02</u>	0.95	Local
2016	0.92	<u>1.03</u>	National

A.3 Adjustments to the Ratified Monitoring Data

Short-term to Long-term Data Adjustment

In 2016, there were 2 monitoring locations that recorded a data capture rate lower than 75% for one or more pollutants, these were continuous monitor LW4 (Loampit Vale) for both NO₂ and PM₁₀, and diffusion tube L6 (Le May Avenue) for NO₂. For the NO₂ annualisation calculations for LW4 and L6, three urban background continuous monitoring stations were used, with an average data capture of 92%, to calculate annual mean to period mean ratios. For the PM₁₀ annualisation calculation at LW4, two urban background sites with average data capture of 96% were used. Details of the calculation for the short-term to long-term adjustment of annual mean NO₂ and PM₁₀ concentrations for LW4 are shown in Table N and Table O, and those for adjustment of NO₂ for L6 are shown in Table P.

Table N. Short-Term to Long-Term Monitoring Data Adjustment for Annual Mean NO₂ Concentration at Loampit Vale (LW4)

Site	Site Type	Annual Mean (µg/m ³)	Period Mean (µg/m ³)	Ratio
Wandsworth Town Hall (WA2)	Urban Background	43.1	44.3	0.97
Wandsworth Putney (WA9)	Urban Background	44.9	46.2	0.97
Southwark Elephant & Castle (SK6)	Urban Background	38.3	39.6	0.97
Average Ratio				0.97

Table O. Short-Term to Long-Term Monitoring Data Adjustment for Annual Mean PM₁₀ Concentration at Loampit Vale (LW4)

Site	Site Type	Annual Mean (µg/m ³)	Period Mean (µg/m ³)	Ratio
Bexley Belvedere West (BQ8)	Urban Background	15.1	15.9	0.95
City of London Sir John Cass School (CT3)	Urban Background	24.4	25.2	0.97
Average Ratio				0.96

Table P. Short-Term to Long-Term Monitoring Data Adjustment for Annual Mean NO₂ Concentration at Le May Avenue Diffusion Tube Location (L6)

Site	Site Type	Annual Mean (µg/m ³)	Period Mean (µg/m ³)	Ratio
Wandsworth Town Hall (WA2)	Urban Background	43.1	46.7	0.92
Wandsworth Putney (WA9)	Urban Background	44.8	52.1	0.86
Southwark Elephant & Castle (SK6)	Urban Background	38.5	44.3	0.87
Average Ratio				0.88

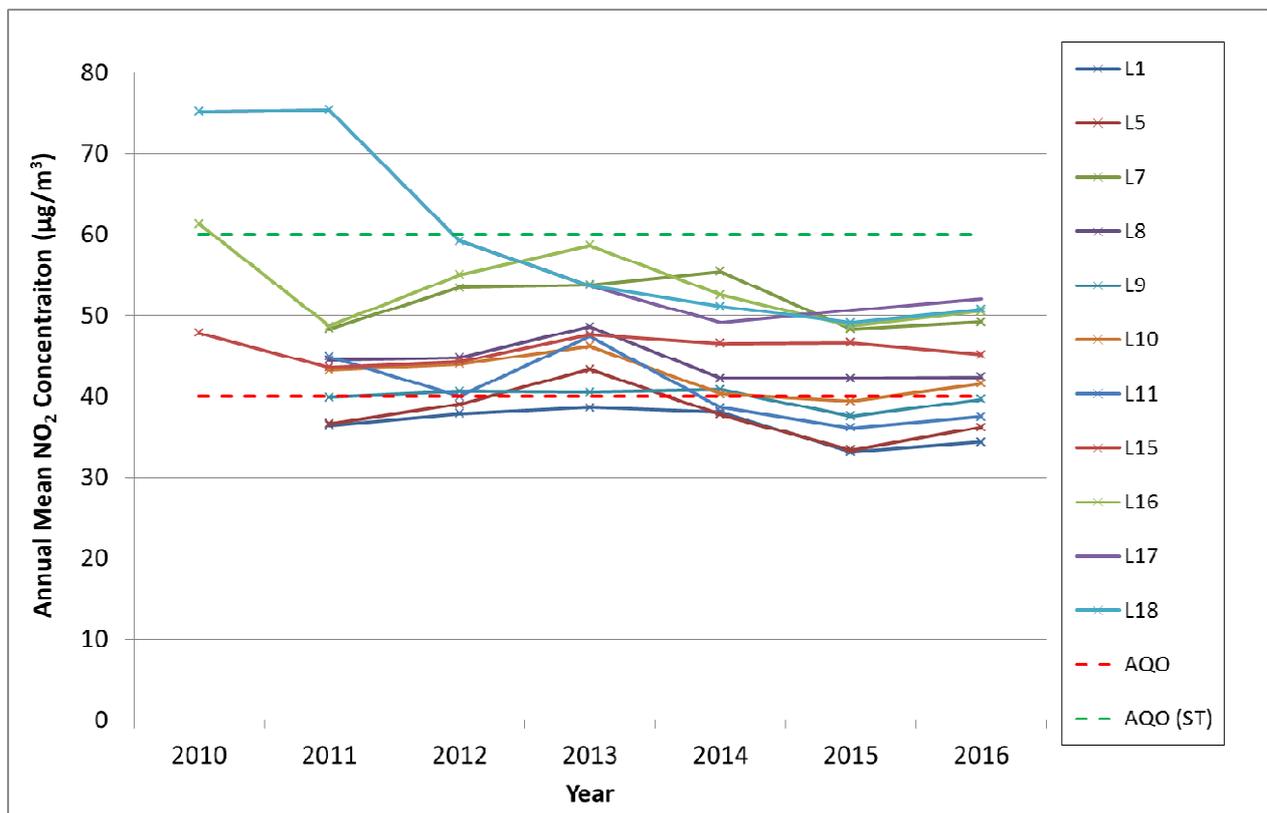
Distance Adjustment

Although a small number of diffusion tubes are not located at relevant exposure, such as on kerbside lampposts as opposed to building facades, in order to maintain consistency for analysing diffusion tube trends over several years, NO₂ concentrations at these locations have not been distance corrected.

A.4 Annual Mean NO₂ concentration Trend Analysis

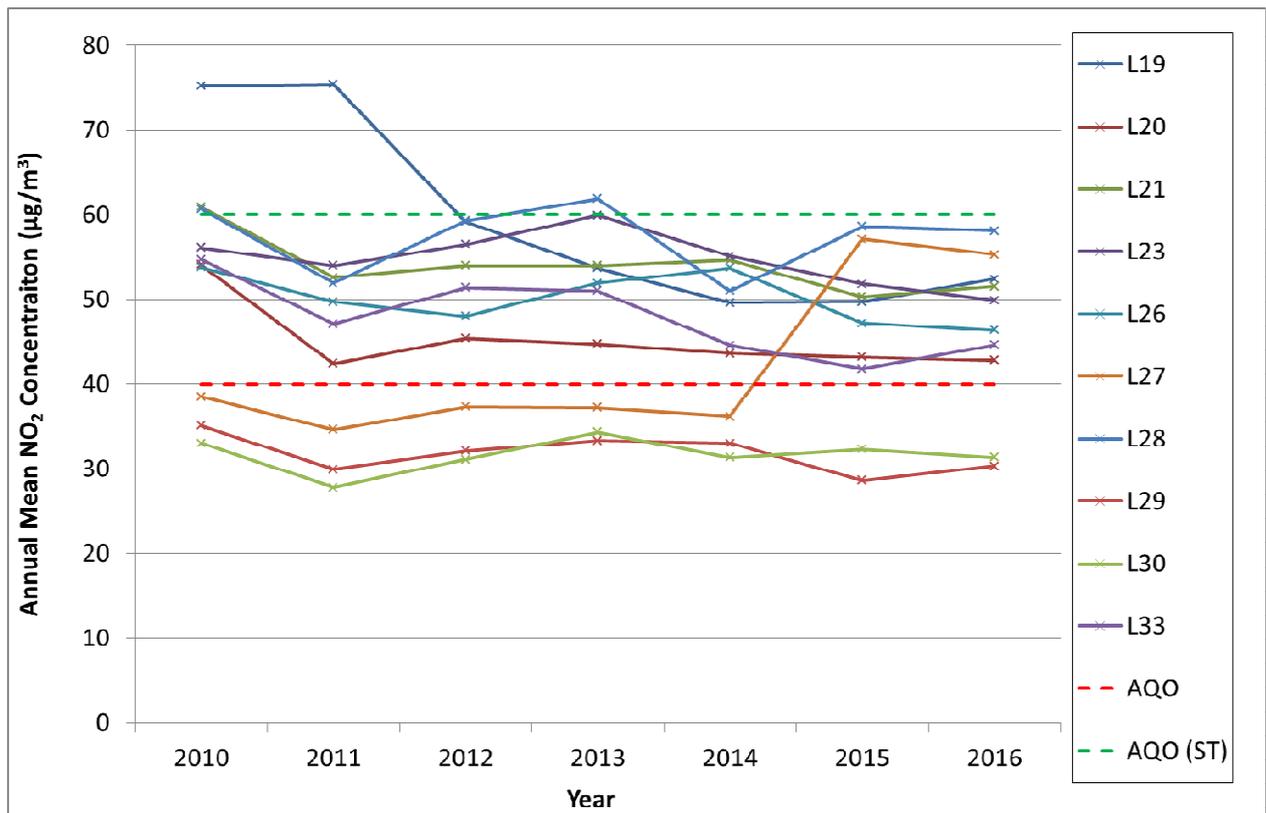
To clearly understand and visualise the trends in annual mean NO₂ concentration over the last 7 years, plots of the annual concentrations recorded at all NO₂ monitoring locations have been produced and are shown below in Figures A.3 to A.6.

Figure A.3. Trend in NO₂ concentration at roadside diffusion tube locations (1)



Note: AQO (ST) = 60 µg/m³. Diffusion tubes cannot be used to directly compare against the 1-hour mean NO₂ objective. However, LLAQM.TG16 states that at locations where annual mean NO₂ concentrations of greater than 60 µg/m³ are monitored the 1-hour mean NO₂ objective is likely to be exceeded.

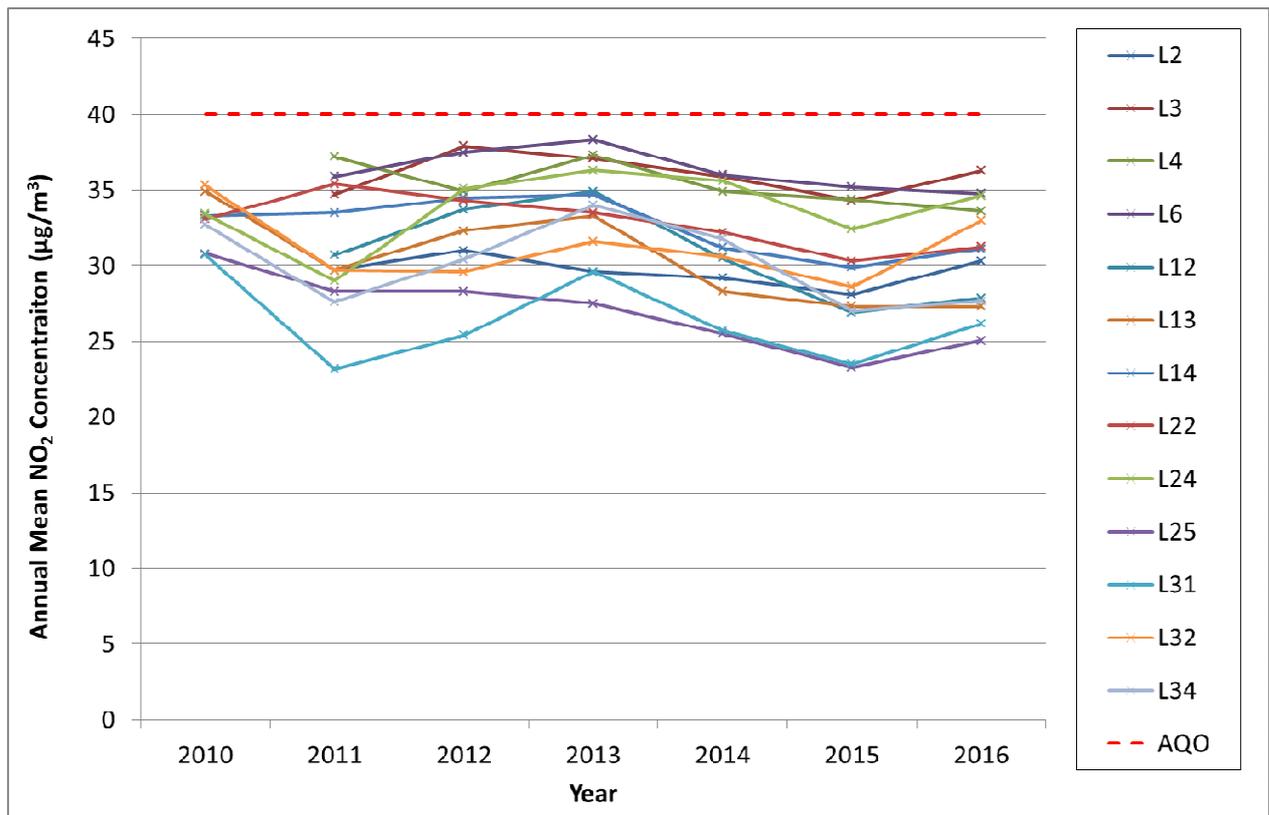
Figure A.4. Trend in NO₂ concentration at roadside diffusion tube locations (2)



Note: AQO (ST) = 60 µg_m⁻³. Diffusion tubes cannot be used to directly compare against the 1-hour mean NO₂ objective. However, LLAQM.TG16 states that at locations where annual mean NO₂ concentrations of greater than 60 µg_m⁻³ are monitored the 1-hour mean NO₂ objective is likely to be exceeded.

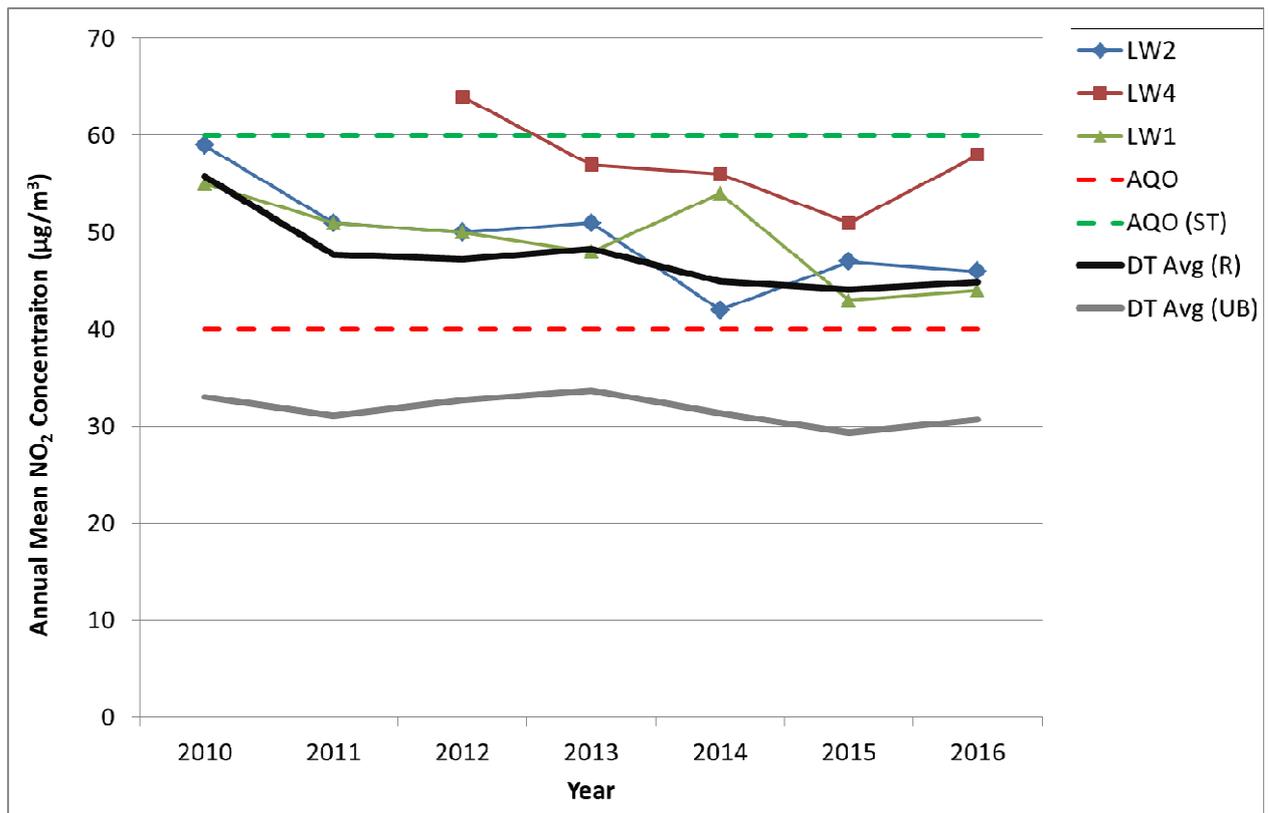
Tube L27 was re-located to a much busier roadside location in 2015.

Figure A.5. Trend in NO₂ concentration at urban background diffusion tube locations



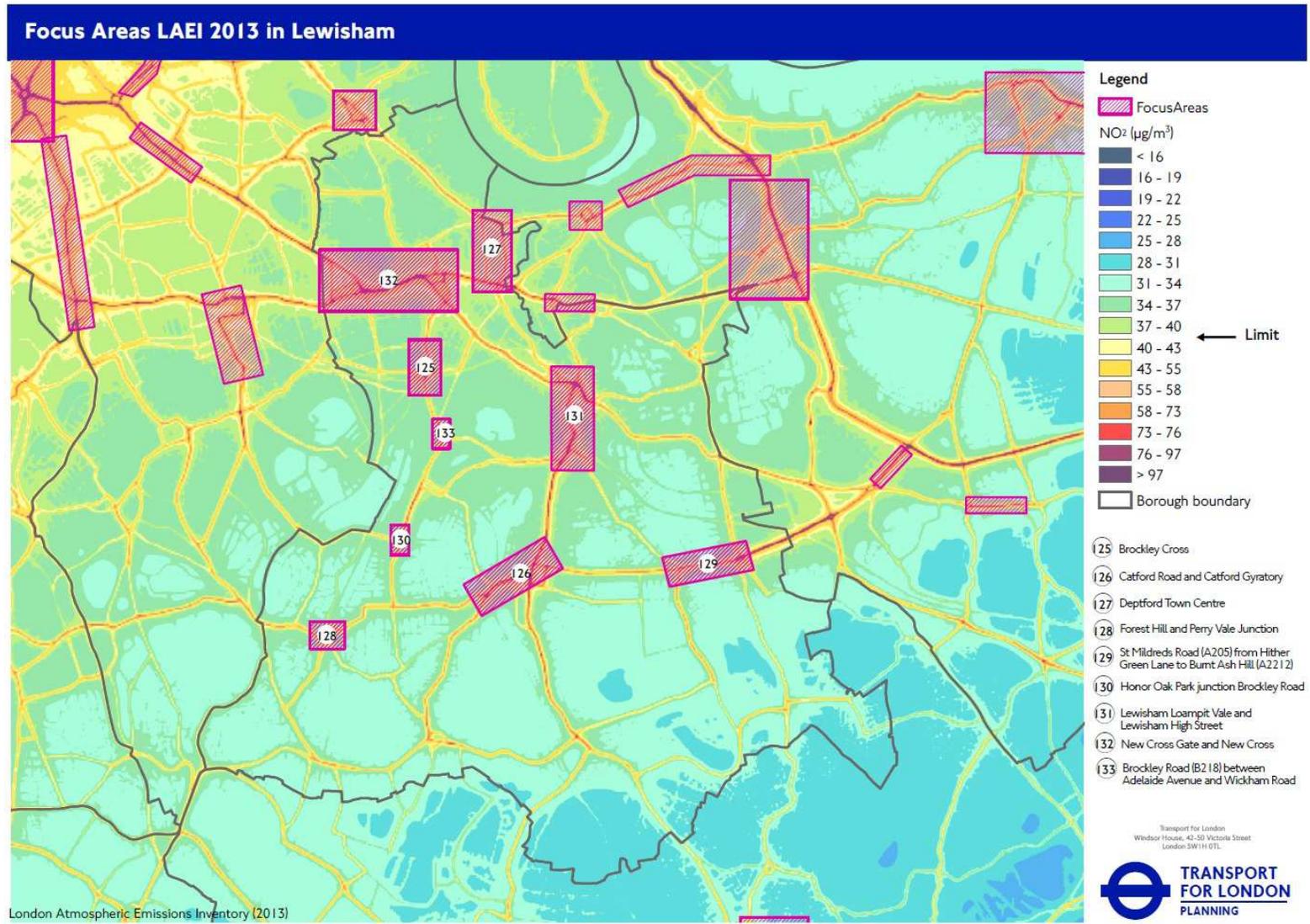
Note: AQO (ST) = 60 µg_m⁻³. Diffusion tubes cannot be used to directly compare against the 1-hour mean NO₂ objective. However, LLAQM.TG16 states that at locations where annual mean NO₂ concentrations of greater than 60 µg_m⁻³ are monitored the 1-hour mean NO₂ objective is likely to be exceeded.

Figure A.6. Trend in NO₂ concentration at continuous monitoring locations



Note: AQO (ST) = 60 µg/m³. Diffusion tubes cannot be used to directly compare against the 1-hour mean NO₂ objective. However, LLAQM.TG16 states that at locations where annual mean NO₂ concentrations of greater than 60 µg/m³ are monitored the 1-hour mean NO₂ objective is likely to be exceeded.

Figure A.7. Air Quality Focus Areas in LB Lewisham



Appendix B Full Monthly Diffusion Tube Results for 2016

Table Q. NO₂ Diffusion Tube Results

Site ID	Valid data capture for monitoring period % ^a	Valid data capture 2016 % ^b	Annual Mean NO ₂														Annual mean – raw data	Annual mean – bias adjusted
			Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec				
L1	100	100	38.6	30.2	28.9	29.5	30.7	31.8	27.7	26.4	37.2	34.7	40.2	44.2	33.3	34.3		
L2	92	92	37.8	30.2	27.4	28.7	26.8	25.5	22.8	22.3	30.9	31.2	-	40.0	29.4	30.3		
L3	100	100	43.6	39.1	29.6	28.4	31.2	31.8	26.3	27.3	34.4	36.6	41.6	52.9	35.2	36.3		
L4	100	100	42.6	32.4	27.1	29.9	30.4	27.0	28.7	24.1	34.4	29.6	41.6	43.7	32.6	33.6		
L5	100	100	36.7	34.0	36.0	34.2	42.5	35.2	24.5	26.4	33.6	40.5	40.0	37.5	35.1	36.1		
L6	42	42	42.0	-	-	32.3	35.0	-	-	-	-	-	40.8	40.8	38.2 ^c	34.8		
L7	100	100	51.4	47.9	42.5	46.3	49.3	45.4	42.6	42.6	54.0	45.7	47.7	57.5	47.7	49.2		
L8	100	100	41.7	38.5	42.8	38.3	46.4	39.6	34.2	33.2	42.4	44.3	46.6	45.6	41.1	42.4		
L9	100	100	38.3	36.6	41.6	33.7	44.2	37.6	29.7	32.7	37.7	41.9	45.4	42.4	38.5	39.6		
L10	100	100	44.6	39.3	39.0	32.9	41.4	41.8	27.8	29.2	41.2	48.4	47.3	51.1	40.3	41.5		
L11	100	100	39.0	36.0	36.5	32.4	38.5	37.2	25.2	23.9	36.5	43.1	44.2	43.7	36.4	37.4		
L12	83	83	35.5	-	-	22.8	23.7	21.1	17.2	17.1	26.6	29.5	37.3	39.7	27.1	27.9		
L13	100	100	36.4	25.6	22.8	24.0	25.4	21.8	20.3	18.0	26.7	26.1	32.9	37.9	26.5	27.3		
L14	100	100	42.8	33.5	27.9	25.3	23.7	23.9	25.1	25.5	31.4	26.4	36.0	41.0	30.2	31.1		
L15	92	92	50.5	43.3	34.8	37.8	49.0	48.0	41.4	38.3	51.8	42.5	-	44.8	43.8	45.2		
L16	100	100	47.1	43.4	49.5	46.8	57.8	47.1	42.6	44.8	51.6	50.8	53.4	53.5	49.0	50.5		
L17	100	100	53.5	48.7	41.3	44.0	54.2	45.9	49.0	48.5	50.7	53.8	56.3	60.9	50.5	52.1		
L18	100	100	57.8	41.3	43.7	45.6	51.8	46.2	50.3	46.8	48.9	50.4	52.1	56.5	49.3	50.8		

Site ID	Valid data capture for monitoring period % ^a	Valid data capture 2016 % ^b	Annual Mean NO ₂													
			Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual mean – raw data	Annual mean – bias adjusted
L19	100	100	52.9	45.0	53.7	48.0	51.6	48.4	52.1	45.6	50.4	50.8	55.4	56.3	50.9	52.4
L20	92	92	47.7	40.7	-	39.7	38.9	34.3	38.6	31.7	42.9	37.9	47.4	57.3	41.5	42.8
L21	100	100	55.6	45.1	40.1	51.6	49.1	43.8	56.2	44.5	53.9	44.2	51.8	64.3	50.0	51.5
L22	100	100	39.8	32.3	26.6	27.9	26.0	24.1	25.7	21.6	31.5	29.7	39.3	39.7	30.4	31.3
L23	100	100	53.2	48.1	44.2	43.2	47.5	47.8	43.5	39.1	52.4	47.9	52.2	62.1	48.4	49.9
L24	100	100	40.0	33.1	31.5	29.8	33.3	30.7	26.2	23.9	34.5	35.2	41.2	43.9	33.6	34.6
L25	100	100	29.3	25.8	20.2	20.9	23.2	19.1	18.8	17.0	26	25.1	31.9	34.5	24.3	25.0
L26	100	100	50.6	46.6	38.8	41.9	45.2	39.8	41.4	37.2	50.5	39.9	52.3	56.1	45.0	46.4
L27	92	92	63.8	48.4	50.2	51.3	48.5	48.7	50.8	-	58.8	46.3	61.2	62.2	53.7	55.3
L28	100	100	62.9	51.7	49.7	49.5	56.5	48.5	57.4	48.9	61.6	54.1	62.1	73.7	56.4	58.1
L29	92	92	32.5	29.3	29.8	26.0	-	25.8	20.1	21.0	28.6	31.4	38.6	40.7	29.4	30.3
L30	83	83	37.6	-	30.6	27.2	27.7	28.4	24.2	19.9	30.2	-	39.1	39.3	30.4	31.3
L31	100	100	31.5	25.1	24.6	22.1	24.5	20.4	16.2	14.4	25.0	28.9	34.3	37.5	25.4	26.2
L32	92	92	37.7	-	27	25.5	29.7	24.7	21.6	22.1	30.0	30.5	37.5	65.8	32.0	33.0
L33	100	100	48.9	42.1	41.4	35.7	39.8	41.5	36.8	32.7	45.5	43.9	51.9	59.8	43.3	44.6
L34	92	92	34.0	24.8	25.2	24.4	23.7	-	19.6	19.5	26.2	28.3	34.2	35.4	26.8	27.6

Exceedance of the NO₂ annual mean AQO of 40 µg^m-³ are shown in **bold**.

^a data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

^b 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 have been “annualised” in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%