London Borough of Lewisham Air Quality Annual Status Report for 2017
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This report provides a detailed overview of air quality in London Borough of Lewisham during 2017. It has been produced to meet the requirements of the London Local Air Quality Management statutory process[1].

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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 microns in diameter
$PM_{2.5}$	Particulate matter less than 2.5 microns 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	Date[1]
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} mot to be exceeded more than 3 times a year	24 hour mean	31 Dec 2004

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

1. Air Quality Monitoring

1.1 Locations

The London Borough of Lewisham (LBL) currently monitors air quality at 3 continuous monitoring stations. The newest monitoring station (LW4) was commissioned in 2012. A fourth station (LW3) was operational until the end of 2015 when it was decommissioned. The details of the monitoring stations in 2017 are given below in Table B. SO_2 and O_3 monitoring ended at LW1 and LW2 in October 2016.

Monitoring of NO_2 with diffusion tubes was carried out at 35 sites in 2017, 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. In September 2017 St James Hatcham School was added to the network. Details of all tube diffusion tube sites in 2017 are given in Table C.

Table B. Details of Automatic Monitoring Sites for 2017

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	Chemiluminescence UV fluorescence UV photometer
LW2	Lewisham 2 (New Cross)	536241	176932	Roadside	Y-AQMA3	0	6m	2.5m	NO_2 PM_{10} $PM_{2.5}$	Chemiluminescence UV fluorescence TEOM-FDMS
LW4	Lewisham 4 (Loampit Vale)	537912	175838	Roadside	Y-AQMA3	0	7m	2.5m	NO_2 PM_{10}	Chemiluminescence TEOM

Table C. Details of Non-Automatic Monitoring Sites for 2017

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
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

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)
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
L35	Kender Primary School	535447	176897	Roadside	N	N/A	2	2.5	NO_2	N
L36	Deptford Park School	536275	178405	Roadside	Y	N/A	2	2.6	NO_2	N
L37	St James Hatcham School	536317	176883	Urban Background	Y	N/A	N/A	2.5	NO_2	N

1.2 Comparison of Monitoring Results with AQOs

The results of nitrogen dioxide monitoring carried out by LBL 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 all monitoring sites was greater than 75%. All diffusion tube locations reported data capture rates greater than 75%, except L37 St James Hatcham School, due to the site being commissioned in September 2017. The annual mean concentration for L37 has been annualised. Details of the annualisation calculations are presented in Appendix A.

Table D. Annual Mean NO_2 Ratified and Bias-adjusted Monitoring Results (μg m^{-3})

Site ID	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean Concentration (μg m^{-3})						
				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)	2017 (Bias Adjustment Factor = 1.00)
LW1 (CM)	Urban Background (Automatic)	99.8	99.8	**51**	**50**	**48**	**54**	**43**	**44**	**43.1**
LW2 (CM)	Roadside (Automatic)	86.6	86.6	**51**	**50**	**51**	**42**	**47**	**46**	**48.9**
LW4 (CM)	Roadside (Automatic)	99.7	99.7	-	**64** [c]	**57**	**56** [c]	**51**	**58** [c]	**53.9**
L1	Roadside	100	100	36.4	37.8	38.6	38.0	33.1	34.3	31.6
L2	Urban Background	100	100	29.7	31.0	29.6	29.2	28.1	30.3	29.0
L3	Urban Background	100	100	34.7	37.9	37.1	35.9	34.3	36.3	32.7
L4	Urban Background	100	100	37.2	34.9	37.3	34.9	34.4	33.6	31.7
L5	Roadside	100	100	36.6	39.0	**43.3**	37.7	33.4	36.1	30.0
L6	Urban Background	100	100	35.9	37.5	38.3	36.0	35.2	34.8 [c]	32.2
L7	Roadside	92	92	**48.3**	**53.4**	**53.8**	**55.4**	**48.3**	**49.2**	**43.3**
L8	Roadside	100	100	**44.5**	**44.8**	**48.6**	**42.2**	**42.2**	**42.4**	38.6
L9	Roadside	92	92	39.9	**40.6**	**40.5**	**40.8**	37.5	39.6	35.1
L10	Roadside	92	92	**43.2**	**44.0**	**46.2**	**40.3**	39.4	**41.5**	37.3
L11	Roadside	100	100	**44.9**	**40.0**	**47.4**	38.6	36.1	37.4	34.8
L12	Urban Background	100	100	30.7	33.7	34.9	30.5	26.9	27.9	26.4

Site ID	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean Concentration (µg m^{-3})						
				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)	2017 (Bias Adjustment Factor = 1.00)
L13	Urban Background	100	100	29.7	32.3	33.3	28.3	27.3	27.3	26.6
L14	Urban Background	100	100	33.5	34.5	34.7	31.2	29.9	31.1	29.2
L15	Roadside	100	100	**43.6**	**44.3**	**47.6**	**46.5**	**46.6**	**45.2**	36.3
L16	Roadside	100	100	**48.7**	**55.0**	**58.6**	**52.5**	**48.7**	**50.5**	**44.1**
L17	Roadside (Triplicate)	100	100	**75.4**	**59.2**	**53.7**	**50.0**	**49.8**	**51.1**	**48.9**
L18										
L19										
L20	Roadside	100	100	**42.4**	**45.4**	**44.7**	**43.6**	**43.2**	**42.8**	38.6
L21	Roadside	100	100	**52.6**	**54.0**	**54.0**	**54.6**	**50.3**	**51.5**	**49.7**
L22	Urban Background	92	92	35.4	34.3	33.5	32.2	30.3	31.3	31.9
L23	Roadside	100	100	**54.0**	**56.5**	**59.9**	**55.1**	**51.8**	**49.9**	**44.5**
L24	Urban Background	100	100	29.0	35.1	36.3	35.6	32.4	34.6	33.3
L25	Urban Background	100	100	28.3	28.3	27.5	25.5	23.3	25.0	23.1
L26	Roadside	92	92	**49.7**	**48.0**	**51.9**	**53.7**	**47.2**	**46.4**	**43.5**
L27	Roadside	100	100	34.6	37.3	37.2	36.2	**57.1**	**55.3**	**52.4**
L28	Roadside	100	100	**51.9**	**59.3**	**61.9**	**51.0**	**58.6**	**58.1**	**55.5**
L29	Roadside	92	92	29.9	32.1	33.3	33.0	28.6	30.3	29.0
L30	Roadside	83	83	27.8	31.1	34.3	31.3	32.3	31.3	28.1
L31	Urban Background	92	92	23.2	25.4	29.6	25.7	23.5	26.2	24.4

Site ID	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean Concentration (µg m^{-3})						
				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)	2017 (Bias Adjustment Factor = 1.00)
L32	Urban Background	92	92	29.7	29.6	31.6	30.6	28.6	33.0	28.4
L33	Roadside	75	75	**47.1**	**51.4**	**51.0**	**44.6**	**41.8**	**44.6**	**40.7**
L34	Urban Background	92	92	27.6	30.4	34.0	31.8	27.0	27.6	26.4
L35	Roadside	92	92	-	-	-	-	-	-	31.3
L36	Roadside	100	100	-	-	-	-	-	-	**43.1**
L37	Urban background	25	25	-	-	-	-	-	-	29.2

Notes: Exceedance of the NO_2 annual mean AQO of 40 µg m^{-3} are shown in **bold**.

NO_2 annual means in excess of 60 µg m^{-3}, indicating a potential exceedance of the NO^2 hourly mean AQS objective are shown in bold and underlined.

[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 should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

The 2017 annual mean NO_2 concentrations at the three continuous monitoring locations all exceeded the annual mean NO_2 AQO of 40µgm^{-3}. The highest concentration was 53.9µgm^{-3} at LW4. Between 2011 and 2017 there has generally been a downward trend in annual mean NO_2 concentrations at the automatic monitoring stations, although the NO_2 concentration increased in 2017 at LW2 (New Cross). At LW1 annual mean NO_2 concentrations have decreased from 51µgm^{-3} in 2011 to 43.1µgm^{-3}. A similar trend is seen in the data from LW4 where annual mean NO_2 concentrations have decreased from 64µgm^{-3} in 2012 to 53.9µgm^{-3} in 2017.

The annual mean NO_2 AQO of 40µgm^{-3} was exceeded at 10 diffusion tube locations in 2017, which is an improvement from 2016 which saw exceedances at 13 diffusion tube sites. The highest concentration was measured at site L28 (55.5µgm^{-3}), which also recorded the highest concentration in 2016. In terms of temporal trends there is considerable variability between the diffusion tube monitoring locations over the 2011 to 2017 period, although there was an overall decrease in concentrations between 2011 and 2017 at most sites. The triplicate tubes co-located with LW2 continuous monitor at New Cross (L17,

L18, L19) showed evidence of generally decreasing NO_2 from 2011 to 2016, although the greatest reduction took place between 2011 and 2012. The increase in NO_2 at location L27 is due to the site having been re-located to a worst-case location in early 2015.

Over the last 7 years annual mean NO_2 concentration measured at all urban background sites have remained below the annual mean NO_2 AQO of 40μgm^{-3}; however L24 and L31 have increased in concentration since 2011. Roadside locations have tended to exceed the AQO. On average, annual mean NO_2 concentrations at roadside and urban background monitoring locations decreased between 2011 and 2017. Annual mean NO_2 concentrations tended to fluctuate somewhat year to year without significantly increasing or decreasing. Concentrations in 2017 were lower at all sites than compared to 2016, excluding L22 which saw a negligible increase.

Table E. NO_2 Automatic Monitor Results: Comparison with 1-hour Mean Objective

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Number of Hourly Means > 200 µg m^{-3}						
			2011 [c]	2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]	2017 [c]
LW1	99.8	99.8	0	2	3	0	0	0	0
LW2	86.6	86.6	0	0	0	0	7	0	0
LW4	99.7	99.7	-	16 (**221**)[c]	**26**	5 (180)[c]	0	9 (184) [c]	4

Notes: Exceedance of the NO_2 short term AQO of 200 µg m^{-3} over the permitted 18 days per year 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 should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

In 2017, no exceedances of the hourly mean NO_2 AQO value (200µgm^{-3}) were recorded at the LW1 and LW2 automatic monitoring locations. At LW4, 4 exceedances of the hourly mean NO_2 AQO value were recorded during the year, which is within the 18 permitted hours for compliance with the hourly NO_2 AQO. In the past 7 years there has been no obvious trend, however all locations tend to stay within the AQO of 200µgm^{-3} fewer than 18 times a year.

At LW1, the urban background site, there have been three or fewer exceedances of the hourly NO_2 AQO value in any one year since 2011, with no exceedances recorded from 2014 onwards.

At LW2, a roadside site, during the 2011 to 2017 period, hourly averaged NO_2 concentrations greater than 200µgm^{-3} have only been recorded in 2015 (7 hours). At LW4, in 2013 there were 26 hours exceeding the hourly NO_2 AQO value, therefore 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 NO_2 AQO value; due to data capture being below 75% in 2013 the 99.8th percentile of hourly NO_2 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. Since 2014 the 1-hour mean NO_2 objective has been achieved.

Table F. Annual Mean PM_{10} Automatic Monitoring Results (µg m^{-3})

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean Concentration (µg m^{-3})						
			2011	2012	2013	2014	2015	2016	2017
LW2	81.9	81.9	26	26	23	23 [c]	23	24	22.8
LW4	85.8	85.8	-	24	28	25 [c]	17	26 [c]	20.9

Notes: Exceedance of the PM_{10} 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 should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

The annual mean PM_{10} concentrations recorded at the two automatic monitoring stations that measure particulate matter were well below the AQO of 40µgm^{-3} in 2017, and for all years since 2011. In 2017, LW2 recorded the highest PM_{10} annual mean concentration of 22.8µgm^{-3}. LW4 showed a significant decrease in 2017 from 2016 concentrations. The highest recorded annual mean PM_{10} concentration during 2011 to 2017 period was 28µm^{-3} at LW4 in 2013.

Over the last 7 years annual mean PM_{10} concentrations at LW2 automatic monitoring station has been 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. PM_{10} Automatic Monitor Results: Comparison with 24-Hour Mean Objective

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Number of Daily Means > 50 µg m^{-3}						
			2011 [c]	2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]	2017 [c]
LW2	81.9	81.9	19	15 (47) [c]	15	14 (38) [c]	8	9	11
LW4	85.8	85.8	-	3 (36) [c]	19	13 (41) [c]	1	18 (47) [c]	7

Notes: Exceedance of the PM_{10} short term AQO of 50 µg m^{-3} over the permitted 35 days per year or where the 90.4th percentile exceeds 50 µg m^{-3} are shown in **bold**.
Where the period of valid data is less than 85% of a full year, the 90.4th 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 should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

Both LW2 and LW4 achieved the 24-hour mean PM_{10} AQO in 2017. In all years since 2011, all of the PM_{10} monitoring locations have achieved the 24-hour mean PM_{10} AQO. The highest numbers of exceedances of the daily mean PM_{10} objective value (50 µgm^{-3}) was 18 days in 2016 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 PM_{10} 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 (µg m^{-3})

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean Concentration (µg m^{-3})						
			2011 [c]	2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]	2017 [c]
LW2	81.5	81.5	-	-	17.6	16.5	15.5	18.9	15.5

Notes: Exceedance of the $PM_{2.5}$ annual mean AQO of 25 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 should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

The results of PM_{10} monitoring carried out by LB of Lewisham are presented in Table H.

Since 2013, the LBL has monitored $PM_{2.5}$ concentrations at site LW2. In 2017, the annual mean $PM_{2.5}$ concentration measured was 15.5 µg m^{-3}, which is below the annual mean $PM_{2.5}$ target value of 25 µg m^{-3}; this is a decrease from the value of 18.9 µg m^{-3} recorded in 2016, and is the lowest annual mean $PM_{2.5}$ concentration along with 2015 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.

2. Action to Improve Air Quality

London Borough of Lewisham contains eight Air Quality Focus Areas (AQFAs), which are areas with some of the poorest air quality in Lewisham, and are the focus of targeted actions to improve air quality. The AQFAs in LBL 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.7.

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

2.1 Air Quality Action Plan Progress

2017 was a very important year for Lewisham in raising the profile on air quality. The Lewisham Mayor laid out his commitment by launching an Air Quality Campaign, approved by Mayor and Cabinet in June 2017, this focused on behavioural change by all whilst providing a focused approach with children, schools, transport and infrastructure projects coupled with an evidenced based approach. The Mayor appointed his own Air Quality Champion. With links to academic research and development, Lewisham hosted the MRC Festival 2017, Our Air, Your Health, with a history of air pollution in Deptford (1661 – 2017) as one of the academic talks on air quality. An Air Quality Master Class was provided to Lewisham Councillors, by Kings College London. Preparations were made for a Lewisham Air Quality Conference, open to the public and also a School Air Quality Event, both to be held in March 2018, with the plans for the promotion of the new Lewisham Air app and also the pilot scheme for an Air Quality School Accreditation Scheme.

Preparation and plans for the expansion of Lewisham's Air Quality monitoring took place in 2017 with the introduction of an additional 17 diffusion tube locations i.e. from 33 to 50 and a contribution made by the Council towards the installation of an Air Quality Supersite, at Honour Oak Park Sports Ground, planned for summer 2018. This is a new million pound air pollution research lab, with primary funding from Natural Environment Research Council (NERC).

Table J provides a brief summary of the London Borough of Lewisham progress against the Air Quality Action Plan, showing progress made this year. New projects which commenced in 2017 are shown at the bottom of the table.

Table J. Delivery of Air Quality Action Plan Measures

ID	Action Category	Action	Progress and planned action presented in 2016 ASR	Progress 2017and Planned Future Action
1	Emissions from developments and buildings	Ensuring emissions from construction are minimised	Number of applications for the discharge of the Construction Logistics Plan and the Construction Environmental Management Plan approved: *10 x applications for Approval of construction Logistics plan & 47 x applications for approval of construction management/Environmental plans*	42 Construction Logistics Plan applications and 47 Construction (Environmental) Management Plan discharged. A new Local Plan is being developed in 2018. Environmental Protection Policies are being considered as part of this process and these will be informed by policies developed in the new London Plan. As part of the process wording for the condition/s controlling emissions from construction will be considered, along with the review and development of current guidance.

ID	Action Category	Action	Progress and planned action presented in 2016 ASR	Progress 2017and Planned Future Action
2	Emissions from developments and buildings	Ensuring enforcement of Non Road Mobile Machinery (NRMM) air quality policies	Number of NRMM conditions recorded, and all sites checked on the NRMM database once construction begins: See Table L.1 for more details	See Table L for details. The development of policy in the new London Plan will strengthen enforcement of NRMM.
3	Emissions from developments and buildings	Enforcing alternative clean and efficient energy supplies (to replace Enforcing CHP and biomass air quality policies)	Planning to review abatement conditions in 2017 and report in 2017 ASR.	An energy assessment is required for every major application. An energy assessment must include: - a response to the 3 stages of the Mayor's Energy hierarchy demonstrating compliance with each stage - a calculation of the baseline energy demand and carbon dioxide emissions (with evidence of how it has been calculated) - details of the performance of the building - a feasibility study of all renewable technologies - the proposed technical solution - an explanation of where and why the proposed development does not meet identified standards. - a fully completed 'Monitoring for Sustainability' form (can be downloaded from the Council's website: http://www.lewisham.gov.uk/myservices/planning/policy/Documents/SustainabilityMonitoringForm.pdf).
4	Emissions from developments and buildings	Enforcing Air Quality Neutral policies	Air Quality Neutral Assessments reviewed: See Table L.1 for more details	See Table L for details. The development of policy in the new London Plan will strengthen the Air Quality Neutral requirements.
5	Emissions from developments and buildings	Ensuring adequate, appropriate, and well located green space and infrastructure is included in new developments	To review a list of appropriate tree/planting species which aid Air Quality in 2017. Greenspace provision: See Table L.1 for details	Public realm improvements provided in community green space at: GARAGES AND GREEN SPACE (AT REAR OF 182-244 WOOD VALE), BUCKLEY CLOSE, LONDON, SE23 3EQ. In addition to this Quietway routes provided improved aesthetics and greening and was introduced in 2016 and had initial increase in use of 38% over 2017.

ID	Action Category	Action	Progress and planned action presented in 2016 ASR	Progress 2017and Planned Future Action
				The Council is encouraging community tree planting: https://www.lewisham.gov.uk/myservices/environment/trees/Pages/Tree-planting-scheme.aspx . A list of Tree species for air quality improvement has not been produced as there is only general advice on species available i.e. Due to the larger total surface area of needles, coniferous trees have a larger filtering capacity than trees with deciduous leaves (Stolt, 1982). This capacity is also greater because the needles are not shed during the winter, when the air quality is usually worse. However, coniferous trees are sensitive to air pollution and deciduous trees are better at absorbing gases (Stolt, 1982). A mix of species therefore seems to be the best alternative. Air pollution filtering capacity increases with more leaf area, and is thus higher for trees than bushes or grassland (Givoni, 1991).
6	Emissions from developments and buildings	Ensuring that Smoke Control Zones are appropriately identified and fully promoted and enforced	Council Wide Publicity Campaign to be organised for late Spring/early Summer 2017 where information on Smoke Control Areas and requirements will be promoted.	Lewisham focused on the Lewisham Mayor's Air Quality campaign (See 2.1 introduction to table) Publicity around Smoke Control Zones is now planned for Winter 2018, where we'll work with the London Mayor in providing information and requirements to reduce the air quality impact.

ID	Action Category	Action	Progress and planned action presented in 2016 ASR	Progress 2017and Planned Future Action
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.	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.	Lewisham's Warm Homes Healthy People fuel poverty advice service was delivered in 250 homes in 2017/18. Actions taken by residents reduced emission by 83tCO2e. In 2018/19 the project will extend to cover Bexley, Bromley, Greenwich, Lewisham and Southwark with support from the GLA. Lewisham in partnership with South East Community Energy and Retrofit Works are enabling residents to access energy company funding for heating and insulation improvements, in 2017/18 152 measure were installed.
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	Ongoing.	Works recommended in EPC inspection report to ensure property has a rating of 'E' or above is included in licensing conditions of HMO's. Enforcement action carried out if EPC forms not submitted. *Also where Council procure properties for use by the Council for temporary accommodation this also meets a minimum EPC rating of 'E'.*

ID	Action Category	Action	Progress and planned action presented in 2016 ASR	Progress 2017and Planned Future Action
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	Still considering monitoring of action. Which will be updated on the 2017 ASR submission.	The action has not been implemented due to staffing changes and reorganisation but has been raised with the new team management and will be considered in any future reviews of the Council's housing assistance policy and an update will be provided in the next ASR. However, from 1st April with Empty homes grants (Discretionary grant) officers will make sure that properties brought back into use under these grants meet the Government's requirement of at least a minimum EPC rating of 'E' on completion. The mandatory Disabled Facilities Grant helps homeowners and tenants to fund home adaptations and this is not something the Council can currently include.
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.	This ASR in draft form was reviewed at Lewisham's Health Protection Committee in March 2017 where actions were considered and approved.	The ASR was presented to the DMT for Community Services. The Director of Public Health is part of this management team.
8A	Public health and awareness raising	The Council's political leadership will champion the issue of air quality inside and outside of the borough	Dedicated Communication officer currently reviewing all publicity and campaigns in relation to Air Quality for 2017.	The Lewisham Mayor's Air Quality campaign (See 2.1 introduction to table), included the appointment of the Mayor's Air Quality Champion.
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.	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.	The Healthy Weight Strategy developer in 2017 has as one of its main aims to 'promote an environment that supports healthy weight and wellbeing as the norm, making it easier for our residents to choose healthier diets and active lifestyles.' There are synergies to air quality improvement with a more active lifestyle and these links are being developed.
10	Public health and awareness raising	Director of Public Health to have responsibility for	Public Health element of the JSNA is currently being refreshed.	JSNA for Air Quality was refreshed in 2017.

ID	Action Category	Action	Progress and planned action presented in 2016 ASR	Progress 2017and Planned Future Action
		ensuring their Joint Strategic Needs Assessment (JSNA) has up to date information on air quality impacts on the population	Public Health intelligence team is awaiting updated data from GLA. JSNA refresh is planned to be completed in May 2017.	
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	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.	Provided Lewisham Health Protection Committee air quality updates. The Health and Wellbeing Strategy is still being drafted.
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.	The ASR was presented to the DMT for Community Services. The Director of Public Health is part of this management team.
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.	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.	Provided brief through Bi monthly Air Quality Working Groups and also Strategic Air Quality Board meetings every quarter. Also separate focused meetings with transport in relation to Electric Vehicle provision and school projects.
14	Public health and awareness raising	Engagement with businesses	Number of applications for the discharge of the DSP condition approved: 10 applications. Condition wording:	Number of applications for the discharge of the DSP condition approved: 11 applications. Promoted dilverBest at the 2017 Mayor's Business Award. As a result of this one Lewisham-based business (Fronte)

ID	Action Category	Action	Progress and planned action presented in 2016 ASR	Progress 2017and Planned Future Action
			(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. (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. (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. **Reason:** In order to ensure satisfactory vehicle management and to comply with Policy 14 Sustainable movement and transport of	linked in with the scheme as they promote their new sustainable delivery option (see: https://www.fronte.co.uk/sustainable-parcel-delivery-with-click-and-collect/), along with contacts with many local businesses. DEFRA bid application for Cleaner Villages was successful, which will provide engagement with businesses with two of the Air Quality Focus Areas, i.e. Lewisham Town Centre and Deptford Church Street. See ID 46 and 47 for new action to report for next ASR.

ID	Action Category	Action	Progress and planned action presented in 2016 ASR	Progress 2017and Planned Future Action
			the Core Strategy (June 2011).	
15	Public health and awareness raising	Promotion of availability of airTEXT	• 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.	Total subscribers to air text in Lewisham in 2017 is 173. In 2017 continued to target the same groups as last year. In 2017 the Lewisham Air app was developed. 'The promotion of availability of air TEXT' action next year also to include 'The promotion of availability of Lewisham Air app' action. Launched in March 2018, the numbers downloaded have risen to 300 (end of April).

ID	Action Category	Action	Progress and planned action presented in 2016 ASR	Progress 2017and Planned Future Action
			• 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	
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	80% of schools in the borough having an accreditation in 15/16. Work ongoing.	Schools continue to take part in the STARS programme. More targeted work is planned for 2018/19 to look at detailed travel planning and support to reduce the numbers of parents driving to school. Before and after Evaluation will be monitored and known behaviour change models will be used to maximize change.

ID	Action Category	Action	Progress and planned action presented in 2016 ASR	Progress 2017and Planned Future Action
17	Public health and awareness raising	Air quality at schools	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.	Through the Mayors Air Quality campaign we have worked with schools through the School Travel Plan. This has included the running of idlingaction events at three schools. The procurement of 50 anti-idling signs that will be introduced at designated schools in 2018. In 2017 work was carried out in the development of a School Air Quality Accreditation scheme for Lewisham, which is being piloted and planned launch in 2018/19 academic year. A new School Travel Plan officer is to be appointed to work with schools from 2018 and an Air Quality apprentice is working with them to visit and support schools.
17 A	Public health and awareness raising	Air quality at schools	Offer Cycle training to schools and appoint Lollipop personnel to provide proficiency and safety for cycling and walking to school.	All primary schools are offered Bikeability for their Year 5/6 pupils. Balance Bike training was carried out at 20 schools. Scooter training courses are booked for the Summer term in 2018.
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	Procurement reviewing in April 2017	A programme of internal staff training was provided in 2017 with a specific focus on air quality and procurement delivery.

ID	Action Category	Action	Progress and planned action presented in 2016 ASR	Progress 2017and Planned Future Action
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)	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.	A programme of internal staff training was provided in 2017 with a specific focus on air quality and procurement delivery.
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	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.	Considered as a potential action as part of the LIP3 process, which will develop a transport strategy and implementation plan for the borough. Draft document for consultation in Autumn 2018, with final version approved by February 2019.
21	Delivery servicing and freight	Virtual Loading Bays and priority loading for ultra-low emission delivery vehicles	This has been reviewed but is not currently seen as being appropriate given the logistics of delivery and servicing areas within the borough.	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	Ongoing.	FLEET no longer consider necessary to join the FORS scheme due to the admin burden that it will place on the reduced staff levels. Also question the benefits in terms of improving air quality as the rolling driver CPC training includes in the

ID	Action Category	Action	Progress and planned action presented in 2016 ASR	Progress 2017and Planned Future Action
				syllabus "driving effectively, efficiently to reduce emissions and improve safety." PROPOSE to remove this as an Action.
23	Borough fleet actions	Increasing the number of hydrogen, electric, hybrid, bio-methane and cleaner vehicles in the boroughs' fleet	All lease cars are hybrid/electric. Continuing to work with LoCity to consider further uptake of vehicles.	Added to the fleet another HY-BRID refuse vehicle to work on Lewisham market this takes the total to 2.
24	Borough fleet actions	Accelerate uptake of new Euro VI vehicles in borough fleet	REVISED: 48 trucks will be upgraded to Euro VI during 17/18. Procurement in process.	Reduced the order to 33 from 48 due to fleet rationalising and route analysis. The next step is to replace 15 Euro 5 refuse trucks and 49 Euro 5 buses before the ULEZ deadline Oct2020, which may reduce due to further rationalisation. Once this next order is placed and delivered all of LBL fleet will be at Euro 6. Any short term hired in vehicles that are required are always Euro 6 as standard.
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	Driver training is on-going in order to comply with driver CPC regulations.	Continue to run CPC training which includes in the syllabus "driving effectively, efficiently to reduce emissions and improve safety."
26	Localised solutions	Improvement and Introduction of green spaces in new developments through the Planning process by conditions and S106 obligations.	Charlottenberg Park in New Cross and Surrey Canal Linear Park in Deptford have both opened in 2016	See Action 5 for further information. Also New linear park for Pepys Estate being extended, opening up the former canal bridge, to connect the Deptford Wharves development. Proposals for improving Beckenham Place Park in progress over 2017. Lewisham Gateway confluence

ID	Action Category	Action	Progress and planned action presented in 2016 ASR	Progress 2017and Planned Future Action
				park planned progress 2018/2019
27	Localised solutions	Low Emission Neighbourhoods (LENs)	N/A	N/A
28	Cleaner transport	Discouraging unnecessary idling by vehicles near schools	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.	Idling action events held at 3 schools. The end of year report provided details on success. Also a priority within the Lewisham Mayor's Air Quality Campaign (see introduction to Table)
28 A	Cleaner transport	Carry out a Council wide anti-idling campaign discouraging unnecessary idling by idling vehicles	Dedicated Communication officer currently reviewing all publicity and campaigns in relation to Air Quality for 2017.	Idling action events held at 3 schools. The end of year report provided details on success. Also a priority within the Lewisham Mayor's Air Quality Campaign (see introduction to Table)
29	Cleaner transport	Speed control measures e.g. lowering the legal speed limit to 20mph in built up residential areas	All Lewisham Roads included in 20 mph zones from September 2016. *See 'AQFA integration with LIP' for details on streetscape schemes to assist with 20 mph.*	The borough wide 20mph limit was implemented in September 2016. Monitoring has been carried out which has shown reductions in speed as a result. However, physical measures will be required on some streets to assist with compliance. These streets are currently being prioritised and potential measures identified. The borough is also encouraging TfL to introduce 20mph on the parts of the network that it is responsible for.

ID	Action Category	Action	Progress and planned action presented in 2016 ASR	Progress 2017and Planned Future Action
30	Cleaner transport	Expanding car clubs and Increasing the proportion of electric, hydrogen and ultra-low emission vehicles in Car Clubs	Car club bays provided via Planning in 2016: *See Table L.1 for more details* 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**.**	1 Car club bay provided at HAZELHURST COURT, BECKENHAM HILL ROAD, BROMLEY, SE6 3AG development and For all car free developments we have secured car club memberships. For instance in 2017 this was conditioned and discharged for 437-439 BROCKLEY ROAD, LONDON, SE4 2PJ, KENT WHARF, CREEKSIDE, LONDON, SE8 3DZ, Officers are currently in discussions with Zipcar (the borough's only current car club) about the potential introduction of further electric vehicles to its fleet. Zipcar has plans to gradually introduce more EVs to their Zipcar flex operations (point to point model). However, for the fixed bays it is harder to achieve without the necessary supporting infrastructure. Boroughs are limited on the degree to which they can assist with the implementation of EVCPs in fixed car club bays due to state aid rules. The Council is in discussion with other car club providers.
31	Cleaner transport	Very Important Pedestrian Days (e.g. no vehicles on certain roads on a Sunday) and similar initiatives	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.	Considering roads, but need to assess full impact on surrounding streets. For Walk to School Week in 2018, Athelney Primary School is trialling this and will feedback. VIP campaign will take place in September 2018.
32	Cleaner transport	Free or discounted parking charges at existing parking meters for zero emission cars	This will be considered within the Parking review which is planned for later in the 2017.	This will be considered within the Parking review which has been delayed and will go to Mayor and Cabinet at the end of 2018/19. Air quality is being factored into this review.
33	Cleaner transport	Free or discounted residential parking permits for zero emission cars	During the year (2015/2016) a total of 9,428 resident and business parking permits were	During the year (2016/2017) a total of 16,000 resident and business parking permits were issued. Permits issued to lower emission vehicles and sold at a concessionary rate was 345,

ID	Action Category	Action	Progress and planned action presented in 2016 ASR	Progress 2017and Planned Future Action
			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. Further information see http://www.lewisham.gov.uk/myservices/parking/Pages/default.aspx	represent 5.75% of the total which is an increase of 4% from that of last year. The Parking review which has been delayed and will go to Mayor and Cabinet at the end of 2018/19 will consider charges and concessions. Air quality is being factored into this review.
34	Cleaner transport	Surcharge on diesel vehicles below Euro 6 standards for Resident and Controlled Parking Zone permits	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.	This will be considered within the Parking review which has been delayed and will go to Mayor and Cabinet at the end of 2018/19. Air quality is being factored into this review.
35	Cleaner transport	Installation of residential electric charge points	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. 14 Additional residential on street sites have been approved	There are currently 29 EVCPs in 10 locations, including 6 in Council managed car parks. The Council will be consulting on its EVCP strategy in late spring/early summer 2018, with a final document approved by the end of the year. This will set out our plans for expansion of the charging network over the next four years (to 2022). In partnership with Source London we are currently consulting on a further 14 sites for 7kw chargers, with a view to seeing

ID	Action Category	Action	Progress and planned action presented in 2016 ASR	Progress 2017and Planned Future Action
			for installation. Date of installation now planned for Summer 2017.	these implemented by the end of 2018, subject to consultation. This has been delayed from last year in order to agree on legal arrangements. Officers are also starting to talk to other providers about introducing lamp column charging and complementing the Source London network with additional 7kw chargers run by other operators.
35 A	Cleaner transport	Carry out a campaign to promote the use of electric charge points within the borough.	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.	Campaign wasn't carried out in 2017, as the production of the strategy was still being consulted internally. Lewisham had an Air Quality Conference in March 2018 where the principles of the strategy were communicated. As part of the launch of the draft EVCP strategy, public consultation, the Council will make a call for suggestions for new EVCP locations. A publicity campaign is planned for the end of the 2018/19 financial year, with details on new locations.

ID	Action Category	Action	Progress and planned action presented in 2016 ASR	Progress 2017and Planned Future Action
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)	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.	Officers are working in partnership with TfL to progress a number of rapid charging points. An initial long list of 20 sites across the borough (mixture of land ownership) has been identified, with two sites implemented to date.
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	See link for the Annual Parking report: http://www.lewisham.gov.uk/myservices/parking/Pages/default.aspx The 2016 report will soon be available to review on-line.	See link for the Annual Parking report: http://www.lewisham.gov.uk/myservices/parking/Pages/default.aspx for the 2016/2017 The total number of CPZs operating in the borough at the end of 2016/17 was 22. Which will increase to 23 in 2017/18 as part of the CPZ implementation programme. Also approval for 18/19 CPZ programme received with proposals for a further four zones. CS4 designs have gone through public consultation in September 2017, the full results of this consultation have not been published (expected June 2018) Expect detailed design to start in 2018 and construction to start in 2019 and it'll last 1 year. Over the past 6 month the Council have been assessing sites for the locating of hangers we now have the 1st phase of hanger consulted on and are awaiting the award of the new contract to the supplier to start instillation. Once the

ID	Action Category	Action	Progress and planned action presented in 2016 ASR	Progress 2017and Planned Future Action
				contractor is on board the Council will continue to roll out phase of hanger every 6 month funding dependant.
38	Cleaner transport	Provision of infrastructure to support walking and cycling	Quietway 1 completed and further work on linking the existing cycle route – Waterlink Way – to the Q1 is ongoing. Details are to be reported to TfL through a LiP yearly report.	3 Quietway route are in development with completion expect 2019. Lewisham Council was successful in securing feasibility funding for the Deptford parks **Liveable neighbourhoods** fund from TfL . This feasibility work is going to be carried out over 2018 to inform concept designs hopefully available by early 2019. Schemes include, re assigning road space to create a pocket park, reducing traffic and greening roads, creating a traffic free walking route from the river Thames to New cross via a new green way and other smaller intervention identified through public consultation.
39	Cleaner transport	Develop a 'stand-alone' Cycling Strategy for the borough.	Being developed 2016/17 and to be published in 2018. Internal reporting and LiP yearly reporting.	The Cycling Strategy was adopted in late 2017.
40	Cleaner transport	Increasing cycle parking	Ongoing initiative. Already being provided but will be increased year on year. Internal reporting and LiP yearly reporting on increase in parking.	See Section 10 of the Cycling Strategy.
41	GLA AQ FOCUS AREA 127 & parts of 132 Cleaner Transport	Development of a Zonal Construction Logistic Framework for the Evelyn Street Corridor	Scoping report completed and drafting of the Zonal CLP. Contact made with all construction sites and relevant stakeholders to provide effective communication	The main focus of work following the completion of the CLP has been to engage with developers in the Evelyn Street area. The primary engagement mechanism has been the three ESC CLP Forum meetings held in 2017. Air Quality (AQMesh) and

ID	Action Category	Action	Progress and planned action presented in 2016 ASR	Progress 2017and Planned Future Action
			and transport planning/strategy. Monitoring location and provision being considered. 2016 Progress Report currently being reviewed by Stephen Inch from TfL.	traffic monitoring have been installed on Evelyn Street and Deptford Church Street in partnership with Kings College, to establish the current baselines against which the additional construction traffic can be monitored. More details on progress: http://www.llecp.org.uk/evelyn-street-clp-project
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	Installation of public art being progressed and to be completed February 2017. Publicity to be produced and update to Local Assembly in March 2017.	All art installations completed. Update provided 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	Ongoing. Reporting back to Local Assembly in March 2017.	Progress given at Local Assembly in March 2017. A public consultation carried out in 2017: https://www.pclconsult.co.uk/projects/crofton-park-2/
44	GLA AQ FOCUS AREA 125 to 133 Cleaner Transport	LiP projects	See Table K.3	
45	GLA AQ FOCUS Area 127 Cleaner Transport	Liveable Neighbourhood Scheme 'Deptford Parks'.		NEW ACTION for reporting at next ASR
46	GLA AQ FOCUS AREA 127 Cleaner Transport Public Health and Awareness Raising	DEFRA Project: 'Cleaner Villages' Business engagement at Deptford High Street, to reduce impact of delivery.		NEW ACTION for reporting at next ASR
47	GLA AQ FOCUS AREA 131	DEFRA Project: 'Cleaner Villages' Business engagement		NEW ACTION for reporting at next ASR

ID	Action Category	Action	Progress and planned action presented in 2016 ASR	Progress 2017and Planned Future Action
	Cleaner Transport Public Health and Awareness Raising	at Lewisham Town Centre, to reduce impact of delivery.		

Completed Actions

New Actions

3. Planning Update and Other New Sources of Emissions

Table L gives a summary of planning requirements relating to air quality in the London Borough of Lewisham in 2017, with Table K.2 presenting additional information on developments in 2017. Table K.1 shows the Non-road mobile machinery visits which were carried out in 2017.

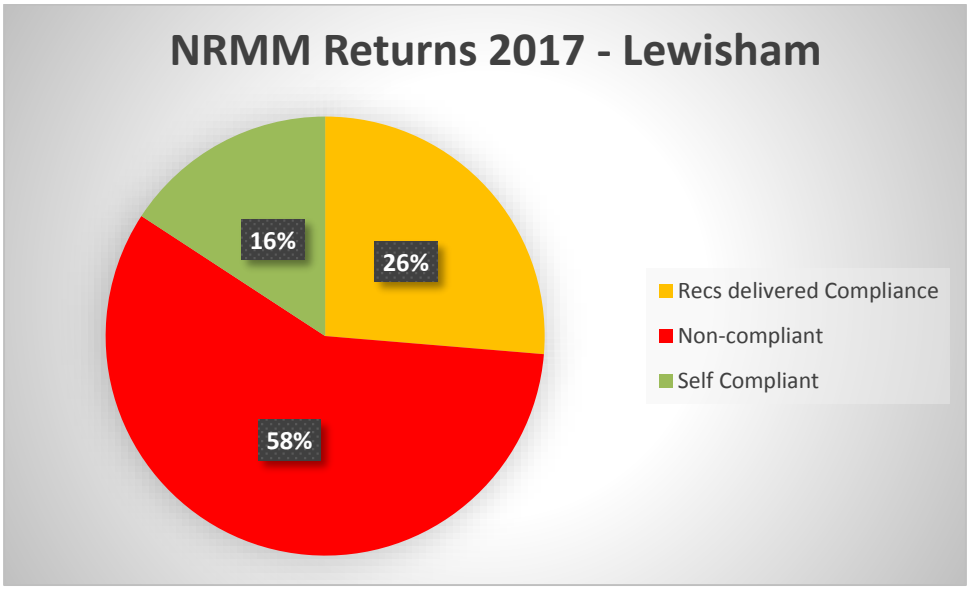
Table L. Planning requirements met by planning applications in London Borough of Lewisham in 2017

Condition	Number
Number of planning applications where an air quality impact assessment was reviewed for air quality impacts	18
Number of planning applications required to monitor for construction dust	47
Number of CHPs/Biomass boilers refused on air quality grounds	1*
Number of CHPs/Biomass boilers subject to GLA emissions limits and/or other restrictions to reduce emissions	1
Number of developments required to install Ultra-Low NO_x boilers	0
Number of developments where an AQ Neutral building and/or transport assessments undertaken	17
Number of developments where the AQ Neutral building and/or transport assessments not meeting the benchmark and so required to include additional mitigation	1*
Number of planning applications with S106 agreements including other requirements to improve air quality	0
Number of planning applications with CIL payments that include a contribution to improve air quality	0
NRMM: Central Activity Zone and Canary Wharf Number of conditions related to NRMM included. Number of developments registered and compliant. Please include confirmation that you have checked that the development has been registered at www.nrmm.london and that all NRMM used on-site is compliant with Stage IIIB of the Directive and/or exemptions to the policy.	N/A
NRMM: Greater London (excluding Central Activity Zone and Canary Wharf) Number of conditions related to NRMM included. Number of developments registered and compliant. Please include confirmation that you have checked that the development has been registered at www.nrmm.london and that all NRMM used on-site is compliant with Stage IIIA of the Directive and/or exemptions to the policy.	There were no specific condition included, but 17 sites in their AQ Assessment provided details of meeting NRMM requirements within their submission. SEE Table K.1. We are part of a consortium of boroughs with a dedicated officer visiting.

* The particular development initially failed its building AQ Neutral Assessment, based around CHP proposed. A further AQ Assessment is required to address and specifying plant that will meet requirements – details still to be received.

Tabke K.1 NRMM visits

NRMM Visits						
Sites Audited 2017	Cold Engaged	Returned Compliance	n{visits}	Recs delivered Compliance	Non-compliant	Self-Compliant
16	3	8	17	5	11	3



A lot of the 'non-compliant' sites were not of concern in terms of their emissions, but simply didn't upload their data to the GLA website, so they are 'technically compliant'. Where the officer encounters un-registered sites in the course of their activity they do seek to engage them.

Further NRMM sites have been identified within 2017 through the planning process. These details have been forwarded onto the officer for visit in 2018, increasing the number of sites shown below in Table K.2.

Table K.2 Additional NRMM sites

Address	**Planning Reference**	**AQ Neutral**	**CHP**	**NRMM**	**Dust Monitoring**
1 White Post Street, London, SE15 1DR.	DC/17/104772	YES	NO	YES	YES
Evelyn Street, London.	DC/17/105015	YES	YES	YES	YES
Arklow Road, London.	DC/17/104825	YES	NO	YES	YES
Church Grove, Ladywell, London.	DC/17/104264	YES	NO	YES	YES

Mayfields Hostel, 47 Burnt Ash Hill, London, SE12 0AE.	DC/17/103886	YES	NO	YES	YES
Sommerville Home, 2-27 Wellington Close, London, SE14 5NA.	DC/17/104189	YES	NO	YES	YES
9-19 Rushey Green, London, SE6 4AZ.	DC/17/101909	YES	NO	YES	YES
Elec-Trix, 86 Bell Green, London, SE26 4PZ.	DC/17/102792	YES	NO	YES	YES
Brick Kiln One, Station Road, Ladywell,	DC/17/102892	YES	YES	YES	YES
Baudwin Road, London.	DC/17/100865	YES	NO	YES	YES
Hereford Place, London.	DC/17/101332	YES	NO	YES	YES
Bell Green, London.	DC/17/100680	YES	NO	YES	YES
19 YEOMAN STREET, SE8 5DT	DC/17/101523	YES	YES	YES	YES
ARKLOW TRADING ESTATE, ARKLOW ROAD, LONDON, SE14 6EB	DC/17/101505	YES	YES	YES	YES
BOND HOUSE, GOODWOOD ROAD, SE14	DC/17/100382	YES	YES	YES	YES
Catford Timberyard	DC/17/104104	YES	NO	YES	YES
Silver Road	DC/17/102703	YES	YES	YES	YES

Table K.2 LIP Projects in Air Quality Focus Areas.

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 jw Devonshire Rd minor junction improvement (implemented)	Dartmouth Road streetscape improvements (inc 20mph measures) *	New EVCP Sites	New 20mph limits	Air Quality Assessment commissioned with recommendations. Report in late Spring 2017	
9	Deptford Parks – Liveability Neighbourhoods	Streets in North Deptford will see reduced traffic owing to new restrictions. Walking and cycling will be transformed by a new north-south traffic-free route along the former Grand Surrey Canal, new Copenhagen crossings, cycle parking and street lighting. New cycle routes through the park will also link to the proposed new Bakerloo line station (New Cross Gate).					

3.1 New or significantly changed industrial or other sources

No news sources identified.

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.

PM_{10} Monitoring Adjustment

TEOM PM_{10} 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 NO_2 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 NO_2 PT forms an integral part of the UK NO_2 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 2017-October 2017).

National Bias Adjustment Factor

The national bias adjustment factor for 2017 is available from the Defra website[2]. 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 2017 is 0.97, based on 22 studies, details are shown in Figure A.1 below.

[2] Diffusion tube bias adjustment spreadsheet March 2018, available at: https://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html

Figure A.1 National Bias adjustment factor

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/18

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 spreadhseet 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 2018
LAQM Helpdesk Website

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: Select the Laboratory that Analyses Your Tubes from the Drop-Down List — If laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List — If preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List — If a year is not shown, we have no data[2]

Step 4: 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 you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[2] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	50% TEA in acetone	2017	R	West Berkshire	12	40	40	0.3%	G	**1.00**
Gradko	50% TEA in acetone	2017	UB	London Borough of Camden	12	40	40	1.9%	G	**0.98**
Gradko	50% TEA in acetone	2017	B	London Borough of Richmond upon Thames	12	21	21	0.4%	G	**1.00**
Gradko	50% TEA in acetone	2017	R	London Borough of Richmond upon Thames	12	35	31	11.6%	G	**0.90**
Gradko	50% TEA in acetone	2017	R	Royal Borough of Greenwich	12	33	36	-7.6%	G	**1.08**
Gradko	50% TEA in acetone	2017	R	Royal Borough of Greenwich	12	40	39	2.1%	G	**0.98**
Gradko	50% TEA in acetone	2017	R	Royal Borough of Greenwich	10	75	66	12.7%	G	**0.89**
Gradko	50% TEA in acetone	2017	R	Royal Borough of Greenwich	12	44	39	13.6%	G	**0.88**
Gradko	50% TEA in acetone	2017	R	Royal Borough of Greenwich	11	49	41	17.1%	G	**0.85**
Gradko	50% TEA in acetone	2017	SU	Royal Borough of Greenwich	12	20	21	-1.1%	G	**1.01**
Gradko	50% TEA in acetone	2017	UI	Falkirk Council	12	18	17	5.0%	G	**0.95**
Gradko	50% TEA in acetone	2017	R	Falkirk Council	10	38	35	8.3%	G	**0.92**
Gradko	50% TEA in acetone	2017	R	LB Newham	12	38	48	-19.6%	G	**1.24**
Gradko	50% TEA in acetone	2017	B	The City of London Corporation	12	41	38	8.7%	P	**0.92**
Gradko	50% TEA in acetone	2017	UI	Middlesbrough	10	17	14	21.3%	G	**0.82**
Gradko	50% TEA in acetone	2017	UB	Norwich City Council	11	13	14	-4.6%	G	**1.05**
Gradko	50% TEA in acetone	2017	R	RBWM	12	39	38	2.4%	G	**0.98**
Gradko	50% TEA in acetone	2017	R	RBWM	12	35	34	1.1%	G	**0.99**
Gradko	50% TEA in acetone	2017	UB	Reading Borough Council	12	20	29	-31.4%	G	**1.46**
Gradko	50% TEA in acetone	2017	SU	Redcar and Cleveland Borough Council	11	15	11	28.4%	P	**0.78**
Gradko	50% TEA in acetone	2017	R	Worthing Borough Council	12	42	38	9.0%	G	**0.92**
Gradko	50% TEA in acetone	2017	KS	Marylebone Road Intercomparison	12	83	79	6.0%	G	**0.94**
Gradko	50% TEA in acetone	2017		**Overall Factor[3] (22 studies)**				**Use**		**0.97**

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 website[3]. The local bias adjustment factor for 2017 at LW2 is 1. Figure A.2 below shows the calculation.

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

Figure A.2

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	05/01/2017	03/02/2017	51.8	54.6	55.9	54	2.1	4	5.2	54.9	100	Good	Good
2	03/02/2017	28/02/2017	53.0	51.9	49.4	51	1.8	4	4.6	44.2	100	Good	Good
3	28/02/2017	28/03/2017	46.4	49.6	51.7	49	2.7	5	6.6	45.3	50	Good	or Data Capture
4	28/03/2017	26/04/2017	45.2	45.0	50.0	47	2.8	6	7.0		0	Good	or Data Capture
5	26/04/2017	02/06/2017	45.2	45.0	46.4	46	0.8	2	1.9	47.1	92	Good	Good
6	02/06/2017	27/06/2017	53.3	53.7	50.9	53	1.5	3	3.8	48.1	100	Good	Good
7	27/06/2017	03/08/2017	47.8	48.0	48.1	48	0.2	0	0.4	41.4	100	Good	Good
8	03/08/2017	30/08/2017	46.9	46.8	48.2	47	0.8	2	1.9	40.2	100	Good	Good
9	30/08/2017	26/09/2017	43.7	46.3	42.6	44	1.9	4	4.7	43.7	96	Good	Good
10	26/09/2017	02/11/2017	49.8	43.5	44.0	46	3.5	8	8.7	47.5	100	Good	Good
11	02/11/2017	30/11/2017	52.4	50.8	48.7	51	1.9	4	4.6	62.9	100	Good	Good
12	30/11/2017	08/01/2018	51.1	51.4	50.6	51	0.4	1	1.0	60.2	96	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: New Cross Gate

Precision: 12 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 10 periods of data
Bias factor A: 1 (0.91 - 1.1)
Bias B: 0% (-9% - 9%)

Diffusion Tubes Mean: 49 µgm^{-3}
Mean CV (Precision): 3

Automatic Mean: 49 µgm^{-3}
Data Capture for periods used: 98%

Adjusted Tubes Mean: 49 (45 - 54) µgm^{-3}

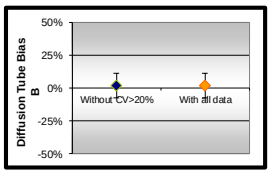
Accuracy (with 95% confidence interval) WITH ALL DATA

Bias calculated using 10 periods of data
Bias factor A: 1 (0.91 - 1.1)
Bias B: 0% (-9% - 9%)

Diffusion Tubes Mean: 49 µgm^{-3}
Mean CV (Precision): 3

Automatic Mean: 49 µgm^{-3}
Data Capture for periods used: 98%

Adjusted Tubes Mean: 49 (45 - 54) µgm^{-3}



Jaume Targa, for AEA
Version 04 - February 2011

Discussion of Choice of Factor to Use

Based on the fact that the local bias adjustment factor is slightly greater than the national bias adjustment factor, to be more conservative when reporting annual mean NO_2 concentrations, it has been decided to use the local bias adjustment factor. In the past 7 years it has predominantly been the national factor that has been used. Table L details the bias adjustment factors for this year and previous years in LBL, including the choice of factor used for each year.

Table L: Bias adjustment factors for Lewisham between 2011 and 2017

Year	Local factor	National factor	Factor used
2011	0.59	0.94	National
2012	0.78	1.01	National
2013	0.93	1.00	National
2014	0.82	0.97	National
2015	1.02	0.95	Local
2016	0.92	1.03	National
2017	1.00	0.97	Local

A.3 Adjustments to the Ratified Monitoring Data

Short-term to Long-term Data Adjustment

In 2017, there was one monitoring location that recorded a data capture rate lower than 75% for NO_2, this was diffusion tube L37 (St James Hatcham). This was due to commissioning the site in October 2017. For the NO_2 annualisation calculations for L37, three urban background continuous monitoring stations were used, with an average data capture of 97%, to calculate annual mean to period mean ratios. Details of the calculation for the short-term to long-term adjustment of annual mean NO_2 and

PM_{10} concentrations for L37 are shown in Table M. Where the period mean is 26th September 2017 to 8th January 2018.

Table M. Short-Term to Long-Term Monitoring Data Adjustment

Site	Site Type	Annual Mean (µg/m³)	Period Mean (µg/m³)	Ratio
London Bexley	Suburban Background	24.5	28.7	0.85
London Eltham	Suburban Background	19.3	21.5	0.89
London Bloomsbury	Urban Background	37.9	42.3	0.90
Average				0.88

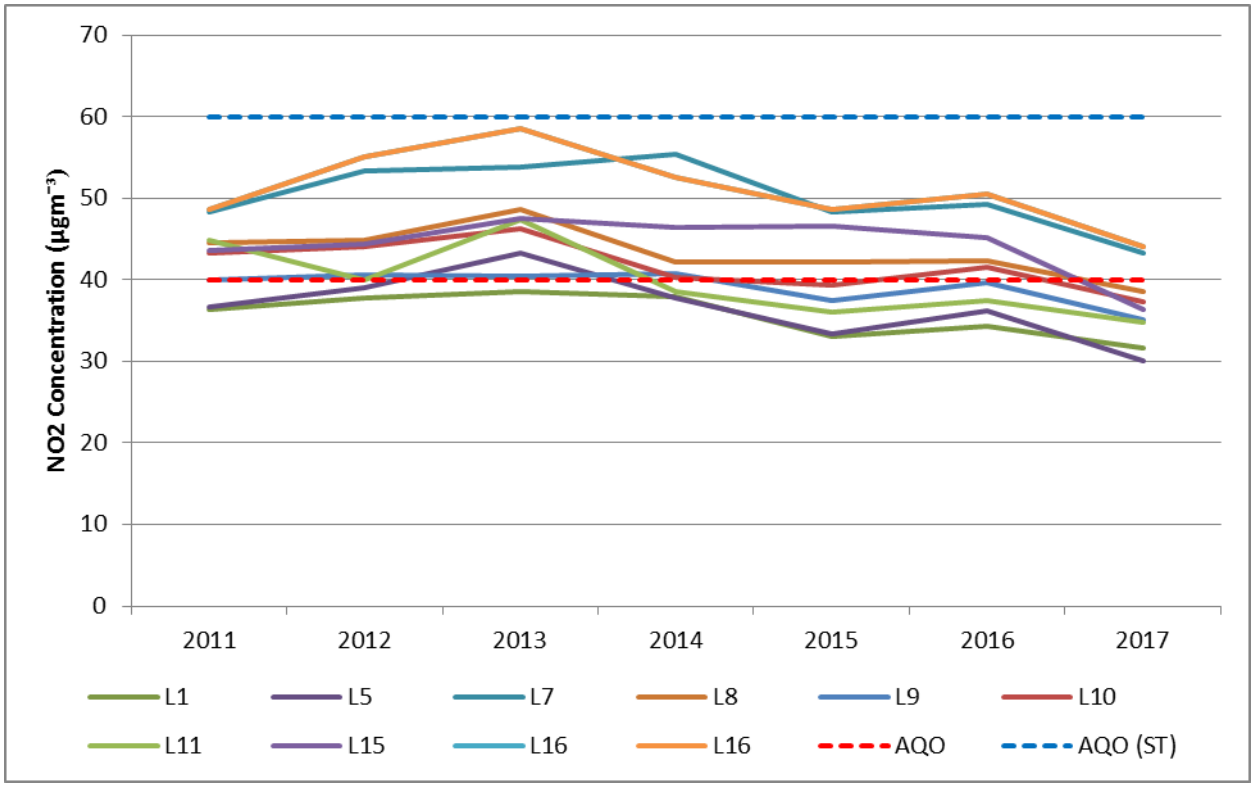
Distance Adjustment

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, NO_2 concentrations at these locations have not been distance corrected.

A.4 Annual Mean NO_2 concentration Trend Analysis

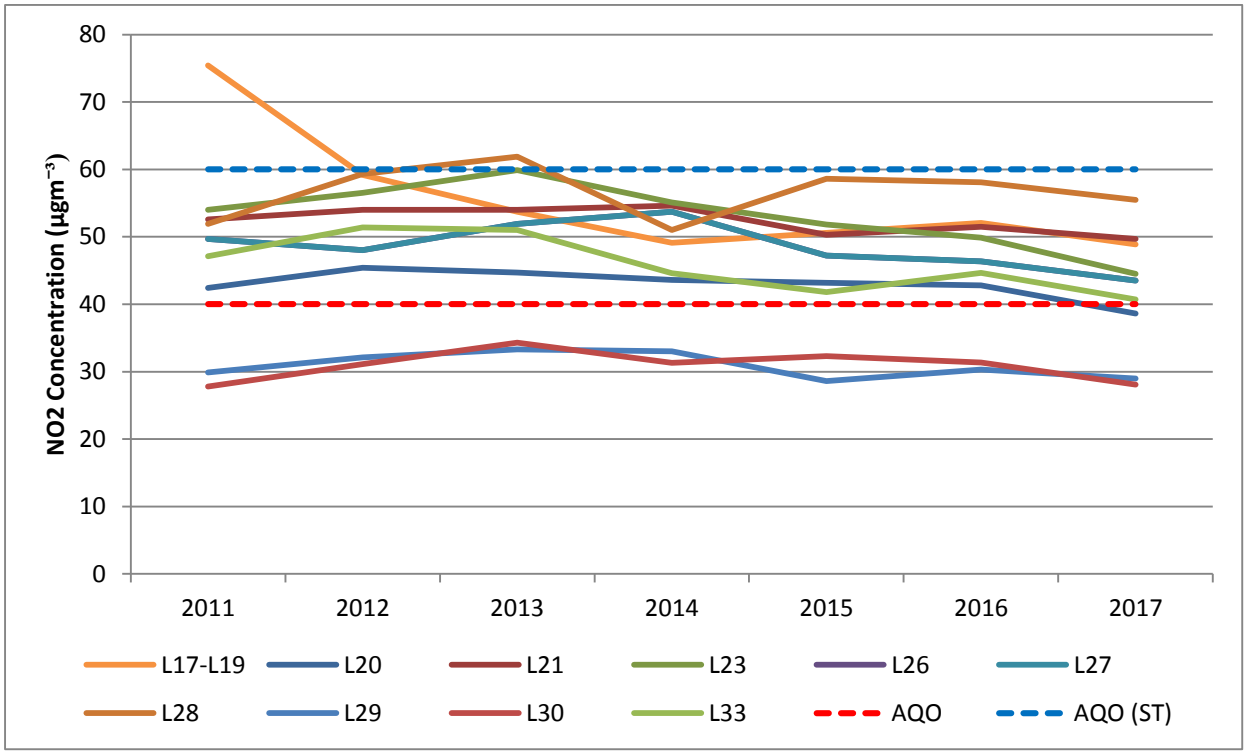
To clearly understand and visualise the trends in annual mean NO_2 concentration over the last 7 years, plots of the annual concentrations recorded at all NO_2 monitoring locations have been produced and are shown below in Figures A.3 to A.6, where AQO is the annual mean Air Quality Objective (40 μgm^{-3}) and AQO (ST) is the short term Air Quality Objective (60 μgm^{-3}).

Figure A.3 Trend in NO_2 Concentration at roadside diffusion tube locations (1)



Note: AQO (ST) = 60 µgm^{-3}. Diffusion tubes cannot be used to directly compare against the 1-hour mean NO_2 objective. However, LLAQM.TG16 states that at locations where annual mean NO_2 concentrations of greater than 60 µgm^{-3} are monitored the 1-hour mean NO_2 objective is likely to be exceeded.

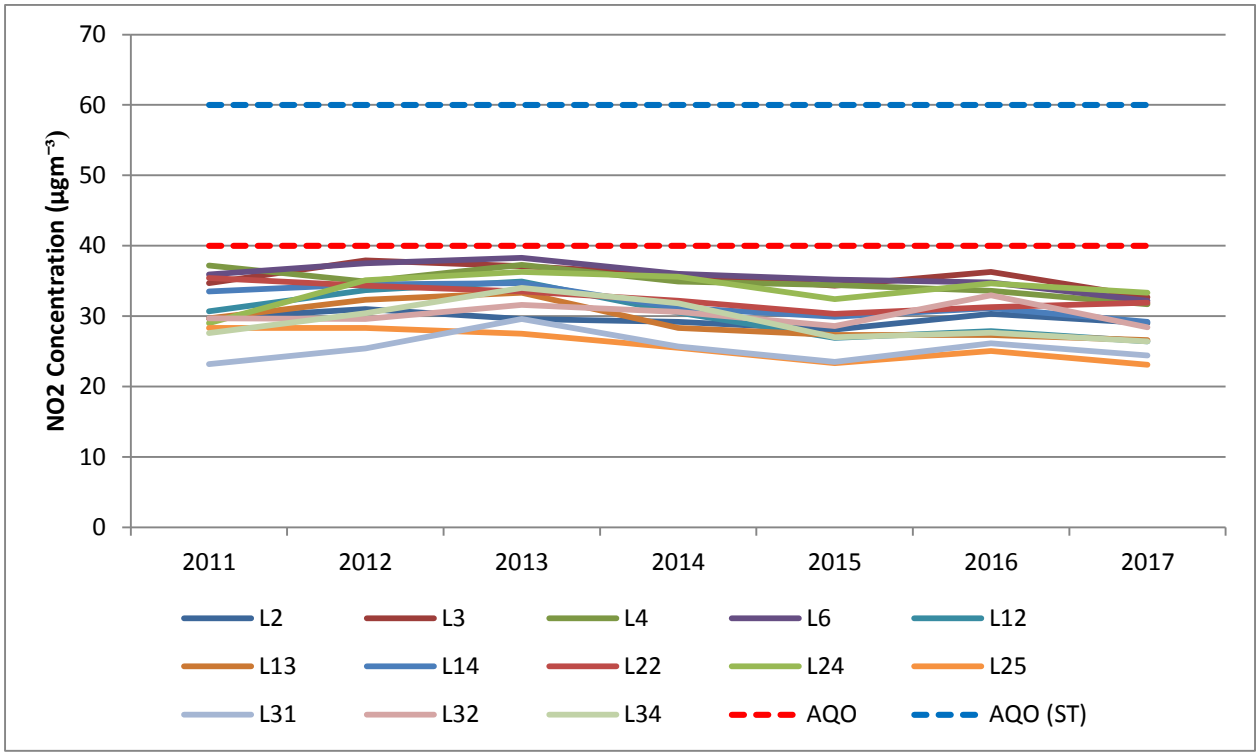
Figure A.4. Trend in NO_2 concentration at roadside diffusion tube locations (2)



Note: AQO (ST) = 60 µgm^{-3}. Diffusion tubes cannot be used to directly compare against the 1-hour mean NO_2 objective. However, LLAQM.TG16 states that at locations where annual mean NO_2 concentrations of greater than 60 µgm^{-3} are monitored the 1-hour mean NO_2 objective is likely to be exceeded.

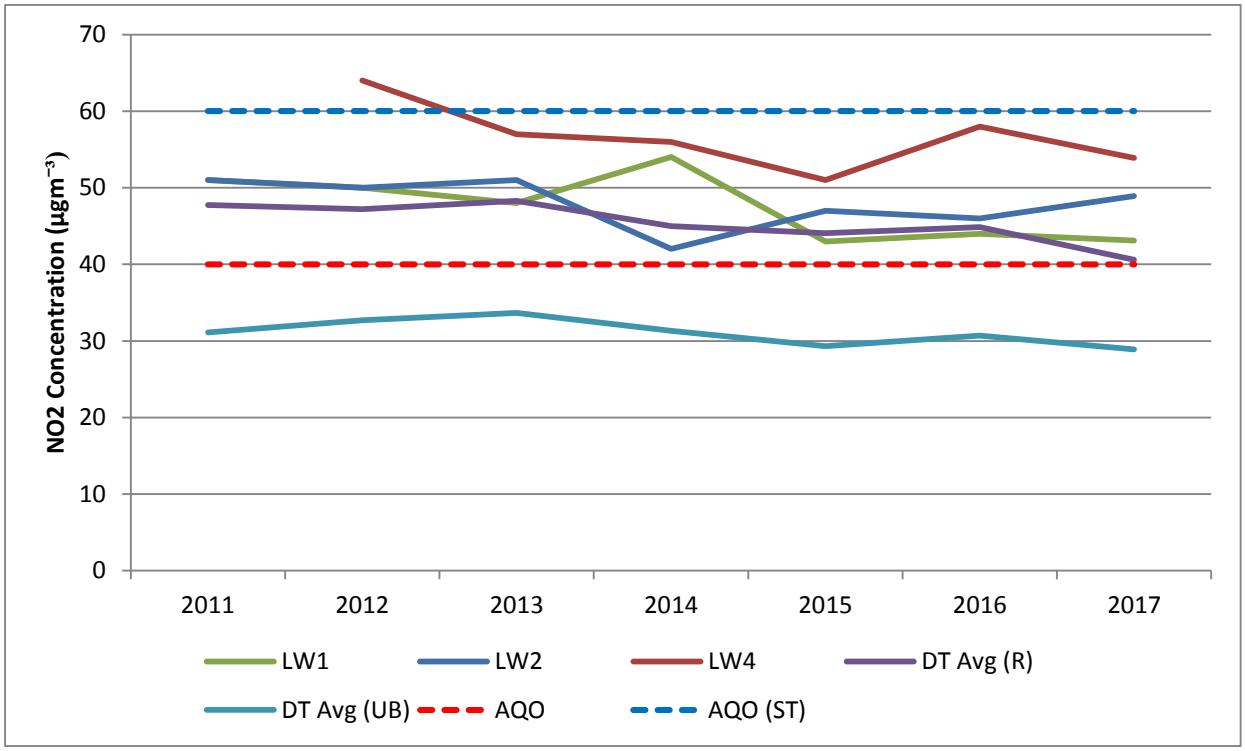
Tube L27 was re-located to a much busier roadside location in 2015.

Figure A.5. Trend in NO_2 concentration at urban background diffusion tube locations



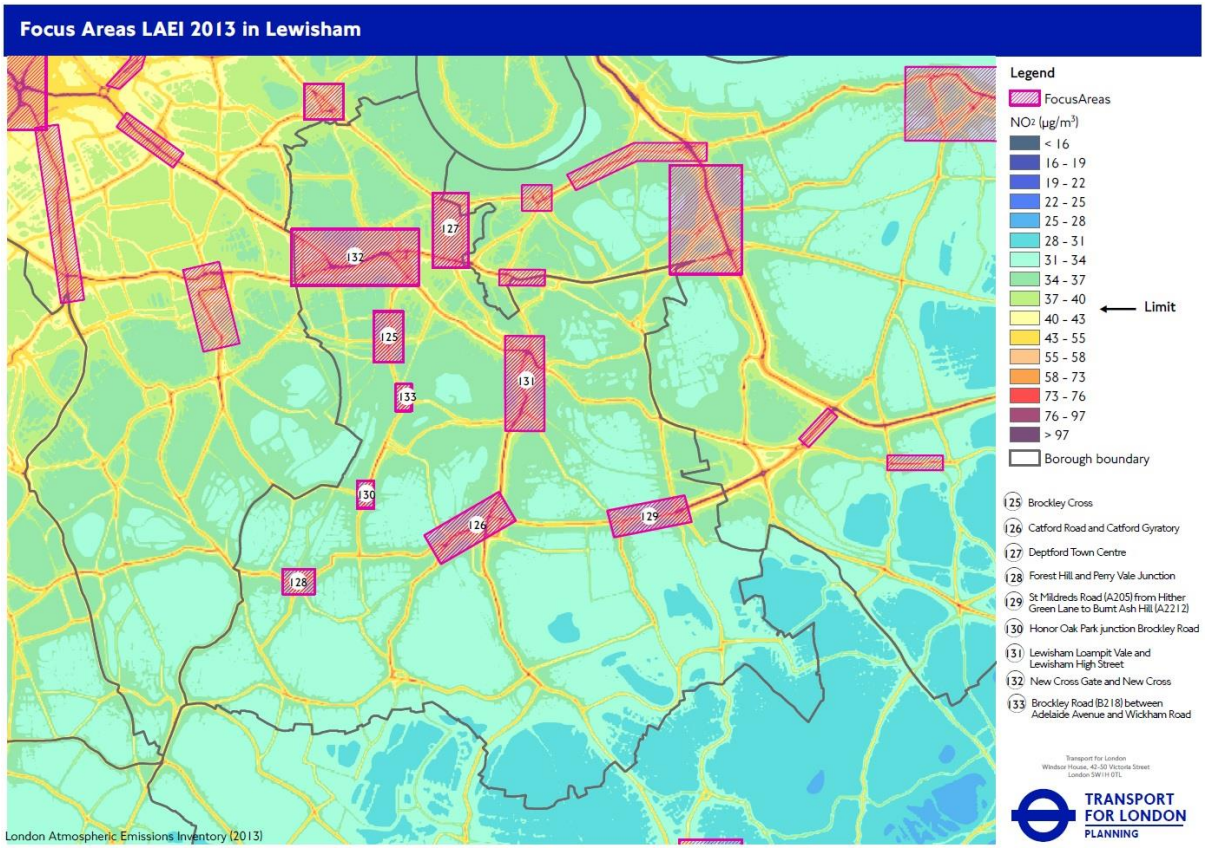
Note: AQO (ST) = 60 µgm^{-3}. Diffusion tubes cannot be used to directly compare against the 1-hour mean NO_2 objective. However, LLAQM.TG16 states that at locations where annual mean NO_2 concentrations of greater than 60 µgm^{-3} are monitored the 1-hour mean NO_2 objective is likely to be exceeded.

Figure A.6. Trend in NO_2 concentration at continuous monitoring locations



Note: AQO (ST) = 60 μgm^{-3}. Diffusion tubes cannot be used to directly compare against the 1-hour mean NO_2 objective. However, LLAQM.TG16 states that at locations where annual mean NO_2 concentrations of greater than 60 μgm^{-3} are monitored the 1-hour mean NO_2 objective is likely to be exceeded.

Figure A.7. Air Quality Focus Areas in London Borough of Lewisham



Appendix B Full Monthly Diffusion Tube Results for 2017

Table N. NO_2 Diffusion Tube Results

Site ID	*Valid data capture for monitoring period %* [a]	*Valid data capture 2017 %* [b]	*Annual Mean NO_2*													
			Jan	*Feb*	*March*	*Apr*	*May*	*June*	*Jul*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*	*Annual mean – raw data* [c]	*Annual mean – bias adjusted* [c]
L1	100.0	100.0	**44.4**	36.0	30.4	27.5	27.3	25.2	24.2	32.3	28.2	32.1	37.4	34.8	31.6	31.6
L2	100.0	100.0	**44.7**	31.1	28.7	25.7	24.8	25.1	22.0	26.6	25.3	26.7	34.4	32.7	29.0	29.0
L3	100.0	100.0	**51.5**	36.7	31.2	23.4	28.3	25.8	25.4	29.8	30.7	34.1	38.7	36.3	32.7	32.7
L4	100.0	100.0	**45.0**	37.9	32.4	28.1	25.2	26.6	24.9	29.3	27.5	31.7	35.6	36.0	31.7	31.7
L5	100.0	100.0	**44.6**	32.5	28.0	26.0	30.9	27.3	27.2	25.3	25.4	27.1	33.6	31.8	30.0	30.0
L6	100.0	100.0	**41.0**	36.9	31.5	33.1	28.7	24.6	28.2	23.2	30.5	34.6	37.9	35.8	32.2	32.2
L7	91.7	91.7	**60.7**	**48.4**	**40.6**	**44.2**	39.3		36.5	38.2	38.9	**41.6**	**45.5**	**42.6**	**43.3**	**43.3**
L8	100.0	100.0	**50.4**	**43.2**	39.0	36.8	39.0	36.1	34.2	34.8	33.6	35.3	**41.7**	39.2	38.6	38.6
L9	91.7	91.7	**47.1**	37.1	34.6	32.6	36.1	32.2	29.4	37.3	30.1	31.3	38.8		35.1	35.1
L10	91.7	91.7	**51.3**	39.0	33.1	34.5	38.1	32.1		39.1	31.6	31.8	**40.6**	38.6	37.3	37.3
L11	100.0	100.0	**58.4**	36.3	31.1	30.8	33.2	28.9	29.1	29.2	34.0	33.5	39.2	33.4	34.8	34.8
L12	100.0	100.0	**41.1**	32.0	26.6	20.7	20.6	17.1	16.6	24.6	23.6	25.9	37.2	31.2	26.4	26.4

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean NO_2													
			Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual mean – raw data [c]	Annual mean – bias adjusted [c]
L13	100.0	100.0	**40.1**	33.1	28.0	22.9	20.9	19.6	18.5	20.4	22.9	29.2	32.8	31.4	26.6	26.6
L14	100.0	100.0	**43.9**	36.0	28.8	26.1	18.8	23.6	21.0	24.6	28.7	29.3	32.9	36.6	29.2	29.2
L15	100.0	100.0	**45.0**	**42.3**	37.2	34.8	38.0	30.3	30.7	33.0	34.1	34.9	37.6	37.5	36.3	36.3
L16	100.0	100.0	**56.1**	**46.1**	**43.9**	**54.5**	**44.8**	**41.9**	38.2	**40.5**	39.6	38.6	**45.6**	39.3	**44.1**	**44.1**
L17	100.0	100.0	**51.8**	**53.0**	**46.4**	**45.2**	**45.2**	**53.3**	**47.8**	**46.9**	**43.7**	**49.8**	**52.4**	**51.1**	**48.9**	**48.9**
L18	100.0	100.0	**54.6**	**51.9**	**49.6**	**45.0**	**45.0**	**53.7**	**48.0**	**46.8**	**46.3**	**43.5**	**50.8**	**51.4**	**48.9**	**48.9**
L19	100.0	100.0	**55.9**	**49.4**	**51.7**	**50.0**	**46.4**	**50.9**	**48.1**	**48.2**	**42.6**	**44.0**	**48.7**	**50.6**	**48.9**	**48.9**
L20	100.0	100.0	**53.6**	**46.5**	38.7	35.2	31.9	32.8	31.6	37.4	35.3	37.2	**41.3**	**42.1**	38.6	38.6
L21	100.0	100.0	**63.4**	**49.4**	**50.8**	**51.8**	**40.8**	**45.3**	**45.0**	**47.0**	**45.9**	**51.1**	**53.2**	**52.8**	**49.7**	**49.7**
L22	91.7	91.7	**45.1**	34.5	30.2	27.9	23.0	22.5	23.8	32.1		31.3	**43.3**	37.1	31.9	31.9
L23	100.0	100.0	**57.6**	**51.3**	**49.5**	**41.5**	**43.3**	39.2	37.6	39.0	**40.8**	**43.3**	**47.0**	**43.6**	**44.5**	**44.5**
L24	100.0	100.0	**49.3**	37.4	29.9	29.5	36.5	25.9	25.9	31.5	29.5	32.7	36.1	35.1	33.3	33.3
L25	100.0	100.0	35.4	26.9	22.5	18.5	19.3	17.3	17.3	19.7	19.8	22.8	29.8	28.3	23.1	23.1
L26	91.7	91.7	**57.0**	**48.1**		37.1	38.9	**42.0**	**40.4**	**40.5**	**41.9**	**44.0**	**45.9**	**43.0**	**43.5**	**43.5**
L27	100.0	100.0	**70.0**	**55.8**	**50.4**	**49.3**	**42.2**	**47.3**	**52.7**	**50.6**	**50.3**	**50.4**	**55.8**	**54.3**	**52.4**	**52.4**

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean NO_2													
			Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual mean – raw data [c]	Annual mean – bias adjusted [c]
L28	100.0	100.0	**67.2**	**59.4**	**62.7**	**53.2**	**45.6**	**49.0**	**53.1**	**53.6**	**48.1**	**54.9**	**57.1**	**61.6**	**55.5**	**55.5**
L29	91.7	91.7	**46.4**	34.2	26.4	23.6	24.6	22.1	21.5	28.9	27.6		32.2	31.8	29.0	29.0
L30	83.3	83.3	**42.3**			24.7	26.0	21.0	20.4	23.4	26.7	26.7	36.3	33.4	28.1	28.1
L31	91.7	91.7	**40.1**	28.9	24.9	19.2	20.2	16.7		18.8	20.6	21.9	29.1	27.7	24.4	24.4
L32	91.7	91.7	**43.4**	33.2	27.9	24.0	23.8	23.4	20.2	23.8	24.7		34.5	33.3	28.4	28.4
L33	75.0	75.0	**51.2**	**47.6**	34.9		34.0		31.5	**43.3**	35.4	38.7	**49.4**		**40.7**	**40.7**
L34	91.7	91.7	**44.0**		26.7	20.9	22.5	16.9	18.6	18.7	27.9	26.3	33.8	33.8	26.4	26.4
L35	91.7	91.7	**50.2**	37.6	29.3	24.9	24.0	22.2		26.9	24.6	30.1	37.6	37.0	31.3	31.3
L36	100.0	100.0	**57.6**	**46.8**	**43.7**	37.8	**41.2**	**44.8**	32.9	37.8	**40.9**	**45.0**	**47.6**	**41.6**	**43.1**	**43.1**
L37	25.0	25.0										27.6	36.8	35.3	33.2	29.2

Exceedance of the NO_2 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 should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%