

L.B. Southwark Air Quality Annual Status Report for 2015
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This report provides a detailed overview of air quality in L.B. Southwark during 2015. 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	Date²
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

² Note: when to be achieved by and then maintained thereafter

1. Air Quality Monitoring

Within the L.B. Southwark, there are two continuous air quality monitor stations, these are supplemented by a Nitrogen Dioxide diffusion tube survey throughout the Borough. Some of the diffusion tube survey is being incorporated into the MAQF Tower Bridge Anti-Idling project, which is a joint project the Authority is running with L.B. Tower Hamlets.

1.1 Locations

Table B Details of Automatic Monitoring Sites for 2015

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
SWK 5	Old Kent Road	534844	177515	Roadside	Yes	1	5	2.0	NO _x & NO ₂ and PM ₁₀	Chemiluminescence and FDMS TEOM
SWK 6	Elephant and Castle	531884	178835	Urban background	Yes	10	25	3.5	NO _x NO ₂ , O ₃ & PM ₁₀	Chemiluminescence, UV Absorption & TEOM

Table C Details of Non-Automatic NO₂ Diffusion tube Monitoring Sites for 2015

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)	Affixed height (m)	Pollutants monitored	Tube co-located with an automatic monitor? (Y/N)
SDT 1	AQMS Old Kent Road - Tube 1	534844	177515	Roadside	Yes	1	5	2.5	NO ₂	Yes
SDT 2	AQMS Old Kent Road - Tube 2	534844	177515	Roadside	Yes	1	5	2.5	NO ₂	Yes
SDT 3	AQMS Old Kent Road - Tube 3	534844	177515	Roadside	Yes	1	5	2.5	NO ₂	Yes
SDT 4	Rotherhithe Old Road SE16	535668	178818	Kerbside	Yes	2	0.5	2.5	NO ₂	No
SDT 5	Drummond Road SE16	534638	179335	Kerbside	Yes	6	0.5	2.5	NO ₂	No
SDT 6	Adjacent to 168 Queens Road SE15	535243	176679	Kerbside	Yes	14	0.5	2.5	NO ₂	No
SDT 7	Adjacent to 167A Rye Lane SE5	534332	176157	Kerbside	Yes	2	0.5	2.5	NO ₂	No
SDT 8	Dunstans Road	534560	174270	Kerbside	Yes	8	0.5	2.5	NO ₂	No
SDT 9	Dulwich Common	533473	17246	Kerbside	Yes	3	0.5	2.5	NO ₂	No
SDT 10	Adjacent to 2 Village Way SE21	532937	174390	Kerbside	Yes	13	0.5	2.5	NO ₂	No
SDT 11	Adjacent to 11 Camberwell Church Street SE5	532673	176738	Kerbside	Yes	2	0.5	2.5	NO ₂	No
SDT 12	AQMS Elephant & Castle - Tube 1	531884	178835	Urban background	Yes	10	25	2.5	NO ₂	Yes
SDT 13	AQMS Elephant & Castle - Tube 2	531884	178835	Urban background	Yes	10	25	2.5	NO ₂	Yes
SDT 14	AQMS Elephant & Castle - Tube 3	531884	178835	Urban background	Yes	10	25	2.5	NO ₂	Yes
SDT 15	Blackfriars Road SE1	531637	180293	Kerbside	Yes	3	0.5	2.5	NO ₂	No

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)	Affixed height (m)	Pollutants monitored	Tube co-located with an automatic monitor? (Y/N)
SDT 17	MAQF TBR 1 - Tooley Street	533503.	179949.5	Roadside	Yes	3	0.5	2.5	NO ₂	No
SDT 18	MAQF TBR 2 - Tower Bridge	533599	180062.2	Roadside	Yes	3	0.5	2.5	NO ₂	No
SDT 19	MAQF TBP 3 - Tooley Street / Boss Street	533586	179867.1	Roadside	Yes	3	0.5	2.5	NO ₂	No
SDT 20	MAQF TBP 4 - Tower Bridge School fence	533518	179843.6	Kerbside	Yes	2	0.5	2.5	NO ₂	No
SDT 21	MAQF TBP 5 - Druid Street	533572	179731.7	Kerbside	Yes	6	0.5	2.5	NO ₂	No
SDT 22	MAQF TBP 6 - Tower Bridge Road	533469	179720.6	Kerbside	Yes	3	0.5	2.5	NO ₂	No
SDT 23	MAQF TBP 7 - Tanner Street West	533409	179656.8	Kerbside	Yes	3	0.5	2.5	NO ₂	No
SDT 24	MAQF TBP 8 - Opposite Papa Johns	533439	179599.5	Kerbside	Yes	3	0.5	2.5	NO ₂	No
SDT 25	MAQF TBP 9 - Abbey Street	533460	179368.7	Kerbside	Yes	2	0.5	2.5	NO ₂	No
SDT 26	MAQF TBP 10 - Long Lane	533323.8	179404.1	Kerbside	Yes	2	0.5	2.5	NO ₂	No
SDT 27	MAQF TBP 11 - Grange Road Triangle	533296.5	179288.5	Kerbside	Yes	2	0.5	2.5	NO ₂	No
SDT 28	MAQF TBP 12 - Webb Street	533216.6	179152.9	Kerbside	Yes	2	0.5	2.5	NO ₂	No
SDT 29	MAQF TBP 13 - Opposite Haddon Hall	533111.3	179121.3	Kerbside	Yes	2	0.5	2.5	NO ₂	No
SDT 30	MAQF TBP 14 - Bricklayers Arms North	533002.9	179068.6	Kerbside	Yes	10	0.5	2.5	NO ₂	No
SDT 31	MAQF TBP 15 - Bricklayers Arms West	533503.4	179949.5	Kerbside	Yes	10	0.5	2.5	NO ₂	No
SDT 32	MAQF HP 1 - Rodney Place Post 113-905	532417	178916	Kerbside	Yes	2	0.5	2.5	NO ₂	No
SDT 33	MAQF HP 2 - Heygate Street Island by Bridge	532403	178816	Kerbside	Yes	10	0.5	2.5	NO ₂	No

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)	Affixed height (m)	Pollutants monitored	Tube co-located with an automatic monitor? (Y/N)
SDT 34	MAQF HP 3 - Heygate South Site entrance on green fence	532324	178772	Kerbside	Yes	2	0.5	2.5	NO ₂	No
SDT 35	MAQF HP 4 - Heygate North Site Entrance on green fence	532253	178788	Kerbside	Yes	10	0.5	2.5	NO ₂	No
SDT 36	MAQF HP 5 - Heygate Street post 04 South site	532195	178726	Kerbside	Yes	2	0.5	2.5	NO ₂	No
SDT 37	MAQF HP 6 - Wansey Street Lamppost north side Reference (1068 / 09)	532337	178711	Kerbside	Yes	10	0.5	2.5	NO ₂	No
SDT 38	MAQF HP 7 - Walworth Road opposite junction to Elephant Road - west side	532074	178825	Kerbside	Yes	2	0.5	2.5	NO ₂	No
SDT 39	MAQF HP 8 - New Kent Road Lamppost 3 North Side (Metro Central)	532053	179070	Kerbside	Yes	10	0.5	2.5	NO ₂	No
SDT 40	MAQF HP 9 - New Kent road Lamppost 15, North side (Meadow Road)	532189	179029	Kerbside	Yes	10	0.5	2.5	NO ₂	No
SDT 41	MAQF HP 10 - New Kent Road Lamppost 29 North side (Rodney Place)	532390	178973	Kerbside	Yes	20	0.5	2.5	NO ₂	No
SDT 42	St Peters Hills Primary School	536057	180343	Kerbside	Yes	10	0.5	2.5	NO ₂	No

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)	Affixed height (m)	Pollutants monitored	Tube co-located with an automatic monitor? (Y/N)
SDT 43	Rotherhithe School Primary School	535503	178705	Kerbside	Yes	20	0.5	2.5	NO ₂	No
SDT 44	St Francesca Cabrini RC Primary School	535334	173993	Kerbside	Yes	20	0.5	2.5	NO ₂	No
SDT 45	Bessemer Grange Primary School	532935	175040	Kerbside	Yes	20	0.5	2.5	NO ₂	No
SDT 46	Charles Dickens Primary school	532212	179764	Kerbside	Yes	5	0.5	2.5	NO ₂	No
SDT 47	Travel Blank									
SDT 48	Adjacent to Beechwood Court 3 Crystal Palace Parade	531911	171364	Kerbside	No	20	0.5	2.5	NO ₂	No

1.2 Comparison of Monitoring Results with Air Quality Objectives

The results presented are after adjustments for “annualisation” and for distance to a location of relevant public exposure, the details of which are described in Appendix A.

1.2.1 Nitrogen Dioxide

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 2015 % ^b	Annual Mean Concentration (µg.m ⁻³)						
				2009	2010	2011	2012	2013	2014	2015
SWK1 ³	Urban Background	N / A	N / A	49 (44%)	N / A	N / A	N / A	N / A	N / A	N / A
SWK5	Roadside	69	69	N / A	N / A	46 (73%)	52 (80%)	55 (>90%)	38 (32%)	42 (69%)
SWK6	Urban Background	80	80	N / A	N / A	N / A	N / A	42 (85%)	37 (84%)	41(80%)
CP1 ⁴	Roadside	N / A	N / A	49 (93%)	47 (56%)	N / A	N / A	N / A	N / A	N / A

Notes: Exceedences of the NO₂ annual mean AQO of 40 µgm⁻³ are shown in **bold**.

NO₂ annual means in excess of 60 µg m⁻³, indicating a potential exceedences of the NO₂ hourly mean AQS objective are shown in bold and underlined.

The above data shows that at both stations, that the annual mean concentrations at both stations is exceeding the objective of 40 µg.m⁻³ since 2011. The trends for the monitoring stations in the Southwark area can be seen in Figure 1 below.

³ This air quality monitoring station was situated at Larcom Street, this station closed in June 2009, due to the council building being disposed off

⁴ This air quality monitoring station was installed by a collaboration of Local Authorities (L.B. Bromley, L.B. Croydon L.B. Lambeth, L.B. Lewisham and L.B. Southwark). This station was closed in July 2010 due to reduction in resources to the Local Authorities.

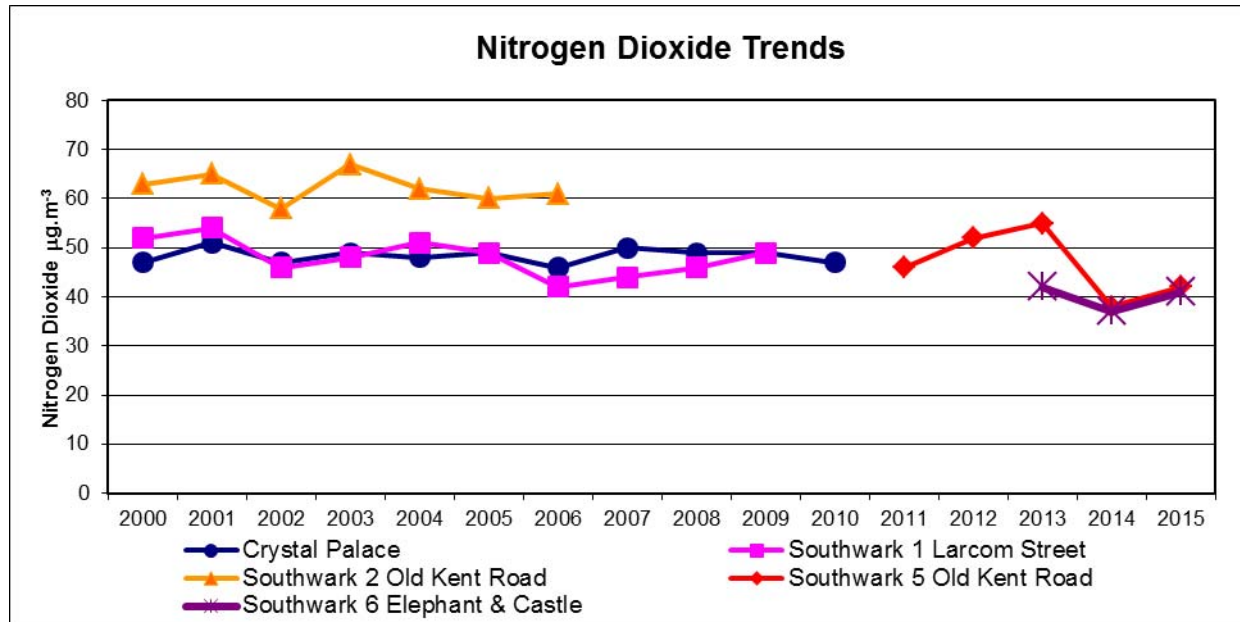


Figure 1 Trends in Annual Mean NO2 Concentrations Measured at the Borough’s Automatic Monitoring Sites

Figure 2 below shows the mean results from all the roadside and background monitoring stations within the London Air Quality Network⁵. This shows that the trend for the background sites is showing a gradual reduction to below the objective. However the roadside locations are not reducing and exceed the objective in the region of $7\mu\text{g.m}^{-3}$ to $20\mu\text{g.m}^{-3}$.

⁵ London Datastore - London Average Air Quality Levels accessed at <http://data.london.gov.uk/dataset/london-average-air-quality-levels>

Nitrogen Dioxide (NO₂) in the London Area

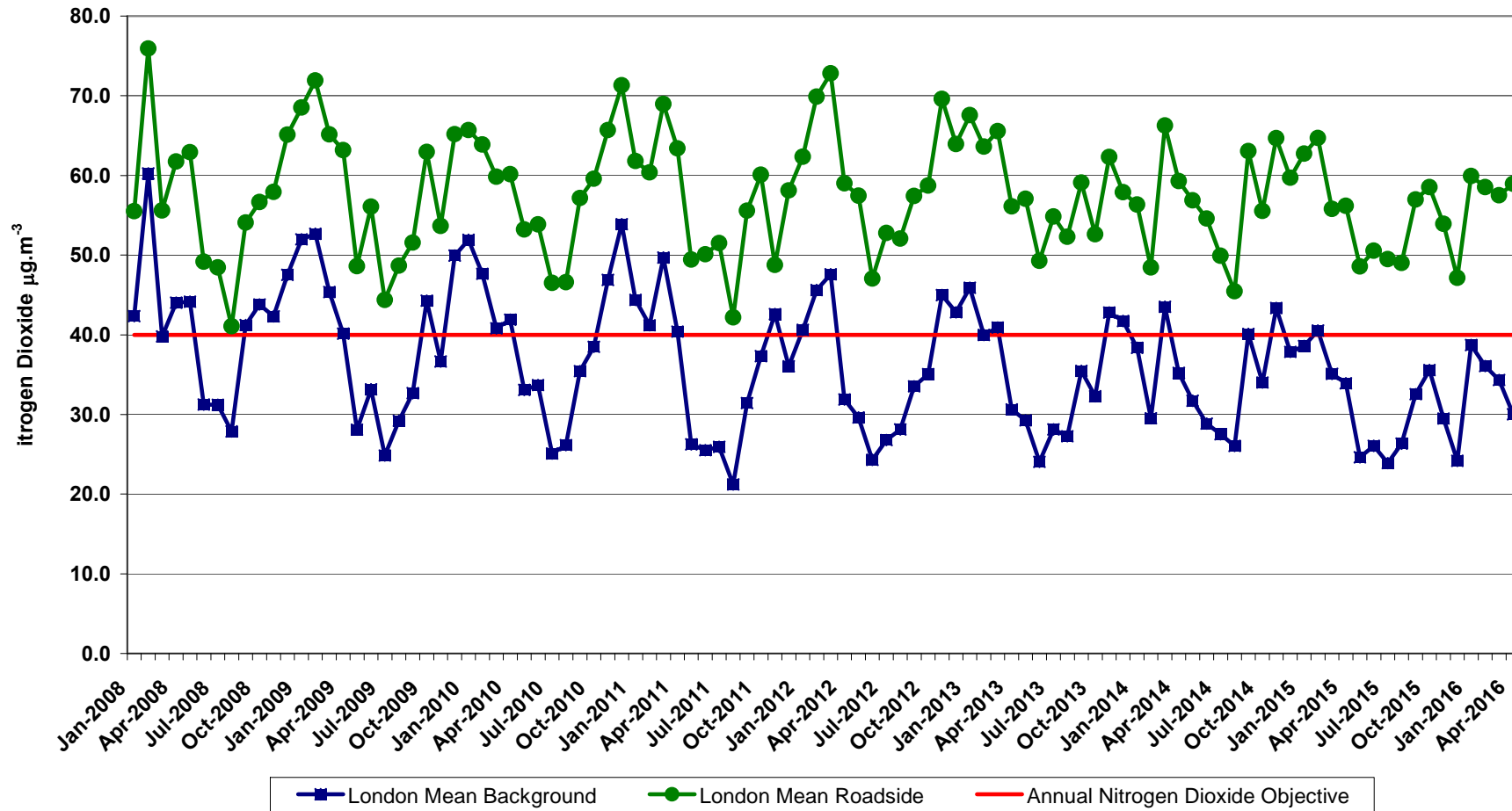


Figure 2 Trends of the monthly mean Nitrogen Dioxide concentrations at roadside and background sites in the London area.

Source GLA accessed at <http://data.london.gov.uk/dataset/london-average-air-quality-levels>

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

Site ID	Valid data capture for monitoring period %	Valid data capture 2015 %	Number of Hourly Means > 200 µg.m ⁻³							
			2009	2010	2011	2012	2013	2014	2015	
SWK1 ³	N / A	N / A	0 (44%)	N / A	N / A	N / A	N / A	N / A	N / A	N / A
SWK5	69	69	N / A	0 (8%)	10 (73%)	6 (80%)	4 (>90%)	1 (32%)	1 (69%)	1 (69%)
SWK6	80	80	N / A	N / A	N / A	N / A	0 (85%)	0 (84%)	0 (80%)	0 (80%)
CP1 ⁴	N / A	N / A	24(80%)	0 (56%)	N / A	N / A	N / A	N / A	N / A	N / A

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

The number of exceedences of the hourly mean >200µg.m⁻³ objective permitted has not been exceeded in the Borough.

1.2.2 Particulate Matter (PM₁₀)

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

Site ID	Valid data capture for monitoring period %	Valid data capture 2015 %	Annual Mean Concentration (µg.m ⁻³)						
			2009	2010	2011	2012	2013	2014	2015
SWK1	N / A	N / A	22 (44%)	N / A	N / A	N / A	N / A	N / A	N / A
SWK5	60	60	N / A	29 (8%)	27 (80%)	25 (82%)	30 (85%)	23	21
SWK6	77	77	N / A	N / A	N / A	N / A	23 (80%)	19	20
CP1	N / A	N / A	24(80%)	23 (55%)	N / A	N / A	N / A	N / A	N / A

Notes: Exceedences of the PM₁₀ annual mean AQO of 40 µgm⁻³ are shown in **bold**.

The PM₁₀ annual mean concentrations at the monitoring stations have met the national air quality objectives. The downward trends of the PM₁₀ annual mean concentrations at the monitoring stations is shown in Figure 3. The trends for all the London Air Quality Network roadside and background monitoring stations can be seen in Figure 4. this shows that the concentrations are generally below the objective level.

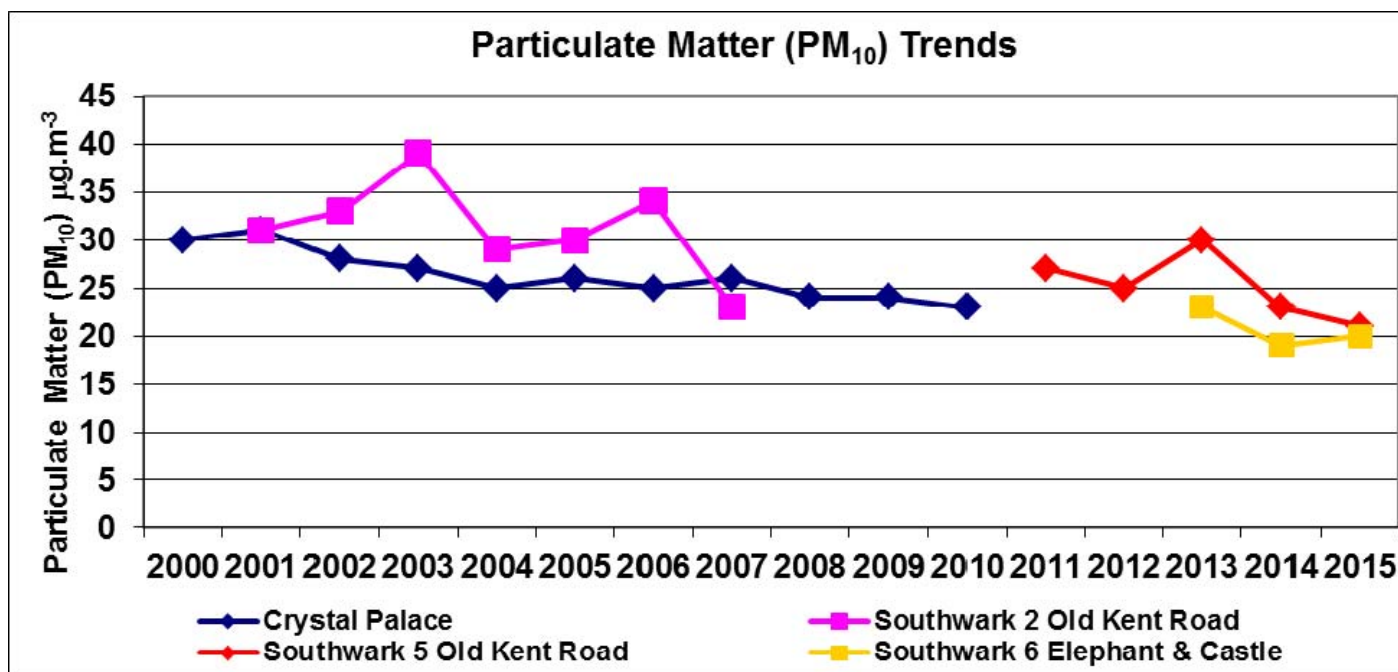


Figure 3 Trends in Annual Mean PM₁₀ Concentrations of the Authority's PM₁₀ monitoring stations

Particulate Matter (PM₁₀) trends

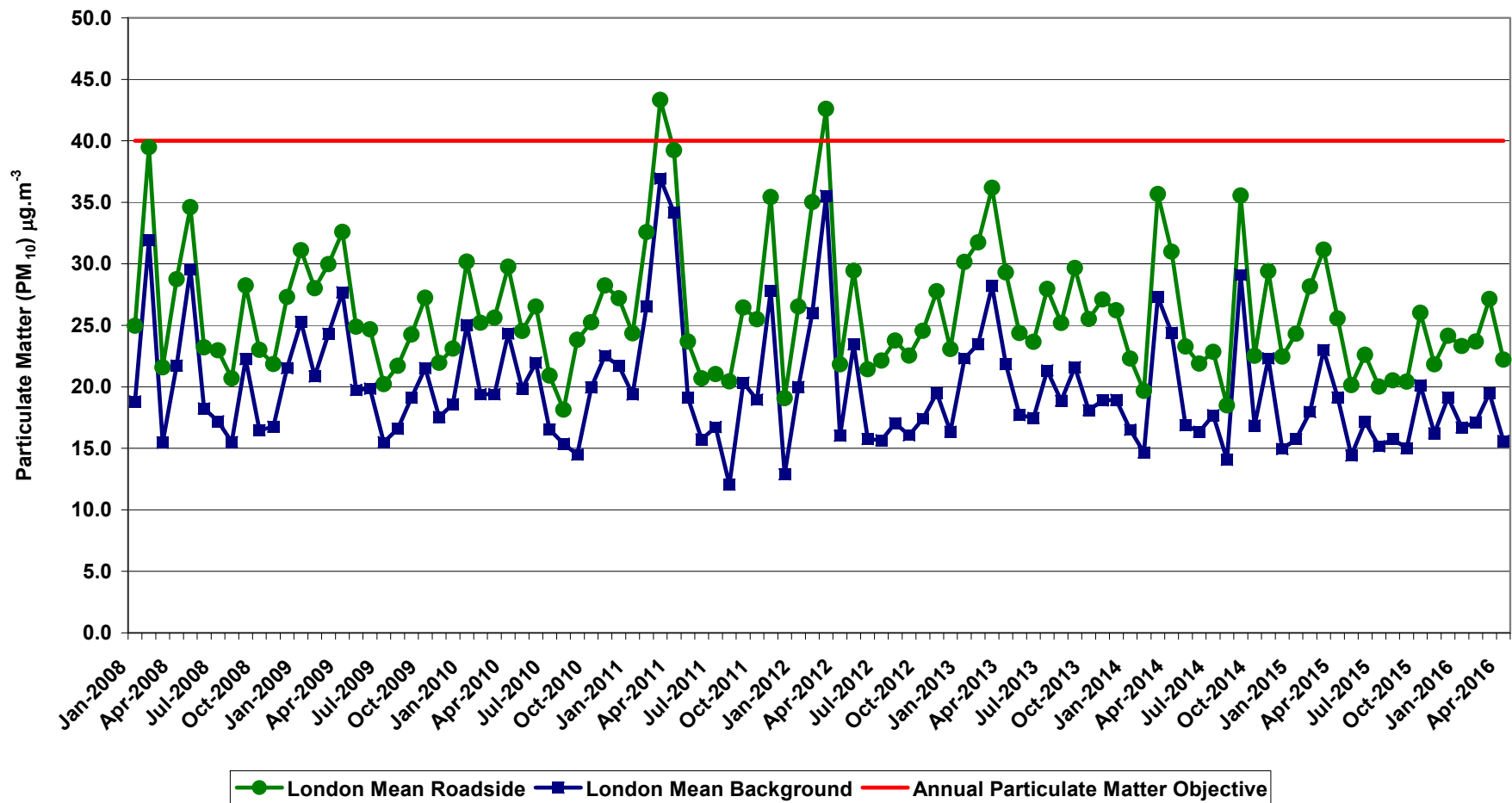


Figure 4 Trends of the monthly mean Particulate Matter (PM₁₀) concentrations at roadside and background sites in the London area. Source GLA accessed at <http://data.london.gov.uk/dataset/london-average-air-quality-levels>

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

Site ID	Valid data capture for monitoring period %	Valid data capture 2015 %	Number of Daily Means > 50 µg m ⁻³						
			2009	2010	2011	2012	2013	2014	2015
SWK1	N/A	N/A	4 (44%)	N/A	N/A	N/A	N/A	N/A	N/A
SWK5	60	60	N/A	0 (8%)	31 (80%)	19 (82%)	30(85%)	10	4
SWK6	77	77	N/A	N/A	N/A	N/A	3 (80%)	0	1
CP1	N/A	N/A	5 (80%)	1 (56%)	N/A	N/A	N/A	N/A	N/A

Notes: Exceedences of the PM₁₀ 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**.

There has been no exceedences of the objective in the monitoring periods.

1.2.3 Particulate Matter (PM_{2.5})

Particulate Matter (PM_{2.5}) Trends

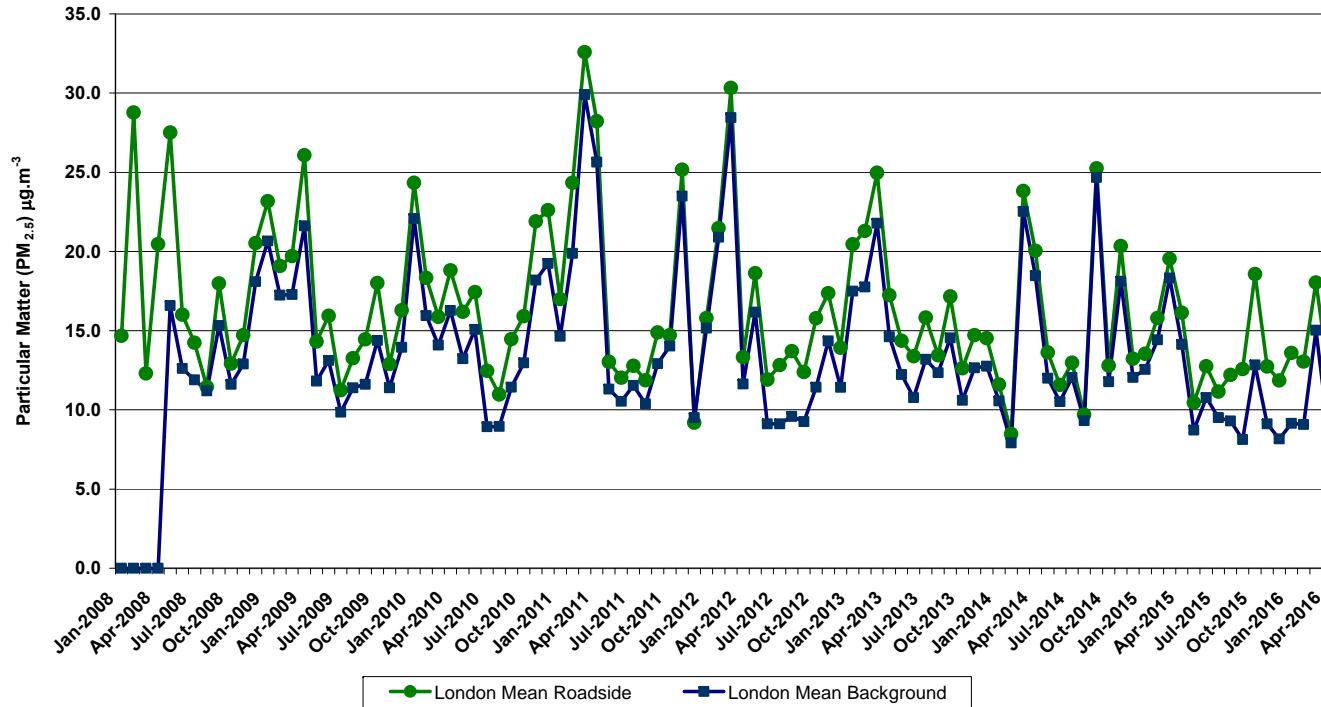


Figure 5 Trends of the monthly mean Particulate Matter (PM_{2.5}) concentrations at roadside and background sites in the London area.

Source GLA accessed at <http://data.london.gov.uk/dataset/london-average-air-quality-levels>

The London Borough of Southwark does not monitor for PM_{2.5} in the Borough. Figure 5 shows the concentrations of all the PM_{2.5} roadside and background monitors in the London Air Quality Network. There appears to be a downward trend of the concentrations.

1.2.4 Sulphur Dioxide (SO₂)

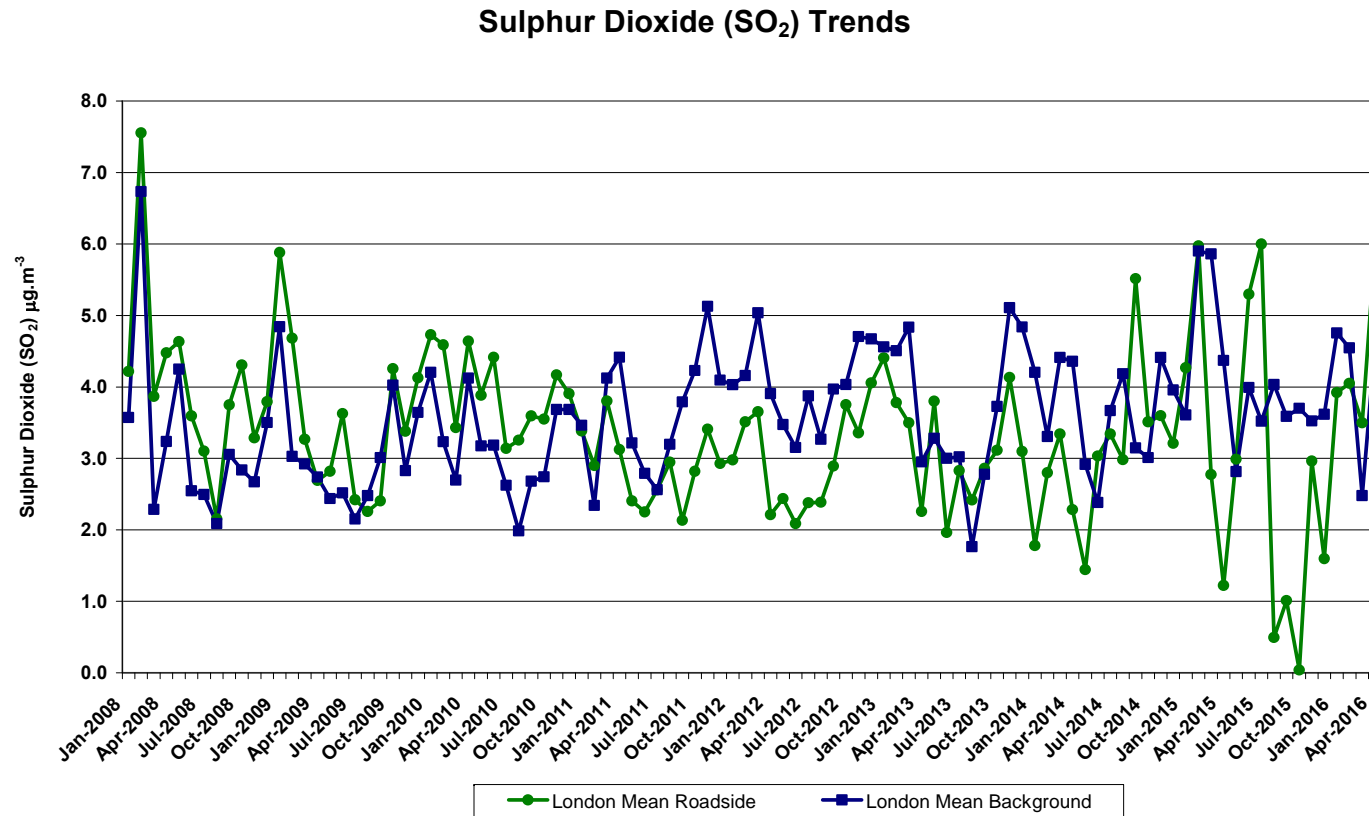


Figure 6 Trends of the monthly mean Particulate Matter (SO₂) concentrations at roadside and background sites in the London area.

Source GLA accessed at <http://data.london.gov.uk/dataset/london-average-air-quality-levels>

The London Borough of Southwark does not monitor for SO₂ in the Borough. Figure 5 shows the concentrations of all the SO₂ roadside and background monitors in the London Air Quality Network. The concentrations are below the objective levels..

2. Action to Improve Air Quality

Table H 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	<i>The Authority's current AQAP is available online at http://www.southwark.gov.uk/downloads/download/2637/air_quality_strategy_and_action_plan</i> Air quality considerations have been incorporated into LIP process through the Transport Plan and 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	The Authority is working with two LSE M.Sc. students to calculate the air pollution burden in the Borough, this data will be utilised in the Borough's JNSA environment section and the forthcoming new Air Quality Action Plan for the Authority. The Environmental Protection Team is working with the Public Health Team to promote the air quality alert cascade process to inform vulnerable persons of poor air quality and actions to be taken.
	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.	Y	Discussions with the GLA's RE: FIT procurement framework regarding tendering for and procuring an Energy Services company (ESCO) to deliver the identified 11 operational estate sites as potential projects for energy efficiency improvement projects as part of the £250,000 annual carbon reduction programme projects.
	2.c	Integrated transport and air quality, including by improving traffic flows on borough roads to	Y	The Authority is working with the City of London, L.B. Tower Hamlets and TfL in the MAQF Tower Bridge Anti-Idling project. The project is aimed at drivers to

Theme	Criteria	Achieved (Y/N)	Evidence
	reduce stop/start conditions		switch off their vehicle's engine when the bridge is open.
	2.d Made additional resources available to improve local air quality, including by pooling its collective resources (s106 funding, LIPs, parking revenue, etc.).	Y	Air quality is listed within the s106 SPD but, at present no additional resources have been provided, but the Environmental Protection Team have been discussion with Planners. Air quality projects have been suggested to Parking Team to seek funding.
3. Leading by example	3.a Invested sufficient resources to complement and drive action from others	Y	In the Borough there is ½ FTE AQ officer and there is no specific budget for AQ but it is incorporated in the Environmental Protection total budget
	3.b Maintained an appropriate monitoring network so that air quality impacts within the borough can be properly understood	Y	The Authority has 2 continuous air quality monitoring stations, which are regularly calibrated by LSO from King's College London and maintained by Enviro-Technology. These stations are supplemented with a network of 42 NO ₂ diffusion tubes monitoring sites which are spatial distributed throughout the Borough.
	3.c Reduced emissions from council operations, including from buildings, vehicles and all activities.	Y	The Council has over the last several years completing a refurbishment of the council housing stock to meet decent home standard, and funding has been provided to schools to improve the energy insulation of the schools and fuel efficiency measures. The Sustainability Team through their Energy programme has reduced the 2008/2009 baseline figure by 26.54% to 30229 tonnes per year
	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	The Authority's waste collection partner Veolia has renewed its fleet to Euro 6 vehicles. Air quality has been considered in the fleet procurement process and the fleet users are encouraged towards alternative fuel / smaller vehicle when ordering new vehicles if required.
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 the major and strategic planning applications are reviewed to ensure that the mayor's policies are being implemented in the new developments in the Borough.

Theme	Criteria		Achieved (Y/N)	Evidence
	4.b	Collected s106 from new developments to ensure air quality neutral development, <i>where possible</i>	N	No funding has been achieved at present through this process.
	4.c	Provided additional enforcement of construction and demolition guidance, with regular checks on medium and high risk building sites.	Y	The enforcement of construction sites is at present being led through the planning process by ensuring that the strategic and major developments have a suitable Construction Management Environment Management Plan and any construction sites which are reported to causing an amenity problem in the area is investigated. The Mayor's NRMM requirements are included within the requirements of any Construction Environmental Management Plans.
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	N	Air quality has been included in the draft Children's JSNA and an air quality report is being presented to the Health and Wellbeing Board in July 2016 with a view to make Air Quality a local Public Health priority.
6. Informing the public	6.a	Raised awareness about air quality locally	Y	The website has been re-written and the new Southwark web pages is being launched in the Autumn 2016. AirText is being promoted through social media. The Authority has promoted the Clean Air 4 schools project in 11 primary schools and 5 secondary schools in the Borough. The Authority is planning a four week advertisement campaign in September.

2.1 Air Quality Action Plan Progress

Table I provides a brief summary of L.B. Southwark progress against the Air Quality Action Plan, showing progress made this year. New projects which commenced in 2015 are shown at the bottom of the table.

Table I Delivery of Air Quality Action Plan Measures

No.	Measure	Action	Progress <ul style="list-style-type: none"> • Emissions/Concentration data • Benefits • Negative impacts / Complaints 	Further information
1	The encouragement to use car clubs	Southwark will continue to encourage the use of the car club schemes, monitor and report on uptake and allocate additional spaces should demand warrant	<p>The number of members at the end of 2014 was 8364 in the borough, with 125 car club spaces utilised. No emission savings has been calculated for this measure.</p> <p>A report has stated that members of car clubs have sold at least one private vehicle since joining a car club or members have also deferred or cancelled purchasing a car since joining the car club.</p>	
2	Encouraging the use of sustainable travel choices in the Borough	Southwark will continue to implement, evaluate and publicise progress of measures to encourage sustainable travel choices, within the borough.	<p>Work has been progressed in the borough through the implementation of the Transport Plan to improve the cycling facilities and improve the pedestrian environment.</p> <p>In 2015 the Authority published a 5-year Cycling Strategy with four key routes identified</p>	
3	The improvement of air quality in the vicinity of schools.	Southwark will investigate funding opportunities to pilot a scheme to identify and implement local air quality improvements near to schools and publicise the results.	<p>In the first phase of the CA4S project six primary schools in the Borough took part, this generated further interest.</p> <p>Through the MAQF 1 funding was obtained to include six primary schools and five secondary schools have received the second phase of the CA4S project. The project has also included a revised secondary schools CA4S project.</p>	
4	Enforcement of engine idling provisions	Southwark investigate potential to undertake enforcement on idling engines at hotspots within the borough.	This measure has been deferred until further resources have been identified and it is cost – effective to implement, but will continue to continue with campaigns	

No.	Measure	Action	<p style="text-align: center;">Progress</p> <ul style="list-style-type: none"> • Emissions/Concentration data • Benefits • Negative impacts / Complaints 	<p style="text-align: center;">Further information</p>
			<p>The authority participated in the CAAB Air Action Days, with two of the Young Advisors volunteering. The Authority is a partner in the City of London MAQF2 project, working with the Idling Engine Project Partnership the recently appointed contractor The Tower Bridge Idling project will concluded in October 2016</p>	<p>The switching off the idling engines will save fuel and emissions, but there are many myths amongst drivers for not switching their vehicles engines to overcome in any future campaigns.</p>
5	Air quality assessment of highway schemes	Southwark will undertake air quality assessments on all major highway traffic management schemes and initiatives and road safety schemes and initiatives > £1m in value	The air quality assessment for the E & C project predicted an increase in air pollution in the area, the authority is monitoring with diffusion tubes in the area, at present there is insufficient data to check whether the scheme has had an impact on the area. There is no preferred options for the Camberwell Town Centre project at present.	
6	Eco Driving Training for Southwark staff.	Southwark will deliver 'in house' smarter driver training to all employees that take the council's internal driving test and investigate how to extend this out to all staff who are required to drive for work purposes.	In the Authority before staff members are permitted to drive any borough's fleet vehicles have to pass an internal driving test, part of this examination includes smarter driving.	
7	Emission strategy for vehicles and plant	Southwark will develop an emissions strategy for all new council and council contractors' vehicles and plant.	Now the ULEZ has been confirmed and the introduction of further zero and ULEV vehicles on the market, the fleet services are exploring alternative fuel vehicles with users. The use of alternative fuel vehicles or using other modes of travel will reduce the emissions in the Borough. The use of the alternative fuel vehicles will generate a market for these vehicles.	
8	Establishment of a central London ULEZ	Southwark will work with partner boroughs in the Central London Air Quality Cluster Group to establish a Central London Ultra Low Emission Zone.	The borough has supported other London Boroughs in requested the ULEZ to be extended to the North and South Circular Roads. The Authority will responding to the current and future consultations on this subject. The extension of the ULEZ to the South Circular Road is predicted to reduce the NO _x emissions by 25% from the baseline in the Borough.	
9	Energy Efficiency measures in Authority Buildings.	Southwark will continue its implementation of energy efficiency measures in council owned buildings.	<p>Work has been implemented in operational estate buildings to improve the energy efficiency, the Low Carbon Schools Programme has produced a carbon savings of 902 tonnes CO₂ per annum.</p> <p>The Authority's Energy and Carbon Reduction Strategy</p>	

No.	Measure	Action	Progress <ul style="list-style-type: none"> • Emissions/Concentration data • Benefits • Negative impacts / Complaints • 	Further information
			has an interim target of 26% reduction in CO ₂ emission by 2026.	
10	The local air quality impact of on-site generation.	Southwark will ensure that local energy generation plant will be fitted with suitable abatement and dispersal technologies, and encourage non-polluting renewable generation	The Energy Centre on the Heygate Estate has been assessed to avoid local air pollution in the area. This energy centre that has been designed to serve numerous phases. In the past there has been a challenge to ensure that energy centres are not divided into smaller units due to the ownership of the developments the energy is serving, whether it public or private sector.	
11	Regulation of industrial processes	Southwark will continue to regulate Part B Processes to ensure that high standards of air pollution control are maintained.	No new processes within the borough, however, several of the existing processes have changed ownership.. The programme of inspection has been carried out in accordance with the risk assessments and has achieved 100% of the programmed inspections in the borough.	
12	Air quality and construction	Southwark will require developers to adopt measures included in the Best Practice Guidance on construction and demolition within their Environmental Construction Management Plans (ECMP).	The Environmental Protection Team continues working with developers to ensure that the construction phase development is not causing an amenity problem and have reviewed all the submitted ECMP's planning conditions.	
13	Travel Plans Monitoring	Southwark will monitor all travel plans received as part of the planning process for compliance and take enforcement action where appropriate.	Due to resources, the monitoring of travel plans through the planning process has stopped. The travel plans for schools have been progressed during 2015/16 period. As of 31 st December 2015 45 schools have an accredited travel plan and 68 schools have updated their existing plan.	
14	Air quality assessments for developments	Southwark will require developers to submit air quality assessments for all major applications within the Air Quality Management Area and any other development that may have an adverse impact on Air Quality.	During 2015, 92 air quality assessments were recorded on the Authority's Planning Register. All were assessed by the Environment Protection Team.	
15	Information in connection with air quality in the Borough.	Southwark will gather an evidence base to determine present and future concentrations within the borough; this information will be made available to developers and their consultants when needed to conduct air quality assessments.	The information will be included on the new air quality web pages for the Authority	

No.	Measure	Action	Progress <ul style="list-style-type: none"> • Emissions/Concentration data • Benefits • Negative impacts / Complaints 	Further information
16	Air quality and local development policies	Southwark will develop policies within its emerging Local Development documents that will require new development to reduce PM ₁₀ and NO _x emissions when compared to previous site use.	<p>There has been on-going discussions with Planning Policy Team to improve the environmental planning policies and condition in connection with air quality.</p> <p>The GLA Air Quality SPD template has been used to a draft air quality guidance note</p>	
17	Promotion of AirText in the Borough	Southwark will continue to promote the AirTEXT service at events and schools and will support other events relevant to air quality	There are 269 (May 2016) participators in the borough and there were 14 morning & 18 evening alerts during the year.	
18	Air Quality Information	Southwark will provide up to date information on air quality via its website and will respond to and engage with residents to support community efforts to raise awareness and change behaviour	The Environment Protection Team has re – written the information in respect of air quality, at present the pages are being beta – tested.. It programmed for the new Southwark website to be launched in the autumn this year.	
19	Monitoring of air quality in the Borough	Southwark will establish and maintain the operation of two automatic monitoring stations at the Elephant and Castle and Old Kent Road and supplement this with a diffusion tube survey to provide a more comprehensive survey of air quality in the borough.	<p>The data capture at the continuous air quality monitoring has been improved with the new contractors.</p> <p>The number of Diffusion tubes has been maintained the same as last year.</p> <p>Data from the monitoring station is included in this report.</p>	
20	Tree Management Strategy	Southwark will pursue its Tree Management Strategy and investigate opportunities to work together with the Mayor on the commitment to plant new trees in priority locations in accordance with the ‘right tree right place’ methodology, taking into suitable account the benefits and costs of street trees on air quality within the borough.	<p>On the Heygate development there will be 1200 trees planted during the period of 2014 & 2020</p> <p>During 2015 financial year 46 street trees were replaced, 49 new street trees Number felled for natural /safety reasons 164 safety includes insurance, dead dying dangerous and trip hazards.</p> <p>The Tree Service has returned to be an In – House service.</p>	

3. Planning Update and Other New Sources of Emissions

The planning update required has been reviewed by Southwark's Development Management Team and the necessary processes are being devised to provide the data in future years.

Southwark has achieved the following air quality improvements in the Borough during 2015:-

- The Clean Air 4 Schools has been extended for a further six primary schools and five secondary schools in the borough. Consideration is being made to integrate the Clean Air 4 Schools project into the School Travel Plan accreditation process.
- The Greening the Elephant MAQF project was completed in December 2015. The project has evaluated the effectiveness of the use of Calcium Magnesium Acetate (CMA) in the construction environment and the use of CristalACTiV™ transparent colloid at the Artwork installation at Elephant Road SE1.
- The Authority has been publicising the Mayor's Non- Road Mobile Machinery requirements to major construction companies in the Borough.
- The authority has revised the technical guidance to constructors on reducing environmental impacts of construction.
- The air quality team worked with the Sustainability team colleagues to improve the energy efficiency of Borough's buildings. In the Low Carbon Schools Programme this has produced a carbon savings of 902 tonnes CO2 per annum
- The authority ensured that air quality was considered during the reworking of the road layout at the Elephant & Castle Northern roundabout.
- Other MAQF projects that received funding in 2015 are still in process and will be reported on their completion.

3.1 New or significantly changed industrial or other sources

In the Borough's opportunity areas for development, there are significant number of energy plants proposed, e.g. 24 boilers and 2 CHP plants at the Elephant Park. This development has an approved Environmental Statement.

The area of land used for industrial land uses in the Borough is reducing, due to the need for housing in London.

Since the last review there have been no significant changes to the road layout of the Borough.

Appendix A Details of Monitoring Site QA/QC

A.1 Automatic Monitoring Sites

The authority is a member of the London Air Quality Network and all the data is ratified in accordance with Kings College London QA / QC procedures for the network.

The authority has out sourced the Local Site operator to King's College London who are contracted to calibrate the all the analysers in the two monitoring stations fortnightly

A.2 Diffusion Tube Quality Assurance / Quality Control

Diffusion Tube Bias Adjustment Factors

The Authority incorporates two local co-location diffusion tube studies, by exposing triplicate tubes at the two air quality monitoring sites in the borough at the Elephant & Castle (Urban Background) and on the Old Kent Road (Roadside). The Authority then uses the Local Air Quality Management Helpdesk spreadsheet to calculate the bias factors, which are included in the results being presented in

QA/QC of Diffusion Tube Monitoring

The Authority has appointed Gradko International Ltd to provide and analysis the Nitrogen Dioxide Diffusion Tube for borough. The laboratory supplies the Authority 20% TEA in water diffusion tubes. The laboratory has confirmed to the authority that it follows the procedures set out in the Practical Guidance. On the next page are the results for Gradko International from the WASP proficiency testing scheme and the new Air Proficiency Testing (AIR PT) scheme. The Didcot Laboratory of Environmental Services Group and Gradko International submit two sets of results, where as the other laboratories in the scheme only submit one set of results.

The AIR PT scheme has up 38 regular different samples and 3 trial different standards for the analytic laboratories to analysed. The LGC Ltd has a programme to send out different combinations of the 41 samples in six rounds throughout the year. (The trail samples were only available for one round only.) Sample 11 contains 4x dynamically loaded Palmes type diffusion tubes are only available in 2014 – 2015 financial year for

rounds AR 001, 003, 004 and 006. The results for these rounds for Gradko international are included in Table K.2. For the 2015 – 2016 financial year, sample 11 is available for rounds AR 007, 009, 010 and 012.

The summary of the tube precision from the National database for Gradko International is detailed on page 33.

Table J Performance of Gradko Laboratory using the Rolling Performance Scheme for WASP Rounds 79 – 109 (Scheme in operation until April 2010).

	Rounds	Performance on basis of RPI, OLD CRITERIA, best 4 out of the 5 rounds	Performance on basis of RPI, NEW CRITERIA, best 4 out of the 5 rounds
April 2007 – April 2008	97 - 101	Good	Good
July 2007 – July 2008	98 - 102	Good	Good
October 2007 – October 2008	99 - 103	Good	Good
January 2008 – January 2009	100 -104	Good	Good
April 2008 – April 2009	101 - 105	Good	Good
July 2008 – July 2009	102 - 106	Good	Good
October 2008 – October 2009	103 - 107	Good	Good
January 2009 – January 2010	104 - 108	Good	Good
April 2009 – April 2010	105 - 109	Good	Good

Table K Performance of Gradko Laboratory using the New Performance Scheme for WASP Rounds 105 – 124 (Scheme in operation from April 2010 with backdated results) and AIR NO2 PT rounds AR001, 3,4, 7,9, 10 and 12.

WASP Round	WASP R105	WASP R106	WASP R107	WASP R108	WASP R109	WASP R110	WASP R111	WASP R112	WASP R113	WASP R114
Round conducted in the period	Apr. – Jun. 2009	Jul. – Sept. 2009	Oct. – Dec. 2009	Jan. – Mar. 2010	Apr – Jun 2010	Jul – Sept. 2010	Oct. – Dec. 2010	Jan. – Mar. 2011	Apr – Jun 2011	Jul. – Sept. 2011
Gradko International	100%	100%	100%	100%	87.5%	100%	100%	100%	100%	100%
WASP Round	WASP R115	WASP R116	WASP R117	WASP R118	WASP R119	WASP R120	WASP R121	WASP R122	WASP R123	WASP R124
Round conducted in the period	Oct. – Dec. 2011	Jan. – Mar. 2012	Apr. – Jun. 2012	Jul. – Sept. 2012	Oct. – Dec. 2012	Jan. – Mar. 2013	Apr. – Jun. 2013	Jul. – Sept. 2013	Oct. – Dec. 2013	Jan. – Mar. 2014
Gradko International	37.5%	100%	100%	100%	100%	100%	100%	100%	100%	100%
WASP Round	AIR PT AR001	AIR PT AR003	AIR PT AR004	AIR PT AR006	AIR PT AR007	AIR PT AR009	AIR PT AR010	AIR PT AR012		
Round conducted in the period	Apr. – May 2014	Jul – Aug. 2014	Oct. – Nov. 2014	Jan. – Feb. 2015	April – May 2015	Jul – Aug 2015	Oct – Nov 2015	Jan – Feb 2016		
Gradko International	100%	100%	100%	100%	100%	100%	100%	100%		

Factor from Local Co-location Studies

Due to the continuous monitoring data at both of the air quality monitoring stations being below 90% and that the data is not evenly disturbed throughout the year, the local co-location has not been calculated. Therefore the bias factor from National Diffusion Tube Bias Adjustment Spreadsheet version Number 06/16 has been used to calculate the Annual mean – bias adjusted data for the Borough's diffusion tube data.

Appendix B Full Monthly Diffusion Tube Results for 2015

Table M NO₂ Diffusion Tube Results

Site ID	Valid data capture for monitoring period % ^a	Valid data capture 2015 % ^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			
SDT 1	100%	100%	26.66	51.94	61.56	61.32	46.20	50.23	38.64	50.41	48.20	64.99	48.42	37.97	48.88	43.01	
SDT 2	100%	100%	28.19	62.24	57.63	66.85	44.56	52.47	39.56	52.01	47.73	65.67	42.71	37.75	49.78	43.81	
SDT 3	100%	100%	32.06	58.61	59.99	61.12	44.69	51.24	39.29	50.78	48.91	69.10	46.99	36.67	49.95	43.96	
SDT 4	100%	100%	62.54	70.94	71.53	65.61	64.87	66.92	60.75	68.65	61.40	76.37	59.18	58.80	65.63	57.75	
SDT 5	100%	100%	48.70	50.77	44.26	38.82	32.30	35.05	31.50	34.15	32.63	42.05	41.84	41.76	39.49	34.75	
SDT 6	100%	100%	77.86	85.65	86.98	83.29	71.46	79.85	77.54	80.58	62.03	87.74	77.34	68.68	78.25	68.86	
SDT 7	100%	100%	56.19	76.79	73.65	75.42	55.25	59.68	53.09	58.90	49.76	73.06	47.99	47.16	60.58	53.31	
SDT 8	92%	92%	50.79		45.65	34.50	29.85	30.96	28.37	34.10	34.44	47.77	33.30	30.97	36.43	32.06	
SDT 9	92%	92%	75.26	62.47	70.12	68.35	52.54	46.74	48.55	64.54		68.99	54.18	40.31	59.28	52.17	
SDT 10	100%	100%	49.92	49.20	50.00	41.60	37.66	38.26	36.65	38.83	38.00	48.56	38.32	30.95	41.50	36.52	
SDT 11	92%	92%	102.21	96.57	93.17	106.55	85.24		75.78	84.80	74.64	93.57	73.67	50.49	85.15	74.93	
SDT 12	92%	92%	67.56	66.46	61.56	61.82	46.55	50.77	47.36	52.39	52.05	76.06	62.71	46.47	57.29	50.42	
SDT 13	100%	100%	62.43	70.25	65.07	65.88	47.22	53.78	42.20	56.67	54.77	68.93	51.93	50.86	57.50	50.60	
SDT 14	92%	92%		67.20	54.93	57.73	38.40	48.13	40.74	58.33	45.48	69.30	59.81	60.76	54.62	48.07	
SDT 15	83%	83%	68.35	78.17	75.66	64.34	61.42	36.29	54.76	65.26	62.21		59.65		62.61	55.10	
SDT 17	92%	92%		79.54	66.11	65.83	64.99	70.51	70.14	74.99	55.08	71.84	63.88	61.15	67.64	59.52	
SDT 18	100%	100%	106.77	99.91	81.71	88.69	75.93	89.75	82.9	98.87	58.58	80.45	92.42	81.98	86.50	76.12	
SDT 19	100%	100%	65.38	72.76	65.68	61.87	63.05	69.92	66.72	69.3	56.7	67.52	63.45	59.98	65.19	57.37	
SDT 20	100%	100%	65.93	70.86	81.67	74.37	71.27	71.26	71.5	79.04	60.59	87.62	64.59	64.67	71.95	63.32	
SDT 21	100%	100%	84.27	77.46	67.75	60.58	64.04	68.15	58.27	62.02	51.3	74.65	70.53	56.65	66.31	58.35	
SDT 22	100%	100%	71.24	83.77	86.76	96.52	71.93	81.70	75.36	85.8	60.44	98.54	69.02	82.2	80.27	70.64	
SDT 23	100%	100%	47.43	50.7	49.36	46.28	35.76	38.02	35.47	42.83	41.35	52.93	39.09	38.16	43.12	37.95	
SDT 24	100%	100%	94.09	105.23	91.41	85.33	94.62	112.18	100.15	89.9	71.91	100.67	96.76	88.39	94.22	82.91	

Site ID	Valid data capture for monitoring period % ^a	Valid data capture 2015 % ^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		
SDT 25	100%	100%	62.42	68.54	73.43	60.61	59.62	63.19	61.83	64.68	56.39	75.19	55.07	47.62	62.38	54.89
SDT 26	83%	83%	67.25	73.77	63.07		59.62	62.66	60.32	56.56		68.44	65.91	59.02	63.66	56.02
SDT 27	92%	92%	67.75	66.11	79.81	82.53	71.22	73.17	63.48		54.13	82.13	65.08	65.6	70.09	61.68
SDT 28	83%	83%	51.06	56.33	48.7	38.08	38.54	37.09	35.9	37.89		40.63	34.43		41.87	36.85
SDT 29	92%	92%	95.36	100.03	96.4	94.95	88.45	104.29	87.61	92.47	67.71	86.71	90.92		91.35	80.39
SDT 30	100%	100%	81.58	80.76	70.16	65.02	71.99	74.37	67.92	83.92	65.55	81.51	63.53	69.18	72.96	64.20
SDT 31	100%	100%	62.81	70.56	65.04	64.75	64.08	65.5	61.15	76.91	59.62	77.79	70.84	67.72	67.23	59.16
SDT 32	92%	92%	70.34	67.65	62.05	54.49	47.39	51.82	40.66	52.39	50.55	64.77	50.92		55.73	49.04
SDT 33	83%	83%	66.42	64.04	65.04	54.49	56.58	53.50		56.06	51.74	65.93	62.8		59.66	52.50
SDT 34	75%	75%	59.97			53.58	49.67	50.21	41.79	45.93	48.41	63.11	44.78		50.83	44.73
SDT 35	92%	92%	52.69	58.08	51.83	40.36	39.75	40.36	39.85	44.78	44.14	54.76	55.69		47.48	41.78
SDT 36	83%	83%	75.07	81	75.76	73.04	57.95	64.73	54.62	68.19	56.7	73.67			68.07	59.90
SDT 37	92%	92%	55	35.39	47.79	43.93	36.64	39.18		34.75	40.78	50.24	45.69	36	42.31	37.23
SDT 38	100%	100%	103.37	113.37	85.16	94.43	115.39	130.50	124.1	120.48	98.04	111.85	132.8	112.59	111.84	98.42
SDT 39	100%	100%	88.67	87.71	69.06	71.87	76.76	83.40	78.62	82.47	66.80	75.21	75.64	73.12	77.44	68.15
SDT 40	100%	100%	82.24	108.68	91.51	99.96	103.87	100.85	87.84	98.8	73.59	103.15	85.3	77.1	92.74	81.61
SDT 41	100%	100%	106.45	115.31	102.33	101.96	97.90	101.06	88.68	103.06	91.28	92.05	85.31	79.95	97.11	85.46
SDT42	92%	92%	57.89	55.94	47.33	45.29	38.46	40.49	38.67	42.32	43.26		90.95	42.98	49.42	43.49
SDT43	92%	92%	73.91	69.58	69.77	70.35	51.98	51.17	48.15	59.52	58.86	73.87	56.82		62.18	54.72
SDT44	92%	92%	77.76	72.42	73.85	64.86	56.14	61.99	49.60	48.93	54.80	72.21	48.17		61.88	54.45
SDT45	92%	92%	41.40	38.85	37.86	32.06	22.87	21.44	20.24	24.05	28.86	36.67	32.67		30.63	26.95
SDT46	92%	92%	52.55	53.18	50.92	43.43	36.21	64.24	37.10	40.04	40.01	49.17	48.66		46.86	41.24
SDT 47	75%	75%	0.27	0.14	0.39			0.29	0.16	0.29	0.17	0.31	0.13		0.24	0.21
SDT48	92%	92%	80.58	75.52	73.56	60.35	58.58	77.68	71.44	79.55		71.70	67.77	63.34	70.92	62.41

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