London Borough of Sutton Air Quality Annual Status Report for 2016

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This report provides a detailed overview of air quality in Sutton during 2016. 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 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	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 Sutton operated five automatic monitoring stations in 2016:

- two kerbside sites: ST4 Sutton – Wallington and ST6 Sutton - Worcester Park, both measuring NO_2 and PM10;
- two industrial sites: ST8 Sutton - Beddington Lane measuring NO_2 and PM10 and Site ST5 Sutton - Beddington Lane (north) measuring NO_2, PM10 and PM2.5.
- one suburban background: ST3 –Carshalton measuring NO_2 - was operational until July 2016.

Table B. Details of Automatic Monitoring Sites for 2016

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA?	Distance from monitoring site to relevant exposure (m)	Distance to kerb of nearest road (N/A if not applicable) (m)	Inlet height (m)	Pollutants monitored	Monitoring technique
ST4	Wallington	528925	163804	Kerbside	Y	5	0.8	*1.5*	NO_2, PM10	Chemiluminescence, BAM
ST5	Beddington Lane (north)	529400	167224	Industrial	Y	6	4.5	*1.5*	NO_2, PM10, PM2.5	Chemiluminescence,BAM
ST6	Worcester Park	522557	165787	Kerbside	Y	2	1.3	*1.5*	NO_2, PM10	Chemiluminescence,TEOM/FDMS
ST8	Beddington Lane	529781	166597	Industrial	Y	330	N/A	*1.5*	NO_2, PM10	Chemiluminescence, BAM
ST3	Carshalton	527776	164513	Suburban Background	Y	2	50	*1.5*	NO_2	Chemiluminescence, UV Photometric

In addition, Sutton Council undertook non-automatic monitoring at twenty four locations in 2016, an increase of one additional site from the previous year.

The new site was as follows:

- BL - Beddington Lane/Brookmead Road.

Long term monitoring, i.e. more than three years has been carry out at only four site as follows:

- ST32 Alcorn Close
- ST33 Carshalton Road
- ST36 Croydon Rd, Beddington
- ST40 38 High Street, Cheam

Map of Non-Automatic Monitoring Sites

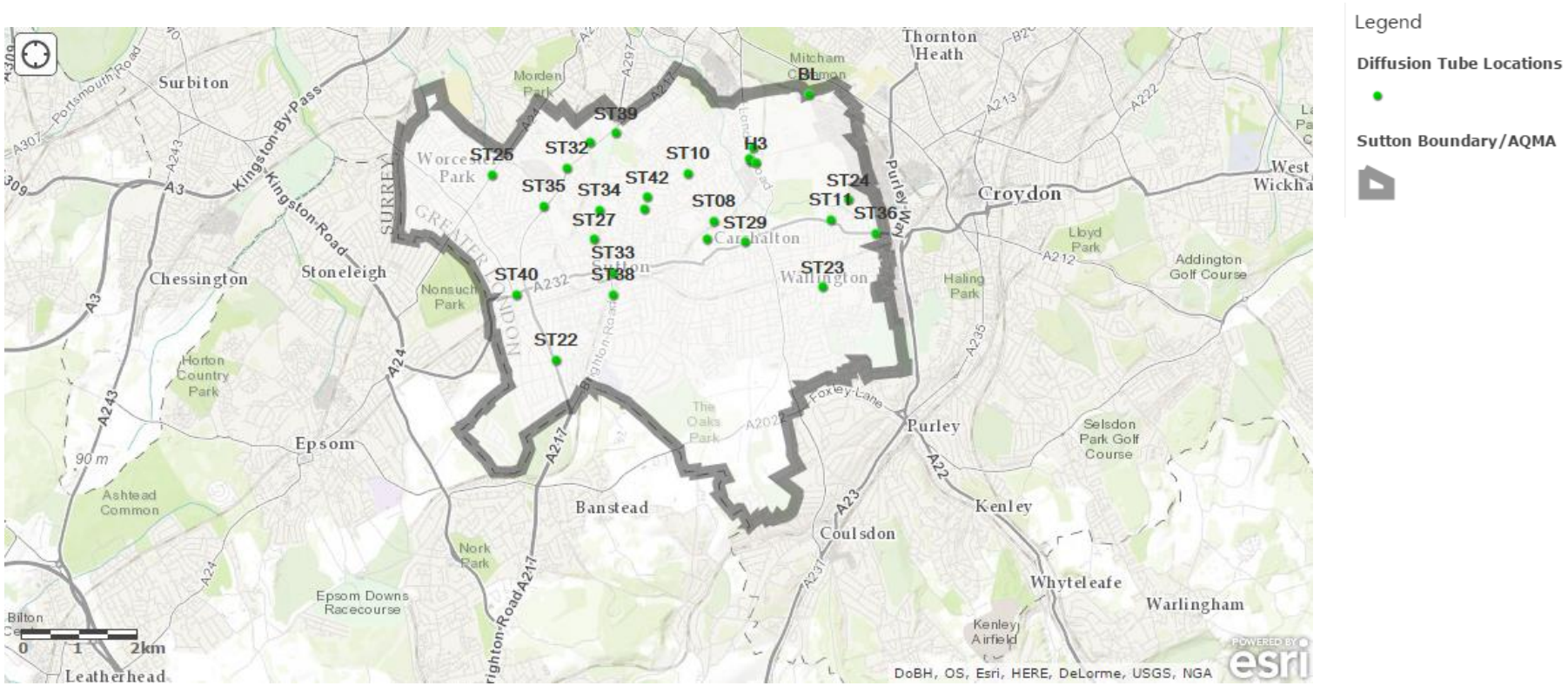


Table C. Details of Non-Automatic Monitoring Sites for 2016

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA?	Distance from monitoring site to relevant exposure (m)	Distance to kerb of nearest road (N/A if not applicable) (m)	Inlet height (m)	Pollutants monitored	Tube co-located with an automatic monitor? (Y/N)
ST21	Glastonbury Road	525567	166291	Urban Background	*Y*	*6*	*2*	2	NO_2	*N*
ST22	Dorset Road, Belmont	525063	162474	Roadside	Y	12	2	2	NO_2	N
ST23	Sandy Lane South	529734	163868	Roadside	Y	5	2	2	NO_2	N
ST24	Derry Road	530130	165404	Roadside	Y	7	2	2	NO_2	N
ST25	Staines Avenue	523874	165778	Roadside	Y	15	2	2	NO_2	N
ST26	West Street	527680	164662	Roadside	Y	2	2	2	NO_2	N
ST07	Hackbridge Primary	528401	166038	Urban background	Y	0	56	2	NO_2	N
ST08	Victor Seymour	527788	164982	Urban background	Y	0	33	2	NO_2	N
ST29	Park Lane	528339	164615	Roadside	Y	2	6	2	NO_2	N
ST10	Muschamp Priory	527299	165789	Urban background	Y	0	20	2	NO_2	N
ST11	Sherwood Park School	529835	165041	Urban background	Y	0	35	2	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)
ST32	Alcorn Close	525184	165845	Urban background	Y	N	25	2	NO_2	N
ST33	Carshalton Road	526048	164032	Roadside	Y	3	1	2	NO_2	N
ST34	Oakhill Road	525772	165118	Roadside	Y	10	1	2	NO_2	N
ST35	Gander Green Lane	524782	165167	Roadside	Y	10	1	2	NO_2	N
ST36	Croydon Rd, Beddington	530645	164839	Roadside	Y	0	11	2	NO_2	N
ST27	Haddon Road/St Nicholas Way	525691	164599	Roadside	Y	11	2	2	NO_2	N
ST38	Brighton Road, Sutton	526046	163636	Roadside	Y	2	10	2	NO_2	N
ST39	Rose Hill roundabout	526019	166469	Roadside	Y	6	2	2	NO_2	N
ST40	38 High Street, Cheam	524357	163599	Roadside	Y	2	1	2	NO_2	N
ST42	Royston Park	526605	165364	Roadside	Y	20	95	2	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)
H1	Hackbridge Road	528373	166077	Roadside	Y	0.5	17	2	NO_2	N
H2	Clover Way	528437	166275	Urban background	Y	0	25	2	NO_2	N
H3	57 London Rd	528499	166004	Roadside	Y	0	5	2	NO_2	N
BL	Beddington Lane	529781	166597	Roadside	Y	15	2	2	NO_2	N

1.2 Comparison of Monitoring Results with AQOs

The results presented are after bias adjustments, the details of which are described in Appendix A.

Table D1. 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 2016 % [b]	Annual Mean Concentration (μgm^{-3})						
				2010 [c]	2011 [c]	2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]
ST4	Automatic	*92*	*92*	**73.3** (99%)	**69.7c** (60%)	**71.8** (95%)	**69.6c** (53%)	**66.6c** (20.5%)	**61.4c** (59%)	**63.2**
ST5	Automatic	*89*	*89*	**45.0** (85%)	38.2 (99%)	39.0c (17%)	-	36.4c (42.8%)	32 (95%)	36.3

Site ID	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2016 % [b]	Annual Mean Concentration (µgm^{-3})						
				2010 [c]	2011 [c]	2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]
ST6	Automatic	*99*	*99*	**58.0** (99%)	**56.5** (99%)	**54.5** (97%)	**49.0** (99%)	**53.5** (99%)	**52** (98%)	**57.1**
ST8	Automatic	*96*	*96*	-	-	35.7c (44%)	36.0 (93%)	30.5 (76%)	27 (86%)	30.1
ST3	Automatic	*100*	*50*	30.9 (94%)	27.2 (79%)	28.7 (87%)	31.7c (74%)	27.3c (74%)	22 (88%)	23.3
ST21	Urban Background	*100*	*100*	-	-	-	-	-	27.3	32.1
ST22	Roadside	*92*	*92*	-	-	-	-	-	37.3	37.2
ST23	Roadside	*92*	*92*	-	-	-	-	-	32.2	35.0
ST24	Roadside	*100*	*100*	-	-	-	-	-	26.7	30.6
ST25	Roadside	*100*	*100*	-	-	-	-	-	32.0	34.6
ST26	Roadside	*100*	*100*	-	-	-	-	-	36.6	**41.3**
ST07	Urban background	*100*	*100*	-	-	-	-	22.3	22.0	24.2
ST08	Urban background	*92*	*92*	-	-	-	-	24.9	23.6	28.5
ST29	Roadside	*92*	*92*	-	-	-	-	-	37.9	**41.5**
ST10	Urban background	*100*	*100*	-	-	-	-	23.0	21.1	24.3
ST11	Urban background	*100*	*100*	-	-	-	-	26.6	23.4	26.4

Site ID	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2016 % [b]	Annual Mean Concentration (µgm^{-3})						
				2010 [c]	2011 [c]	2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]
ST32	Urban background	*100*	*100*	34.4	30.8	31.5	25.3	27.0	22.4	27.0
ST33	Roadside	*100*	*100*	**45.2**	36.6	36.1	39.6	**42.8**	37.3	38.8
ST34	Roadside	*100*	*100*	-	-	-	-	**48.1**	39.4	**42.8**
ST35	Roadside	*100*	*100*	-	-	-	-	**46.3**	31.5	34.1
ST36	Roadside	*100*	*100*	36.9	30.6	32.5	34.1	35.9	29.0	32.8
ST27	Roadside	*100*	*100*	-	-	-	-	-	36.8	39.6
ST38	Roadside	*100*	*100*	-	-	-	-	38.9	34.7	36.8
ST39	Roadside	*100*	*100*	-	-	-	-	36.2	37.1	39.3
ST40	Roadside	*92*	*92*	**52.7**	**47.4**	**50.0**	**46.5**	**48.3**	**42.9**	**44.8**
ST42	Roadside	*75*	*75*	-	-	-	-	24.7	21.0	21.8
H1	Roadside	*100*	*100*	-	-	-	-	33.7	28.9	32.3
H2	Urban background	*100*	*100*	-	-	-	-	29.3	26.5	29.3
H3	Roadside	*92*	*92*	-	-	-	-	36.6	32.9	32.3
BL	Roadside	*92*	*92*	-	-	-	-	-	-	34.1

Notes: Exceedance of the NO_2 annual mean AQO of 40 µgm^{-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%

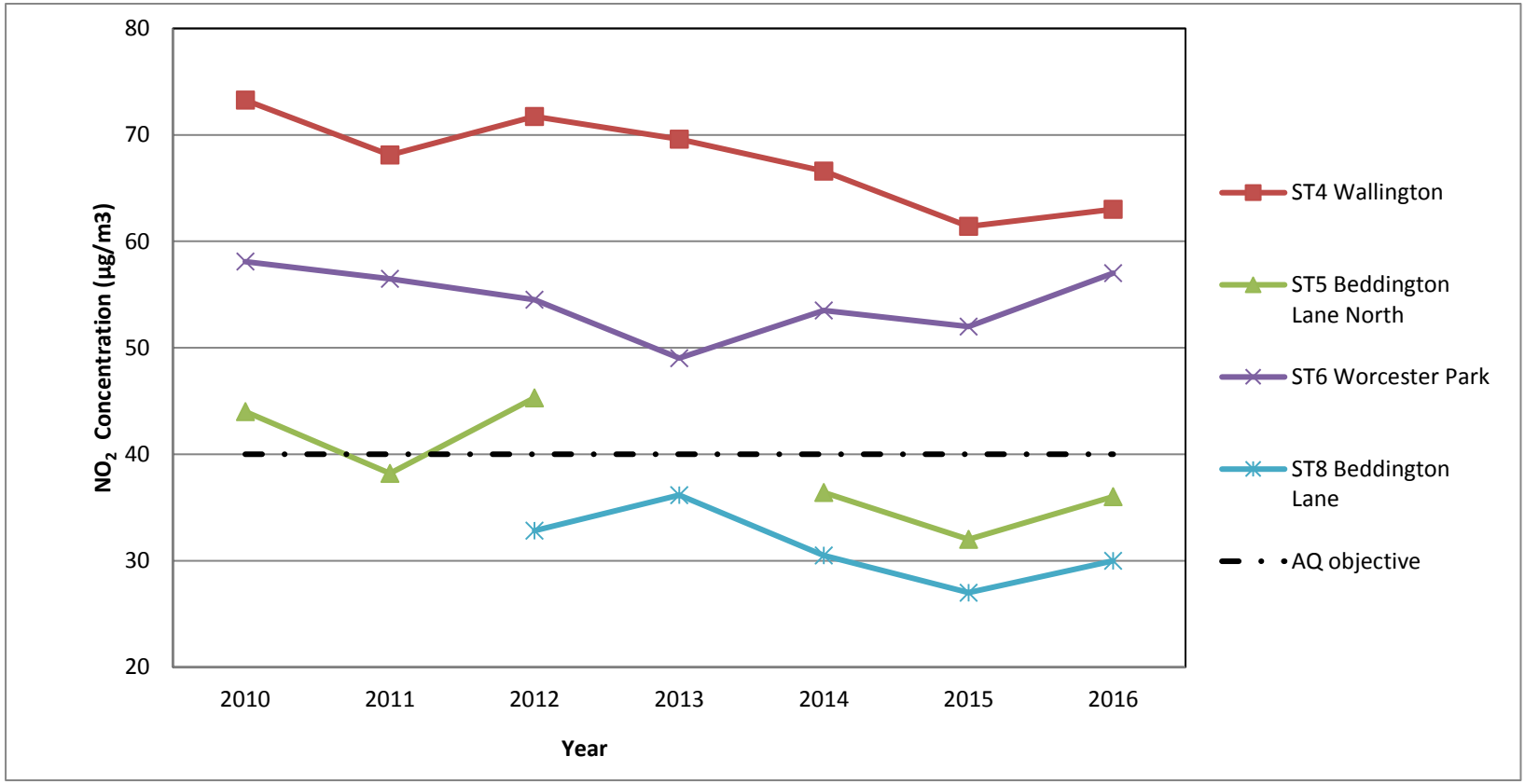
The results presented in the table below are after adjustments for distance to a location of relevant public exposure.

Table D2. Calculation of NO_2 at relevant exposure receptors (µg m-3)

Site ID	Site Name	X (m)	Y (m)	Site Type	Distance from monitoring site to relevant exposure	Distance to kerb of nearest road (N/A if not applicable)	Distance from kerb to relevant exposure	NO_2 Results 2016	Background NO_2	NO_2 at relevant exposure receptor
ST26	West Street	527680	164662	Roadside	2	2	4	**41.3**	22.97871	**38.3**
ST29	Park Lane	528339	164615	Roadside	6	2	8	**41.5**	23.34093	35.6
ST34	Oakhill Road	525772	165118	Roadside	10	1	11	**42.8**	24.27588	34.2
ST40	38 High Street, Cheam	524357	163599	Roadside	2	1	3	**44.8**	21.56618	39.7

The diffusion tube monitoring data shows that there are no exceedences of the annual mean objective where there is relevant exposure at these locations.

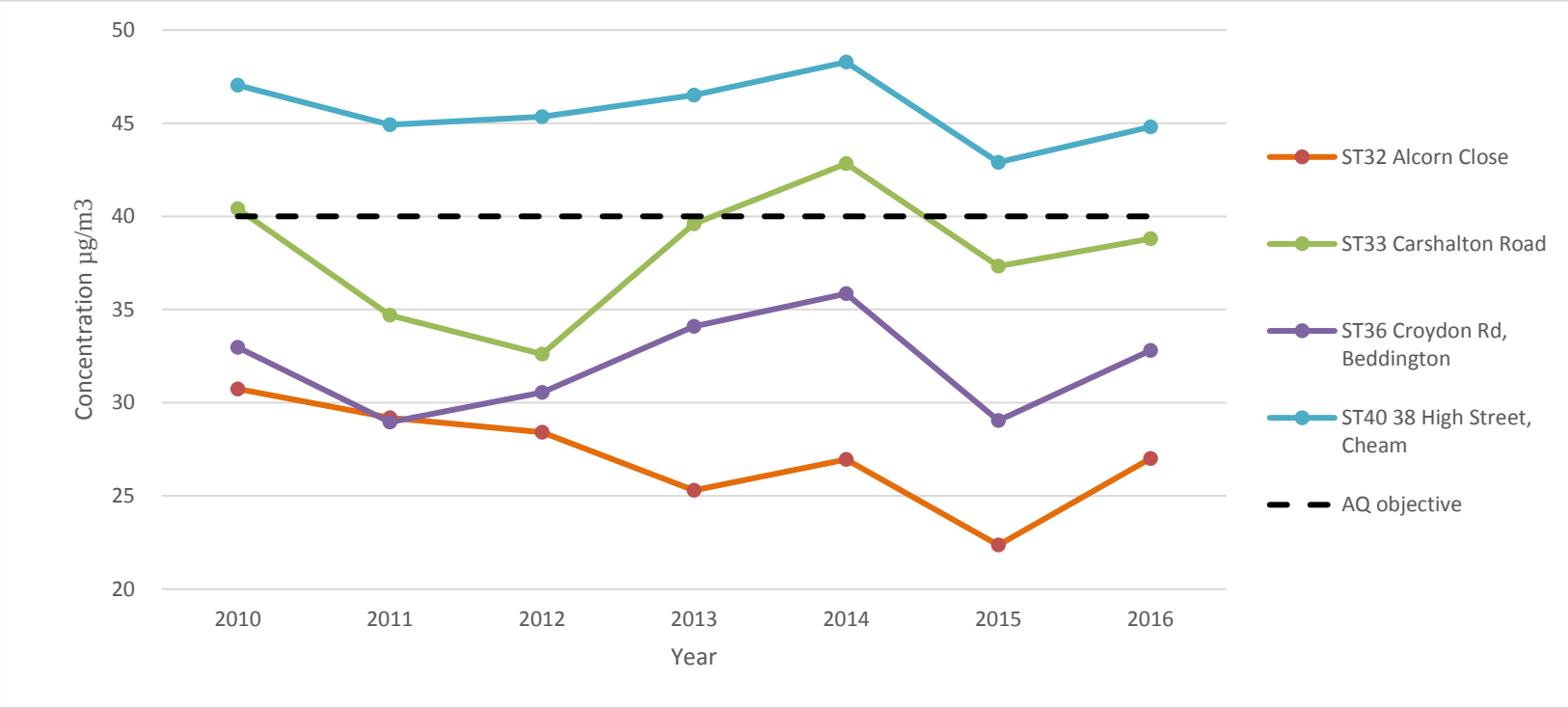
Trends in Annual Mean Nitrogen Dioxide (NO_2) Concentrations measured at the four Continuous Monitoring Sites from 2010.



The graph above shows the trend in annual mean NO_2 concentrations at the continuous monitoring sites between 2010 and 2016. This shows that concentrations have been on a generally upward trend for 2016. ST4 and ST6 have exceeded the NO_2 annual mean AQS objective for all monitored years, but all other sites were compliant in 2016. ST4 Wallington has consistently monitored the highest concentrations of all the monitoring sites, but concentrations have been reducing between 2010 and 2015 which may be attributable to the implementation of measures included in the AQAP. For 2016 all four stations have showed a general uptrend in comparison to the previous year. However, concentrations can fluctuate from year to year according to

external factors. Where this is the case, we would expect the trend to be replicated at other sites. From looking at the diffusion tube monitoring data in both RBK and a neighbouring borough, this indicates that the regional trend for 2016 was a slight increase in NO_2 concentrations.

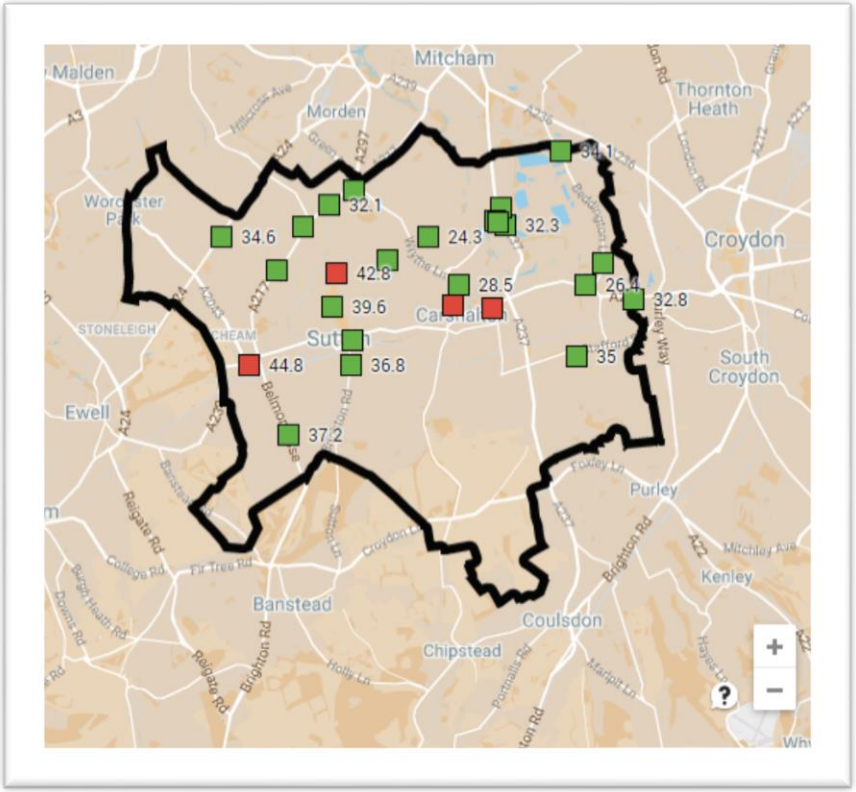
Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Diffusion Tube long term Monitoring Sites



The NO_2 diffusion tube data are summarised in Table D. The full dataset for 2016 (monthly mean values) is included in Appendix B.
The diffusion tube results for 2016 have been adjusted using the national bias adjustment factor of 0.94; further details are provided in Appendix A.
Many of the indicative monitors have been relocated during recent years so there is less continuity in the data collected than with the automatic monitors. The concentrations recorded by the diffusion tubes also have a lesser degree of accuracy so the results tend to have more fluctuations from one year to the next. However, for those sites where monitoring has continued for 6 years or more, a fluctuating trend over the period similar to that recorded at the automatic monitoring sites has been observed. In all sites, the concentrations recorded in 2016 were higher than the previous year.

For 2016, there were four sites where the annual mean AQS objective for NO_2 was exceeded; These were ST26 (West Street), ST29 (Park Lane), ST34 (Oakhill Road) and ST40 (High Street, Cheam). There are no sites exceeding 60 µg/m3, which would be an indication of a potential exceedence of the 1-hour NO2 objective.

Figure 1: Map of NO_2 diffusion tubes monitoring sites in the *London Borough of Sutton*, showing annual mean results for 2016.



Legend

On this map, the squares represent NO_2 diffusion tubes. The EU limit value for annual mean NO_2 is 40µg m^{-3}. All monitoring sites that recorded NO_2 concentrations above this level are coloured in red and all that are below this level are coloured in green. The numbers adjacent to each square are the annual mean NO_2 concentration for 2016.

Diffusion tubes (<**40µg m^{-3}**)

Diffusion tubes (>**40µg m^{-3}**)

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 2016 % [b]	Number of Hourly Means > 200 µgm^{-3}						
			2010 [c]	2011 [c]	2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]
ST4 Wallington	*89*	*89*	**72**	**47** (218.8)	**133**	**69** (248.7)	10 (227.8)	9 (198.7)	**22**
ST6 Worcester Park	*99*	*99*	5	10	13	8	3	11	**24**
ST8 Beddington Lane	*96*	*96*	-	-	0 (132.6)	9	0	0	0
ST5 Beddington Lane (north)	*89*	*89*	2 (158.8)	0	2 (179.6)	-	0 (99.8)	0	0
ST3 Carshalton	100	*50*	0	0 (108.0)	0 (126.6)	1 (136.4)	0 (106.1)	0 (110.2)	0

Notes: Exceedance of the NO_2 short term AQO of 200 µgm^{-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 2016 the ST4 Wallington and ST6 Worcester Park kerbside air quality monitoring stations are exceeding the 1 hour mean NO_2 objective, but the objective is being met at the other two locations. The data is indicating that ST4 site has exceeded the 200 µgm-3 concentration on 22 occasions within the one year period and ST6 Worcester Park on 24 occasions.

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

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2016 % [b]	Annual Mean Concentration (µgm^{-3})						
			2010 [c]	2011 [c]	2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]
ST4 Wallington	*92*	*92*	25.3 (98%)	28.9a (59%)	27.2 (99%)	25.5a (57%)	20.6c (21%)	16(86%)	23
ST6 Worcester Park	*82*	*82*	25.5a (63%)	31.4 (79%)	28.3 (98%)	27.7a (73%)	26.2c (41%)	23 (94%)	22
ST8 Beddington Lane	*94*	*94*	-	-	29.8a (56%)	22.2 (94%)	22.8c (73%)	19c (48%)	23
ST5 Beddington Lane (north)	*85*	*85*	28.7 (93%)	28.0 (100%)	24.1a (26%)	-	20.5c (36%)	24 (91%)	24

Notes: Exceedance of the PM_{10} annual mean AQO of 40 µgm^{-3} are shown in **bold**.

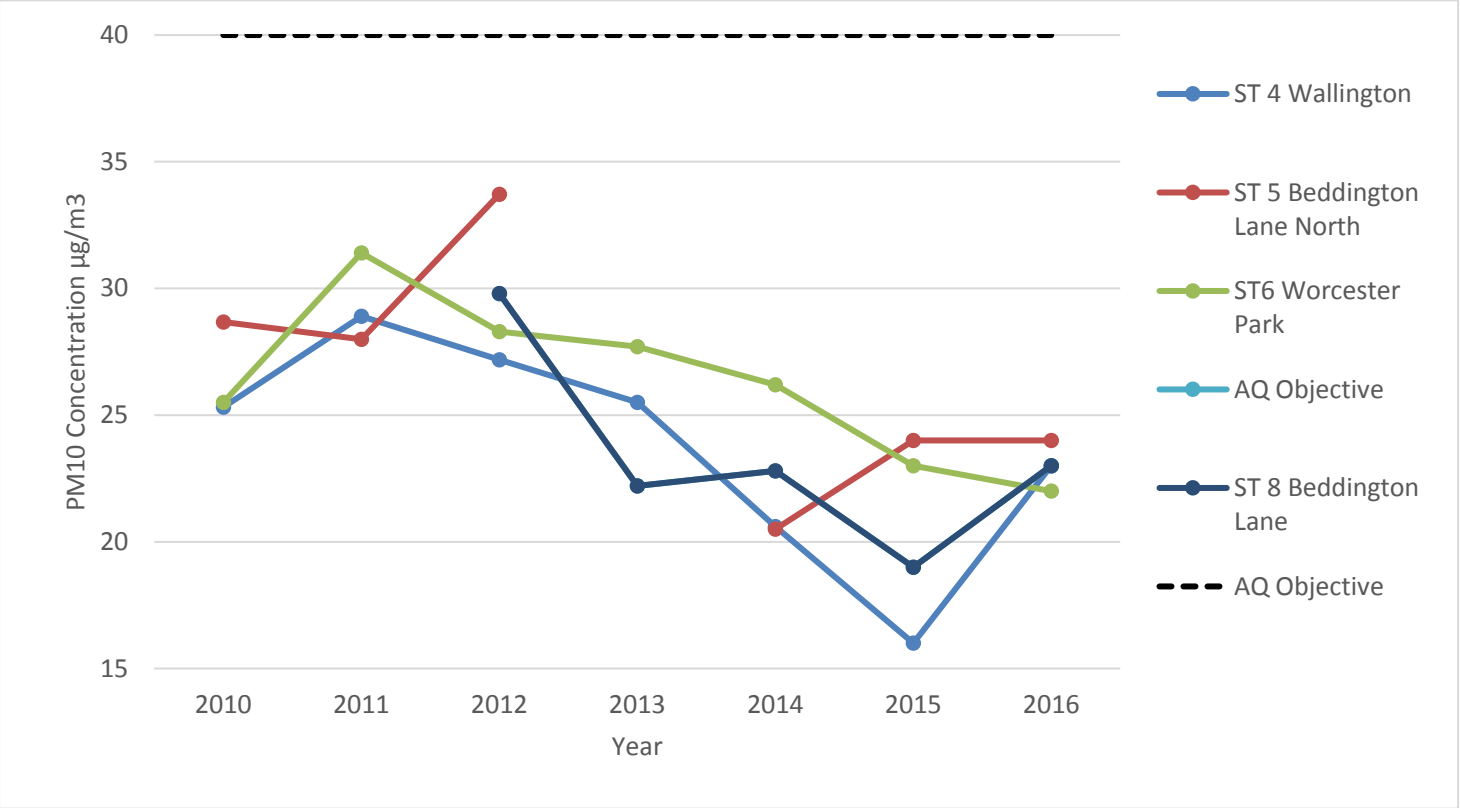
[a] data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

[b] data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

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

PROVISIONAL DATA: The 2016 data downloaded on the 31 March 2017 were provisional but any further changes are likely to be minor.

Trends in Annual Mean PM_{10} Concentrations measured at the Continuous Monitoring Sites



The graph above shows the trend in annual mean PM10 concentrations at the continuous monitoring sites between 2010 and 2016. ST5 Beddington Lane and ST4 Wallington showed an increase in 2016 compared to the previous year. A decrease of 1µgm^{-3} from 2015 results has been recorded at Worcester Park monitoring station.

The monitored concentrations at all sites are well below the annual mean air quality objective for all years. ST6 Worcester Park has generally recorded higher concentrations than the other sites but in 2016 has recorded the lower of the 4 sites. This site has showed a steady decrease in concentrations from 2010.

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 2016 % [b]	Number of Daily Means > 50 µgm^{-3}						
			2010 [c]	2011 [c]	2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]
ST4 Wallington	*92*	*92*	5	4 (37.8)	23	6 (39.3)	0 (27.5)	0 (25.3)	5
ST6 Worcester Park	*82*	*82*	12 (40.4)	31 (**50.3**)	21	20 (44.3)	7 (42.4)	13	5 (34)
ST8 Beddington L	*94*	*94*	-	-	10 (43.6)	5	10 (35.9)	3 (33)	8
ST5 Beddington Lane (north)	*85*	*85*	20	25	17 (**59.2**)	-	0 (30.4)	8	8 (37)

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 90% 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%

PROVISIONAL DATA: The 2016 data downloaded on the 31 March 2017 were provisional but any further changes are likely to be minor.

The data shows that the objective was met at all sites in 2016 as in the previous years.

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 2016 % [b]	Annual Mean Concentration (µgm^{-3})						
			2010 [c]	2011 [c]	2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]
ST5 Beddington Lane North	*85*	*85*	-	-	-	-	12.7 [c]	14.8	14.4

Notes: Exceedance of the $PM_{2.5}$ annual mean AQO of 25 µgm^{-3} are shown in **bold**.
[a] data capture for the monitoring period, in cases where monitoring was only carried out for part of the year
[b] data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)
[c] Means should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

2. Action to Improve Air Quality

Table J. Commitment to Cleaner Air Borough Criteria

Theme	Criteria		Achieved (Y/N)	Evidence
1. Political leadership	***1.a***	Pledged to become a Cleaner Air for London Borough (at cabinet level) by taking significant action to improve local air quality and signing up to specific delivery targets.	Y	Letter of support was written by Lead Member for the Environment.
	1.b	Provided an up-to-date Air Quality Action Plan (AQAP), fully incorporated into LIP funding and core strategies.	*Y*	The most recent AQAP is available online at *https://www.sutton.gov.uk/info/200497/pollution/1232/air_pollution/3* Following the recent change to the LLAQM, the AQAP is now set to be reviewed

Theme	Criteria		Achieved (Y/N)	Evidence
				and consultation on a new AQAP will take place in 2017. Air Quality objectives have been set and incorporated into reporting on the LIP and the One Planet Sutton annual report.
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*	A project to improve air quality within the Beddington Lane / Purley Way area funded through the Mayor's Air Quality Fund continued. Although the monitors within this area show that the Air Quality Objectives are being met, the mixture of residential and commercial premises, together with the number of proposed developments was raising concerns about air pollution. The project tackled fugitive emissions from industrial sites including the application of dust suppressants; provided advice to fleet operators on reducing transport emissions; and worked with school communities to raise awareness about the links between air pollution, modes of transport and health impacts. Work began on designing a scheme of air quality improvements for Sutton Town Centre and a bid for funding to tackle air quality in Worcester Park was submitted to DEFRA but was unsuccessful. Both of these locations have been identified as Air Quality Focus Areas.
	2.b	Developed plans for business engagement (including optimising deliveries and supply chain), retrofitting public buildings using the RE:FIT framework, integrating no engine idling awareness raising into the work of civil enforcement officers, (etc etc).	*Y*	A project to improve air quality within the Beddington Lane / Purley Way area included the launch of the first ECO Stars scheme within Greater London. The scheme, officially launched in March 2015, continued to operate throughout 2016 and a consultant was appointed to engage businesses in the area on a fleet emissions reduction programme. This area has since voted to set up a Business Improvement District which allows a good system of communication and engagement to be in place. A new strategy for business engagement is being developed and this is scheduled for completion in 2017.
	2.c	Integrated transport and air quality, including by improving traffic flows on borough roads to reduce stop/start conditions.	*Y*	Air quality is included as an objective within the Sutton Transport Plan (LIP) and targets for the reduction of PM_{10} and NO_2 have been set. The LIP is available to download from the Transport Information pages on the Council website.

Theme	Criteria		Achieved (Y/N)	Evidence
	2.d	Made additional resources available to improve local air quality, including by pooling its collective resources (s106 funding, LIPs, parking revenue, etc).	*Y*	The project to improve air quality within the Beddington Lane / Purley Way area was funded through the Mayor's Air Quality Fund. Match funding was secured through various funding streams. The project coincided with a number of other improvement programmes for the area and provided a basis for further bids including the securing of Major Schemes Funding. A joint bid with RB Kingston was submitted to DEFRA for Air Quality Grant funding but this was unsuccessful.
3. Leading by example	**3.a**	Invested sufficient resources to complement and drive action from others.	Y	A full-time officer is employed within the Environmental Protection Team who has responsibility for air quality issues. Adequate resources for operating an air quality monitoring network and covering the costs of a member of staff has been allocated within the budget.
	3.b	Maintained an appropriate monitoring network so that air quality impacts within the borough can be properly understood.	*Y*	LB Sutton have managed to retain a network of AQ monitors including automatic monitoring at 4 different locations with data being publicly available on the LondonAir website.
	3.c	Reduced emissions from council operations, including from buildings, vehicles and all activities.	*Y*	LB Sutton's own fleet signed up to be a participant in the Sutton & Croydon Eco Stars Scheme. The fleet has received a star-rating with a roadmap containing suggestions for future improvements. The scheduling of deliveries to Council buildings has been reviewed in order to reduce their number as part of previous work on implementing a Delivery and Servicing Plan.
	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 Council revised its Sustainable Purchasing Policy and a new version was published in July 2016. This includes supporting a reduction in motor vehicle use and increased uptake of low emission vehicles. An explicit target on reducing emissions of NO_2 and PM_{10} from the Council's own and its suppliers' activities has not been included but is currently under discussion for insertion at a later date.
4. Using the	**4.a**	Fully implemented the Mayor's policies relating to air quality neutral, combined	*Y*	Where appropriate, an Air Quality Assessment and/or Air Quality Neutral Assessment has been required to be submitted and approved in order for a

Theme	Criteria		Achieved (Y/N)	Evidence
planning system		heat and power and biomass.		planning application to gain planning consent. The Council's webpages include information for developers including links to the Supplementary Planning Guidance on Controlling Dust and Emissions during Construction and Demolition as well as Low Emissions Strategy Guidance.
	4.b	Collected s106 from new developments to ensure air quality neutral development, ***where possible.***	*Y*	Where appropriate, s106 contributions have been sought either to fund air quality actions or, more commonly, to secure implementation of a mitigation measure by the developer.
	4.c	Provided additional enforcement of construction and demolition guidance, with regular checks on medium and high risk building sites.	Y	The planning system is used to ensure that developers use best practices to minimise emissions during construction and demolition. LBS has participated in a joint project with other boroughs in south London for an officer to visit medium and high risk building sites to provide advice and information on compliance with the Low Emission Zone for Non-Road Mobile Machinery. Visits to construction sites have also been carried out where complaints have been received about dust and/or noise.
5. Integrating air quality into the public health system	**5**	Included air quality in the borough's Health and Wellbeing Strategy and/or the Joint Strategic Needs Assessment.	Y	A consultation on an updated Health and Wellbeing Strategy was carried out in 2015. This was approved in 2016 and includes air quality as a key theme within public protection and regulatory services.
6. Informing the public	**6.a**	Raised awareness about air quality locally.	Y	An intensive programme of education within 6 schools around the Beddington Lane/Purley Way project area was carried out focusing on the links between air quality, health and transport. The project included 16 hours of contact time within each school community and was completed in Spring 2016. airTEXT was promoted at a local community fayre and a link is included on the Council webpage.

2.1 Air Quality Action Plan Progress

Table K provides a brief summary of *London Borough of Sutton's* progress against the Air Quality Action Plan, showing progress made this year. New projects which commenced in 2016 are shown at the bottom of the table.

Table K. Delivery of Air Quality Action Plan Measures

Measure	Action	Progress	Further information
Sustainable Transport Strategy	Develop a strategy for promoting and supporting sustainable transport options within the borough.	A revised Sustainable Transport Strategy was approved in March 2015 and can be viewed here: https://www.sutton.gov.uk/downloads/file/2339/sustainable_transport_strategy A report is prepared in June each year which includes a summary comparing the baseline figure for each of the 7 targets against current progress and with the targets for 2017 and 2025. The report indicated that by last year there had been an increase in cycling from 1% to 2%; a reduction in traffic casualties; and an increase in the percentage of children travelling to school by sustainable means of transport.	
Delivery and Servicing Plans	Develop and implement a plan for reducing the environmental impact of the Council's delivery and servicing activity.	The Council reviewed its procurement procedures and a revised version of the One Planet Sutton Purchasing Policy was approved and published in July 2016. This contains a number of policies that the local authority will implement when procuring goods and services including purchasing those that are locally sourced in order to reduce transport impacts as well as evaluating suppliers based on their commitment to reduce air quality impacts through e.g. implementation of a DSP and the use of low emission vehicles in their fleet. The borough has also been in discussions with neighbouring boroughs to investigate opportunities for working with businesses on electric vehicle deliveries and consolidation.	
Parking Policy	Have a parking policy in place that ensures consideration of air quality impacts are an inherent part of the decision-making on parking controls.	In 2016, a new Parking Strategy was prepared which aimed to develop a more co-ordinated and strategic approach to managing parking demand taking account of factors such as road space allocation, levels of car ownership, congestion and impacts on air quality. This aims to manage the demand for parking interventions by identifying the locations where parking pressures exist and having a phased delivery programme in place. The programme will be delivered over 5 years starting in April 2017 with a review of existing controlled parking zones and pricing. The Parking Strategy has been developed to align with the borough's Sustainable Transport Strategy and the Cycling Strategy with the	

Measure	Action	Progress	Further information
		common aims of achieving a reduction in the reliance on motorised vehicles. The Parking Strategy also sets out a pricing policy for permits which aims to incentivise the uptake of low emission vehicles and make it more costly for permits for each additional motor vehicle within a household.	
Sutton Transport Plan	To have a Transport Plan in place that supports air quality objectives.	A Transport Plan or LIP is in place which was published in 2011 and covers the period up to 2031. Strategic Objective 14 includes the aim of reducing the impact of air pollution. In 2016, a number of schemes were delivered that aimed to ease traffic flow and improve facilities for pedestrians and cyclists. These included: The extension of a strategic cycle route connecting North Cheam and Worcester Park including improved lighting; Extension of a safe route to school for pupils of Overton Grange School travelling on foot or by bike, Creation of a shorter route for pedestrians and cyclists travelling to Westbourne Primary school from the Oldfield Road area; and creation of a link between Carshalton Park and Talbot Road including an upgraded path and new zebra crossing.	A LIP Funding Bid is submitted annually to Transport for London that sets out the transport scheme programme and objectives for the following year.
Workplace Travel Plans	To promote the uptake of WTPs in workplaces throughout the borough.	10 businesses in the borough previously had Workplace Travel Plans in place including the St Helier, Royal Marsden and Sutton Hospitals but these have not been progressed or updated. However, work began on developing a new strategy for engaging businesses that aims to focus on the key centres for commercial/industrial activity within the borough which are the 3 Business Improvement Districts. By working with the BIDs and targeting resources more effectively, the aim is to engage more businesses on workplace travel planning.	
Council Employee Travel Plan	To have a Travel Plan in place for Council employees and encourage a reduction in travel by motor vehicles to/from and during work.	The most recent Staff Travel Survey was undertaken in 2015 and showed that 50 per cent of council staff are now travelling to work using sustainable modes of transport, an increase from 46.4 per cent in 2013. The next Survey will be carried out in spring 2017. The Council provides pool bikes to staff for work journeys as well as cycle lockers, drying facilities and secure cycle parking for staff who cycle to work. Staff can also apply for an interest-free loan to help cover the costs of an annual ticket if using the train, to travel to work.	
School Travel Plans	To have an active Travel Plan in place at Council schools and encourage a reduction in	The percentage of all schools within the borough that have an active Travel Plan in place has fallen to 53%. However, of those schools that are accredited, those awarded gold status has remained consistent. According to STARS data, of the schools that have been	

Measure	Action	Progress	Further information
	travel to/from schools by motor vehicles.	accredited, 17 have gold status, 10 have silver and 7 have bronze.	
Car Clubs	To promote use of car clubs as an alternative to individual car ownership.	The Council engaged with ZipCar and Enterprise to develop the Car Club network in the borough. The locations where demand is greatest are being identified in order to make the most effective use of the vehicles available. There are currently 3 off-street double bays and 3 Enterprise Car Clubs operating at housing developments. A s.106 agreement to include provision of Car Club bays and a minimum of 2 Car Club vehicles was reached previously with a mixed residential / commercial development. The development has now been completed and is starting to be occupied. On first occupation, eligible new occupants will be given 2 years free membership of the Car Club.	
Heart of Hackbridge regeneration project	To smooth traffic flow and reduce dominance of motor vehicles in Hackbridge	Works to complete the Heart of Hackbridge project were carried out in August / September 2016. These include footway improvements, removal of some parking bays and the installation of a Zebra Crossing. Further details can be found on the Outer London Fund page of the Council website.	
Reduction of energy use in Council-owned buildings	To reduce the energy consumption within Council-owned buildings through energy efficiency measures and increased use of renewable energy sources.	In 2016, the total annual electricity consumption was 15,031,740kwh while 10,492,562 units of gas were consumed in the same period. During 2016, 6,800 street lights were upgrade to LED in order to reduce consumption. In addition, lighting in the Council's Civic Offices, Wallington Library and the Cheam Library were upgraded to LED and the Gibson Road Car Park (flood lights) were also upgraded.	
Alternative Refuelling Sites	To promote cleaner vehicles by ensuring infrastructure for refuelling is in place	There are 11 separate locations within the borough at which an electric vehicle charging point is installed and these points form part of the Source London network. The Council worked with Blue Point London in 2016 on replacing and installing new charging points within 6 of its car parks. The most utilised locations were Gibson Road car park, Wallington Library and The Square car park. Based on available data, total usage of the points increased by more than 5 times over the 12 month period. Comparing data for the same point, usage has approximately doubled.	
Cleaning Council Fleet	To reduce the emissions to air from Council's own fleet	The Council signed up as an initial participant in the ECO-Stars Scheme that was launched in March 2015. The Council's fleet has received a 3-star rating and the fleet manager has received recommendations on ways to reduce emissions. 4 vehicles use 30% biodiesel and the remainder use 5% biodiesel. The whole fleet was reviewed within 2016 to evaluate the	

Measure	Action	Progress	Further information
		needs of the different services within the Council. The number of vehicles within the Council fleet is being reduced and a greater number are being hired and/or provided by contractors which will need to comply with the criteria set out in the One Planet Sutton Purchasing Policy.	
Smoke Control Areas	To ensure emissions from domestic fuel burning are controlled	Historically, a number of Smoke Control Orders were put in place and these cover the whole of the borough. Therefore, we continue to enforce the regulations on emissions from chimneys using these Smoke Control Orders. In 2016, the Council received complaints from 10 different sources about smoke from chimneys. We also received 3 enquiries from people wishing to purchase a stove and who wanted information on the regulations.	
Air Quality Management Areas	To ensure that the designated Air Quality Management Areas are appropriate and relevant	Based on the air quality monitoring data, exceedences of the air quality objective for annual mean concentrations of NO2 continue to occur close to busy and congested roads in the borough. While the objectives for PM10 continue to be met, the AQMA designation has been retained for this pollutant as well.	
Industrial Processes	To ensure that all processes that require an Environmental Permit are permitted and comply with their conditions	All processes were inspected in accordance with the Regulations and at the required frequency. 42 installations had a permit in place at the end of December 2015. At the end of 2016, this had reduced to 38 as all Small Waste Oil Burners had their permits revoked following changes to the regulations. No enforcement action was required in 2016.	
Bonfires & Waste Disposal	To reduce the number of bonfires and ensure waste is disposed of appropriately	Enforcement of dark smoke bonfires is carried out under the Clean Air Act while nuisances arising from bonfires is dealt with under the Environmental Protection Act. The Council received 234 complaints about bonfires in 2016 which is more than a 35% increase on the previous year. Information on bonfires is available on the Council website and residents are encouraged to compost their garden waste or subscribe to the Green Waste Collection scheme that became a paid-for service in 2015.	
Demolition and Construction	To minimise the dust emissions generated during demolition and construction	All developments that involve demolition / construction close to receptors are required by planning condition to submit a Construction Management Plan setting out the dust control measures. The applicant is advised to refer to the Supplementary Planning Guidance on the Control of Dust and Emissions during Construction and Demolition and a link to the document is available on the Council website. All submitted Plans are saved on a network drive to which officers can refer should any complaints about dust from the site be	

Measure	Action	Progress	Further information
		received.	
Engine Idling	To discourage unnecessary engine idling of vehicles while stationary.	Several enquiries were received about taxis with engines idling while waiting at Sutton station. The issue was reported to Transport for London and advisory signs are in place at the taxi rank. We have also used the development control process to ensure that contractors on construction sites manage deliveries to their sites and prevent lorries engine idling if waiting to access the site.	
Regulating Waste Sites	To work with the Environment Agency on regulating waste sites to minimise fugitive emissions from sites	The Council continued to have a working relationship with the Environment Agency in particular with regards to inspections and enforcements of regulated sites within the Beddington Strategic Industrial Area. However, the number of joint visits reduced in 2016 reflecting the improvement in compliance among the industrial operators. A programme of applying dust suppressants to the main road through the Beddington industrial area was carried out between April and July and 3 businesses with premises adjacent to the road supported the programme on their own land.	
Development Control	To minimise impacts on air quality and existing residents from new developments	A webpage has been created on the Council's website providing Information for Developers in relation to air quality. This includes details on when an Air Quality Assessment / Air Quality Neutral Assessment would be required. All relevant applications are sent to Environmental Health for comment and mitigation measures have been secured where appropriate.	
Planning Obligations	To secure planning obligations to improve air quality where appropriate.	No s.106 agreements were put in place in 2016. However, funding towards air quality monitoring became available from an earlier agreement and a further s106 agreement began to be implemented with the creation of electric vehicle charging infrastructure on a new development together with improvements to the public realm for pedestrians.	
Low NOx boilers	To promote the use of low NOx boilers where appropriate in new developments	A standard planning condition has been developed which is now utilised for securing the provision of low NOx boilers in larger developments where individual boilers are being installed in the residential units. However, the majority of larger developments have proposed a centralised heating system. Low NOx boilers have also been encouraged where upgrades have taken place to bring empty properties back into use.	
Air Quality Monitoring	To maintain a network of air quality monitors to provide meaningful air quality data	The Council continued to operate a network of automatic air quality monitoring stations. Although one air quality monitoring station closed in July 2016, this was a background site that monitored nitrogen dioxide and ozone and we continue to operate 4 automatic air quality stations. This is supplemented by a network of indicative monitors in order to provide robust data on air quality within the borough. Data is publicly available on the	

Measure	Action	Progress	Further information
		LondonAir and LoveCleanAir websites. A step-by-step guide to obtaining air quality data from the web sources has been produced and is being distributed to interested residents and Councillors.	
AirText	To promote the uptake of airText service to enable people to better manage their exposure to poor air quality	Information on signing up to AirText has been made available on the Council website. It was also promoted at a local community event. Public Health have also been made aware of the service and agreed to identify further opportunities for promotion.	
Public Health partnership	To work in partnership with Public Health on projects that can improve air quality	We have worked with Public Health to provide up-to-date information for inclusion in the borough's Joint Strategic Needs Assessment. Following a period of development and consultation, Sutton's Health and Wellbeing Strategy was approved in September 2016 and this includes air quality as one of its themes.	
Beddington Lane Industrial Area	To implement specific measures in the area to tackle emissions from industry and fleet	As part of the joint project with LB Croydon using Mayor's Air Quality Funding, the ECO Stars Scheme continued to operate in the Beddington Lane Industrial Area throughout 2016. At end of October 2016, 17 businesses across the 2 boroughs were participating and this covered a total of 824 vehicles. The borough worked with a particular site in the industrial area to encourage the uptake of cycling among its employees and this involved arranging for a new secure, covered bike shelter for the staff. In 2016, businesses within the area voted in favour of the establishment of a Business Improvement District and a Business Forum has been established so businesses encourage each other to implement best practices.	
Beddington Renewal and Regeneration Programme	To complement action 33 with improvements to enhance the environment for pedestrians and other road users	The borough has worked closely with the local community in Beddington to identify environmental improvements that will be supported. In 2016, a scheme of tree planting and landscaping was implemented in order to encourage more pedestrians and cyclists to use an east-west route. A bid for funds to deliver significant improvements to the village area and reduce traffic speeds was successful and work will begin in 2017.	

3. Planning Update and Other New Sources of Emissions

Table L. Planning requirements met by planning applications in London borough of *Sutton* in 2016

Condition	Number
Number of planning applications reviewed for air quality impacts	*7*
Number of planning applications required to monitor for construction dust	0
Number of CHPs/Biomass boilers refused on air quality grounds	0
Number of CHPs/Biomass boilers subject to GLA emissions limits and/or other restrictions to reduce emissions	2
Number of AQ Neutral building and/or transport assessments undertaken	7
Number of 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: 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.	15 NRMM conditions included 10 sites visited of these 5 non-compliant, 3 compliant, 1 has no NRMM and 1 waiting for further details.

3.1 New or significantly changed industrial or other sources

For 2016 no new sources have been identified.

Appendix A Details of Monitoring Site QA/QC

A.1 Automatic Monitoring Sites

The Council's monitoring stations fall within the LAQN and QA/QC standards are delivered accordingly. This is considered close, if not equal to, AURN standard.

PM_{10} Monitoring Adjustment

The monitoring data for the London Borough of Sutton is part of the London Air Quality Network, managed by ERG (Environmental Research Group). Where an instrument is not reference equivalent, as is the case with three of the five (four for PM10, one for PM2.5) PM instruments, adjustment is carried out in the validation process. For TEOM, a VCM correction has been applied.

A.2 Diffusion Tube Quality Assurance / Quality Control

The diffusion tubes are supplied and analysed by Gradko utilising the 20% triethanolamine (TEA) in water preparation method. A bias adjustment of 0.94 for the year 2017 (based on 21 studies) has been derived from the national bias adjustment calculator dated April 2017 Version 2.

Diffusion Tube Bias Adjustment Factors 03/17 V2 Issue of the Spreadsheet							
				New (03/17 V2) Update			
Laboratory	Method	Year	Previous Number of Studies	No. Studies Added	Total No. of Studies	Factor	Change in Factor
Aberdeen Scientific Services	20% TEA in water	2016	1	0	1	0.86	0.00
Edinburgh Scientific Services	50% TEA in acetone	2016	1	0	1	0.87	0.00
ESG Didcot	20% TEA in water	2016	2	0	2	0.75	0.00
ESG Didcot	50% TEA in acetone	2016	30	0	30	0.77	0.00
ESG Glasgow	20% TEA in water	2016	1	0	1	0.79	0.00
ESG Glasgow	50% TEA in acetone	2016	1	0	1	0.78	0.00
Glasgow Scientific Services	20% TEA in water	2016	9	0	9	0.97	0.00
Gradko	20% TEA in water	2016	22	-1	21	0.94	-0.03
Gradko	50% TEA in acetone	2016	16	0	16	1.03	0.00
Lambeth Scientific Services	50% TEA in acetone	2016	1	0	1	0.94	0.00
Milton Keynes Council	20% TEA in water	2016	1	0	1	0.74	0.00
Northampton BC	20% TEA in water	2016	3	0	3	0.85	0.00
Somerset County Council	20% TEA in water	2016	3	0	3	0.88	0.00
Somerset County Council	50% TEA in acetone	2016	1	0	1	0.77	0.00
South Yorkshire Air Quality Samplers	50% TEA in acetone	2016	2	0	2	0.83	0.00
Staffordshire Scientific Services	20% TEA in water	2016	11	0	11	0.88	0.00
Tayside Scientific Services	20% TEA in water	2016	1	0	1	0.77	0.00
West Yorkshire Analytical Services	50% TEA in acetone	2016	7	0	7	0.75	0.00
	Number of Studies Included		113	-1	112		

London Borough of Sutton did not conduct any co-location studies in 2016, so it was not possible to calculate a local adjustment factor. As a result, the national adjustment factor (0.94) is applied to diffusion tube monitoring results in this report.

Gradko International Ltd is a UKAS accredited laboratory and participates in laboratory performance and proficiency testing schemes. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO_2 concentrations reported are of a high calibre. The lab follows the procedures set out in the Harmonisation Practical Guidance. Gradko previously participated in the Workplace Analysis Scheme for Proficiency (WASP) for NO_2 diffusion tube analysis and the Annual Field Inter Comparison Exercise. In April 2014, a new scheme, AIR PT13, was introduced. This is an independent analytical proficiency-testing (PT) scheme, operated by LGC Standards and supported by the Health and Safety Laboratory (HSL). AIR PT combines two long running PT schemes: LGC Standards STACKS PT scheme and HSL WASP PT scheme.

Defra and the Devolved Administrations advise that diffusion tubes used for Local Air.

Quality Management should be obtained from laboratories that have demonstrated satisfactory performance in the AIR PT scheme. Laboratory performance in AIR PT is also assessed, by the National Physical Laboratory (NPL), alongside laboratory data from the monthly NPL Field Intercomparison Exercise carried out at Marylebone Road, central London. A laboratory is assessed and given a 'z' score. A score of 2 or less indicates satisfactory laboratory performance.

Gradko International Ltd's performance for 2016 for 100% of samples submitted by Gradko were deemed satisfactory.

The laboratory has also achieved a "good" precision result for 2016. Tubes are considered to have "good" precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more periods during the year is less than 20%, and the average CV of all monitoring periods is less than 10%.

Appendix B Full Monthly Diffusion Tube Results for 2016

Table N. NO_2 Diffusion Tube Results

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2016 % [b]	Annual Mean NO_2													
			Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual mean – raw data [c]	Annual mean – bias adjusted (0.94) [c]
ST21	100	100	40.16	34.81	32.91	29.28	33.24	26.28	22.44	24.31	36.67	37.90	44.37	47.11	34.12	32.1
ST22	92	92	42.02	42.37	-	38.98	35.40	31.72	29.32	30.45	45.82	41.88	46.12	51.74	39.62	37.2
ST23	92	92	38.21	42.76	49.64	38.51	43.65	36.54	25.17	28.74	39.00	20.06	47.57	-	37.26	35.0
ST24	100	100	31.36	35.56	37.55	30.41	34.32	29.97	18.91	20.07	31.13	39.08	41.15	41.06	32.55	30.6
ST25	100	100	40.97	40.34	40.48	31.43	28.08	31.04	28.71	29.74	37.61	36.37	46.96	50.58	36.86	34.6
ST26	100	100	44.31	48.34	42.78	41.07	41.23	38.81	32.17	31.69	47.81	46.65	53.24	58.75	43.90	**41.3**
ST07	100	100	26.91	28.60	27.43	20.54	25.55	18.55	14.19	25.05	23.45	28.60	33.80	35.79	25.71	24.2
ST08	92	92	31.30	33.72	28.06	25.76	26.09	24.24	22.28	-	28.27	33.01	38.62	42.40	30.34	28.5
ST29	92	92	44.52	44.95	41.49	49.20	49.80	39.54	31.90	36.58	47.69	46.79	-	52.92	44.13	**41.5**
ST10	100	100	26.89	28.89	31.12	21.82	24.44	20.17	14.62	15.34	21.25	32.22	33.98	39.35	25.84	24.3
ST11	100	100	33.02	31.35	27.57	24.56	27.95	22.71	18.86	18.81	31.31	27.77	33.26	40.26	28.12	26.4

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2016 % [b]	Annual Mean NO_2													
			Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual mean – raw data [c]	Annual mean – bias adjusted (0.94) [c]
ST32	100	100	29.51	31.26	30.06	26.01	28.07	23.68	16.94	19.51	28.87	34.00	36.16	40.61	28.72	27.0
ST33	100	100	39.89	44.67	48.64	35.65	37.26	36.84	29.14	31.04	45.81	44.54	51.11	50.67	41.27	38.8
ST34	100	100	44.67	46.14	47.12	42.85	43.10	37.00	35.06	34.88	57.24	43.91	52.19	61.96	45.51	**42.8**
ST35	100	100	42.06	38.71	40.79	32.88	32.64	32.34	25.78	27.31	38.05	34.83	40.61	48.76	36.23	34.1
ST36	100	100	34.26	37.14	38.35	31.39	38.34	32.94	20.39	24.05	36.70	41.95	36.37	46.86	34.90	32.8
ST27	100	100	39.17	47.33	46.82	41.55	44.41	39.89	26.28	29.72	40.25	41.64	50.83	57.15	42.09	39.6
ST38	100	100	36.65	42.37	41.68	39.01	40.03	36.88	23.91	30.40	41.10	47.87	46.11	44.09	39.18	36.8
ST39	100	100	39.04	43.67	43.50	37.97	45.05	40.01	30.78	32.35	45.56	45.84	50.04	48.14	41.83	39.3
ST40	92	92	43.22	46.01	-	47.53	47.31	43.94	35.65	40.26	60.04	51.29	52.77	56.82	47.71	**44.8**
ST42	75	75	21.47	29.45	-	20.56	-	19.24	14.32	15.50	23.06	28.44	-	36.87	23.21	21.8
H1	100	100	35.80	33.96	36.57	30.82	35.52	33.55	24.15	23.40	35.84	36.75	41.35	44.51	34.35	32.3
H2	100	100	35.49	34.99	32.60	26.67	30.06	25.94	21.80	16.74	34.93	33.36	38.17	42.78	31.13	29.3
H3	92	92	32.16	40.05	41.29	36.65	34.52	30.10	22.43	22.74	33.63	40.63	-	44.27	34.41	32.3
BL	92	92	41.88	38.30	35.65	36.73	36.94	30.12	27.73	30.02	44.86	31.18	-	45.77	36.29	34.1

Exceedance of the NO_2 annual mean AQO of 40 μgm^{-3} are shown in **bold**.

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

[b] data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)

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