The Royal Borough of Greenwich Air Quality Annual Status Report for 2015
Date of publication: July 2016

This report provides a detailed overview of air quality in The Royal Borough of Greenwich during 2015. 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

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

CONTENTS

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

Table B. Details of Automatic Monitoring Sites for 2015

Site ID	Site Name	Easting	Northing	Site Type	In AQMA?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Inlet height (m)	Pollutants Monitored	Monitoring Technique
GR4	Eltham GR4	543978	174655	Suburban	Y	Y (0)	N/A	3m	NO_2 PM_{10} $PM_{2.5}$ SO_2 (and O_3)	FDMS
GR5	Trafalgar Road	538960	177954	Roadside	Y	Y (0)	5	3m	NO_2 PM_{10}	TEOM
GR7	Blackheath Hill	538141	176710	Roadside	Y	Y (0)	20	3m	NO_2 PM_{10}	FDMS
GR8	Woolwich Flyover	540200	178367	Roadside	Y	Y (0)	3	3m	NO_2 PM_{10} $PM_{2.5}$ (and O_3)	TEOM
GR9	Westhorne Avenue	541879	175016	Roadside	Y	Y (0)	12	3m	NO_2 PM_{10} $PM_{2.5}$ (and O_3)	FDMS

GNO Note- previously GR10	Burrage Grove	544084	178881	Roadside	Y	Y (1)	3	3m	NO_2 PM_{10} $PM_{2.5}$	FDMS
GN2 note - previously GR12	Millennium Village	540169	178999	Background	Y	Y (0)	N/A	3m	NO_2 PM_{10} $PM_{2.5}$	FDMS
GN3 note - previously GR13	Plumstead High St	545560	178526	Roadside	Y	Y (0)	5	3m	NO_2 PM_{10} $PM_{2.5}$ (and O_3)	FDMS
GB6	Falconwood	544997	175098	Roadside	Y	Y (5)	12	3m	NO_2 PM_{10} $PM_{2.5}$ O_3	TEOM
GN4	Fiveways Sidcup Rd	543582	172653	Roadside	Y	Y (5)	2	3m	NO_2 PM_{10}	FDMS
BX3	Thamesmead	547323	181231	Suburban	Y	Y (0)	N/A	3m	$PM_{2.5}$	TEOM

Table C. Details of Non-Automatic Monitoring Sites for 2015

Site ID	Site Name	Easting	Northing	Site Type	In AQMA?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Inlet height (m)	Pollutants monitored	Tube co-located with an automatic monitor? (Y/N)
GW23 (1)	Siebert Rd	540420	177706	Roadside	Y	Y	17.2		NO_2	N
GW24 (2)	Plumstead Common Rd	543806	177951	Roadside	Y	Y	3.0		NO_2	N
GW25 (3)	Eltham Rd	540099	174881	Roadside	Y	Y	3.0		NO_2	N
GW26 (4)	Foots Cray Rd	544015	173139	Roadside	Y	Y	0.5		NO_2	N
GW27 (5)	Charlton Village	541645	177874	Roadside	Y	Y	0.5		NO_2	N
GW28 (58)	Dunblane Rd	542656	176207	Roadside	Y	Y	7.5		NO_2	N
GW29 (6)	Woolwich Rd Charlton	541167	178512	Roadside	Y	Y	1.5		NO_2	N
GW30 (53)	Indus Rd	541372	177070	Roadside	Y	Y	5.0		NO_2	N
GW31 (57)	Deansfield School	543383	175664	Roadside	Y	Y	3.0		NO_2	N
GW32 (7)	Banchory Rd	540664	177235	Roadside	Y	Y	17.1		NO_2	N
GW33 (8)	Blackheath Hill	537971	176776	Roadside	Y	Y	1.5		NO_2	N
GW34 (9)	Bannockburn School	545490	178543	Roadside	Y	Y	3.0		NO_2	N
GW35 (10)	Woolwich Rd Greenwich	539527	178281	Roadside	Y	Y	1.5		NO_2	N
GW36 (11)	Boord St	539320	179234	Roadside	Y	Y	30.0		NO_2	N
GW37 (12)	De Lucy School	546630	179557	Background	Y	Y	215.0		NO_2	N
GW38 (13)	Westhorne Avenue	541885	175045	Background	Y	Y	30.0		NO_2	N

GW39 (14,15,16)	Bexley Rd ECC (Triplicate co-located site)	543986	174660	Background	Y	Y	65.0		NO_2	Y
GW40 (17)	Shrewsbury House	544065	176996	Background	Y	Y	575.0		NO_2	N
GW41 (18)	Sidcup Rd	543391	172765	Roadside	Y	Y	3.0		NO_2	N
GW42 (19)	Greenwich Church St	538317	177652	Roadside	Y	Y	2.0		NO_2	N
GW43 (20)	Creek Rd	537353	177632	Roadside	Y	Y	2.0		NO_2	N
GW44 (21)	Eltham High St	543096	174439	Roadside	Y	Y	3.6		NO_2	N
GW48 (23)	Greenwich South St	538044	176960	Roadside	Y	Y	2.5		NO_2	N
GW49 (24)	Woolwich High St	543472	179217	Roadside	Y	Y	1.0		NO_2	N
GW50 (25,26,27)	Woolwich Flyover (Triplicate co-located site)	540203	178367	Roadside	Y	Y	3.5		NO_2	Y
GW51 (28)	Bugsbys Way	539638	179024	Roadside	Y	Y	2.0		NO_2	N
GW52 (29)	Woolwich High St	542842	179108	Roadside	Y	Y	1.5		NO_2	N
GW53 (30)	Shooters Hill Rd	542181	176878	Roadside	Y	Y	1.5		NO_2	N
GW54 (31)	Westhorne Av	541915	175039	Roadside	Y	Y	2.5		NO_2	N
GW55(32,33, 34)	Crown Woods Way (Triplicate site)	545005	175097	Roadside	Y	Y	1.5		NO_2	Y
GW56 (35)	Sidcup Rd	543679	172598	Roadside	Y	Y	1.5		NO_2	N
GW57 (36,37,38)	Trafalgar Rd (Triplicate co-located site)	538968	177955	Roadside	Y	Y	7.0		NO_2	Y

GW58 (39,40,41)	Blackheath Hill (Triplicate co-located site)	538143	176712	Roadside	Y	Y	4.0		NO_2	Y
GW59 (42,43,44)	Westhorne Av (Triplicate co-located site)	541883	175016	Roadside	Y	Y	13.0		NO_2	Y
GW60 (45,46,47)	Burrage Grove (Triplicate co-located site)	544086	178882	Roadside	Y	Y	16.9		NO_2	Y
GW61 (50,51,52)	Millennium Village (Triplicate co-located site)	540175	179000	Background	Y	Y	n/a		NO_2	Y
GW101 (48)	Plumstead Rd	544727	178884	Roadside	Y	Y	1.0		NO_2	N
GW102 (49)	Plumstead Rd	544075	178898	Roadside	Y	Y	1.0		NO_2	N
GW103 (54)	Wricklemarsh Rd	540935	176575	Roadside	Y	Y	9.0		NO_2	N
GW104 (55)	Sun Lane	540743	177072	Roadside	Y	Y	12.5		NO_2	N
GW105 (56)	Cliftons Roundabout	541143	174294	Roadside	Y	Y	5.0		NO_2	N
GW106 (22)	Grand Depot Rd	543505	178576	Roadside	Y	Y	1.0		NO_2	N

1.2 Comparison of Monitoring Results with AQOs

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.

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

Site ID	Site Type	Valid Data Capture for period of monitoring %	Valid Data Capture 2015 %[a]	Annual Mean Concentration μg m^{-3}						
				2009	2010	2011	2012	2013	2014	2015[b]
GR4 Eltham	Automatic	N/a	99	*24*	24	23	22	21	20 (20.5)	20
GR5 Trafalgar Rd	Automatic	N/a	91	**48**	**47**	**42**	**44**	**41**	38	36
GR7 Blackheath Hill	Automatic	N/a	93	**43**	**43**	**48**	**48**	**48**	**44**	39
GR8 Woolwich Flyover	Automatic	N/a	96	**82**	**73**	**67**	**71**	**64**	**75**	**66**
GR9 Westhorne Av	Automatic	N/a	98	***45***	**46**	**43**	**44**	**46**	**43**	**40**
GN0 Burrage Grove	Automatic	N/a	99	**49**	**53**	**43**	**45**	**45**	38	35
GN2 Millennium Village	Automatic	N/a	60	36	36	33	37	38	36	28

Site ID	Site Type	Valid Data Capture for period of monitoring %	Valid Data Capture 2015 %[a]	Annual Mean Concentration µg m^{-3}						
				2009	2010	2011	2012	2013	2014	2015[b]
GN3 Plumstead High St	Automatic	N/a	72	**44**	**42**	**42**	39	37	37	34
GB6 Falconwood	Automatic	N/a	100	**45**	**51**	**42**	**47**	**51**	**45**	**41**
GN4 Fiveways	Automatic	N/a	100	-	-	*47*	**52**	**58**	**53**	**44**
GW23	Diffusion tube	n/a	92	**42.8**	**48.6**	39.4	**42.2**	**46.0**	**42.7**	**41.5**
GW24	Diffusion tube	n/a	100	**51.1**	**58.3**	**53.1**	**54.9**	**58.3**	**54.8**	**53.5**
GW25	Diffusion tube	n/a	92	**53.6**	**55.5**	**48.0**	**47.1**	**48.9**	**45.2**	**38.4**
GW26	Diffusion tube	n/a	100	**42.8**	37.5	32.5	31.6	32.2	31.2	**28.6**
GW27	Diffusion tube	n/a	83	**51.6**	**53.8**	**46.1**	**51.1**	**49.8**	**43.7**	**39.7**
GW28	Diffusion tube	n/a	92	38.8	**40.8**	37.8	39.7	36.4	36.9	**35.8**
GW29	Diffusion tube	n/a	92	**70.7**	**70.7**	**65.0**	**66.6**	**65.2**	**61.8**	**62.3**
GW30	Diffusion tube	n/a	75	38.1	**41.7**	37.9	**52.0**	39.3	38.3	**35.0**
GW31	Diffusion tube	n/a	100	32	35.1	34.5	37.9	37.9	37.5	**35.7**

Site ID	Site Type	Valid Data Capture for period of monitoring %	Valid Data Capture 2015 %[a]	Annual Mean Concentration µg m^{-3}						
				2009	2010	2011	2012	2013	2014	2015[b]
GW32	Diffusion tube	n/a	100	**48.3**	**50.9**	**47.8**	**50.1**	**48.5**	**51.9**	**49.6**
GW33	Diffusion tube	n/a	100	**59.8**	**67.1**	**59.2**	**64.1**	**62.7**	**63.4**	**60.8**
GW34	Diffusion tube	n/a	100	**51.3**	**52.1**	**48.2**	**48.3**	**45.1**	**44.0**	38.9
GW35	Diffusion tube	n/a	100	**74.4**	**73.8**	**71.5**	**73.2**	**72.3**	**69.4**	**59.1**
GW36	Diffusion tube	n/a	92	**54.2**	**46.0**	**52.6**	**54.5**	**55.2**	**60.1**	**57.2**
GW37	Diffusion tube	n/a	100	28	26.5	28.9	24.6	22.7	23.6	21.8
GW38	Diffusion tube	n/a	100	36.9	38.6	36.2	37.6	37.0	35.9	34.2
GW39	Diffusion tube	n/a	100	25.1	25.4	23.1	23.8	22.0	20.0	19.1
GW40	Diffusion tube	n/a	100	22.5	25.4	22.6	25.4	21.3	19.4	18.8
GW41	Diffusion tube	n/a	83	**45**	**47.2**	**48.5**	**47.8**	**43.3**	**44.7**	**50.0**
GW42	Diffusion tube	n/a	100	**58.1**	**59.8**	**56.0**	**52.5**	**53.1**	**52.8**	**49.9**
GW43	Diffusion tube	n/a	92	**59.1**	**61.6**	**62.3**	**66.8**	**60.4**	**57.0**	**57.3**

Site ID	Site Type	Valid Data Capture for period of monitoring %	Valid Data Capture 2015 %[a]	Annual Mean Concentration µg m^{-3}						
				2009	2010	2011	2012	2013	2014	2015[b]
GW44	Diffusion tube	n/a	92	**61.1**	**70.5**	**48.4**	**50.4**	**55.6**	**50.7**	**48.9**
GW48	Diffusion tube	n/a	100	**47.1**	**49.2**	**47.4**	**47.6**	**45.6**	**42.0**	**42.2**
GW49	Diffusion tube	n/a	100	**50.3**	**46.3**	**43.7**	**48.5**	**43.4**	**44.6**	**44.2**
GW50	Diffusion tube	n/a	100	**75.3**	**72.6**	**75.5**	**75.9**	**67.5**	**73.9**	**70.7**
GW51	Diffusion tube	n/a	83	**50.5**	**47.1**	**41.9**	**49.3**	**43.3**	**46.9**	**44.9**
GW52	Diffusion tube	n/a	92	**44.8**	**54.4**	**48.5**	**45.7**	**44.9**	**43.9**	39.6
GW53	Diffusion tube	n/a	100	**46.3**	**44.9**	**43.3**	**41.8**	34.2	37.0	36.1
GW54	Diffusion tube	n/a	100	**60.6**	**61.2**	**60.8**	**63.6**	**57.5**	**56.4**	**52.5**
GW55	Diffusion tube	n/a	100	**51**	**58.8**	**53.2**	**58.1**	**60.8**	**57.6**	**51.7**
GW56	Diffusion tube	n/a	92	**56.1**	**64.2**	**53.5**	**56.2**	**56.1**	**56.7**	**51.0**
GW57	Diffusion tube	n/a	92	**43.6**	**46.7**	**43.1**	**41.9**	39.7	36.4	35.0
GW58	Diffusion tube	n/a	100	**47**	**52.3**	**50.7**	**48.5**	**49.4**	**48.5**	**46.3**

Site ID	Site Type	Valid Data Capture for period of monitoring %	Valid Data Capture 2015 %[a]	Annual Mean Concentration µg m^{-3}						
				2009	2010	2011	2012	2013	2014	2015[b]
GW59	Diffusion tube	n/a	100	**44.6**	**54.8**	**44.3**	**44.6**	**43.9**	**44.7**	**40.8**
GW60	Diffusion tube	n/a	100	**41.6**	**46.4**	**41.3**	39.0	38.0	32.7	31.6
GW61	Diffusion tube	n/a	100	**42.2**	**41.0**	**40.7**	**40.0**	39.1	35.2	30.5
GW101	Diffusion tube	n/a	100	**78.7**	**79.8**	**85.3**	**78.8**	**79.5**	**81.8**	**68.1**
GW102	Diffusion tube	n/a	100	**67.6**	**68.5**	**65.3**	**70.2**	**66.2**	**67.1**	**57.7**
GW103	Diffusion tube	n/a	92	**44.7**	**45.8**	**47.7**	**52.8**	**46.3**	**47.3**	**48.9**
GW104	Diffusion tube	n/a	100	**50.3**	**50.4**	**55.2**	**58.5**	**50.5**	**52.0**	**53.1**
GW105	Diffusion tube	n/a	100	**54.9**	**72.4**	**51.0**	**55.7**	**53.9**	**55.7**	**52.2**
GW106	Diffusion tube	n/a	92	**43.5**	**45.0**	**43.8**	**41.9**	**47.5**	**45.4**	39.9

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

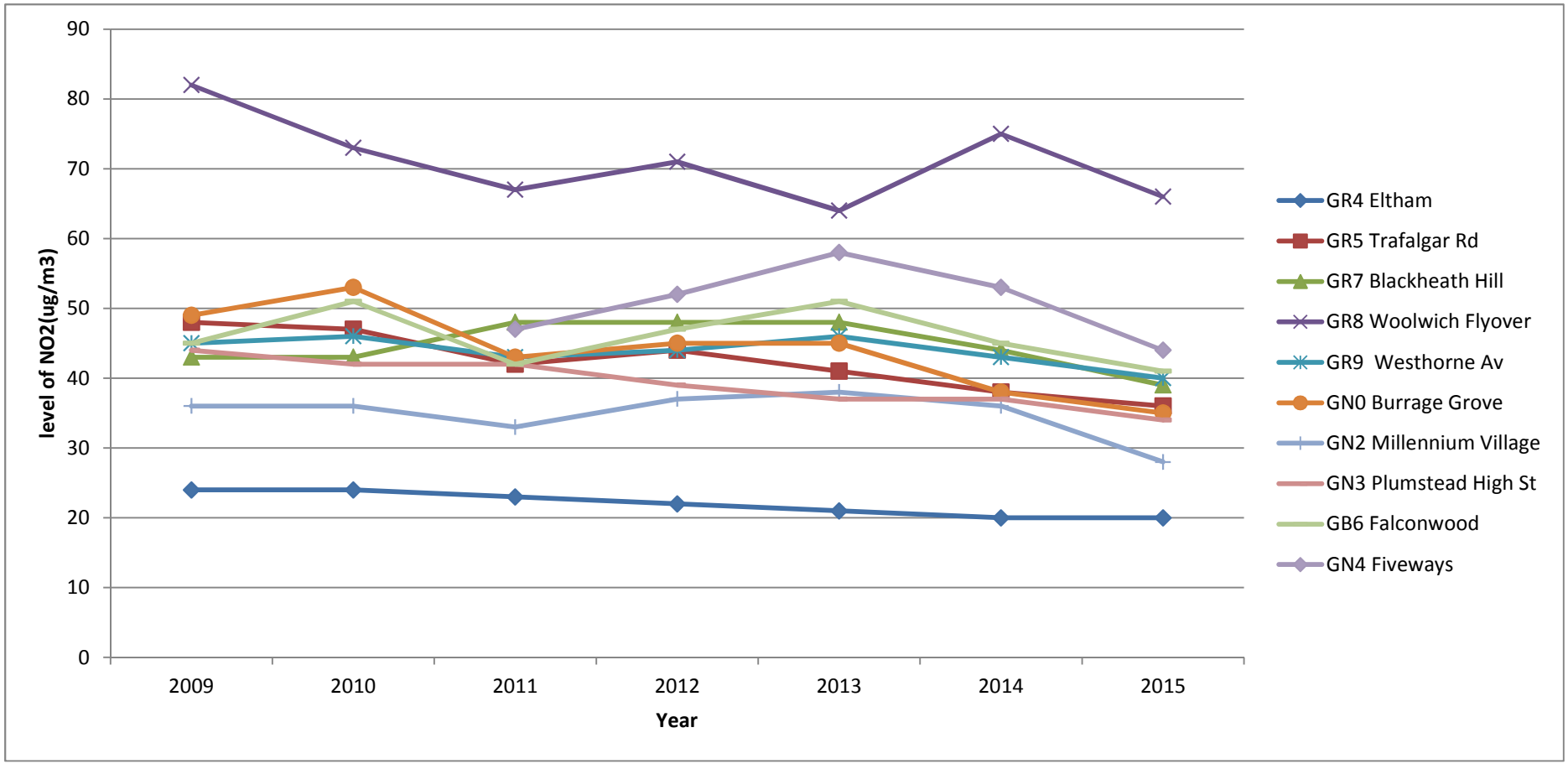
NO_2 annual means in excess of 60 µg m^{-3}, indicating a potential exceedance of the NO^2 hourly mean AQS objective are shown in bold and underlined.

[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%

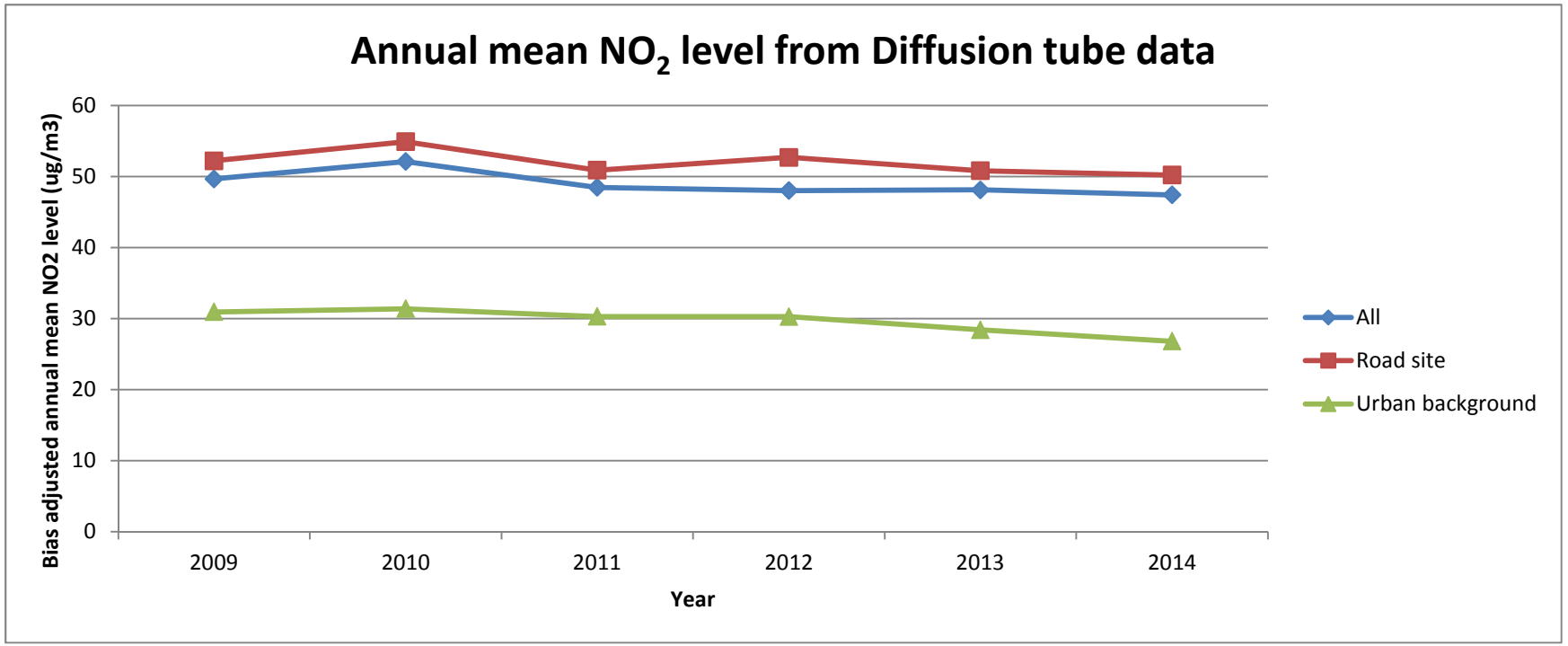
Figure 3 NO2 levels automatic sites



Comment

As can be seen from Figure 1 above all sites monitored by Greenwich's automatic stations show a slight downward trend. However a significant number still show pollution levels above the level of 40 ug/m^3 set in the Air Quality Objectives.

Figure 4 NO2 levels diffusion tube sites



Comment

Results from Greenwich's diffusion tube sites again show a similar slight downward trend, however roadside sites are persistently above the levels set in the Air Quality Objectives

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

Site ID	Site Type	Valid Data Capture for period of monitoring %	Valid Data Capture 2015 %[a]	Number of Exceedences of Hourly Mean (200 µg m^{-3})						
				2009	2010	2011	2012	2013	2014[b]	2015
GR4 Eltham	Suburban	N/a	99	*0*	4	0	0	0	0 (86.1)	0
GR5 Trafalgar Rd	Roadside	N/a	91	2	0	0	0	0	5	0
GR7 Blackheath Hill	Roadside	N/a	93	0	0	1	0	1	0	0
GR8 Woolwich Flyover	Roadside	N/a	96	**53**	**38**	6	**27**	8	**26**	6
GR9 Westhorne Av	Roadside	N/a	98	*0*	0	0	0	4	1	0
GN0 Burrage Grove	Roadside	N/a	99	3	1	1	1	0	0	0
GN2 Millennium Village	Background	N/a	60	0	0	0	2	2	0 (151.5)	0
GN3 Plumstead High St	Roadside	N/a	72	0	1	0	0	0	0 (120.7)	0
GB6 Falconwood	Roadside	N/a	100	6	5	7	21	11	10	2
GN4 Fiveways	Roadside	N/a	100	-	-	0	1	7	2	1

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%

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

Site ID	Site Type	Valid Data Capture for monitoring Period %	Valid Data Capture 2015%[a]	Annual Mean Concentration µg m^{-3}						
				2009	2010	2011	2012	2013[b]	2014[b]	2015
GR4 Eltham	Suburban	N/a	99	*26*	*23*	23	20	20	18	17
GR5 Trafalgar Rd	Roadside	N/a	91	21	22	23	23	23	20	19
GR7 Blackheath Hill	Roadside	N/a	93	*24*	28	32	28	30	27	25
GR8 Woolwich Flyover	Roadside	N/a	96	37	33	35	33	32	29	29
GR9 Westhorne Av	Roadside	N/a	98	*23*	22	23	20	24	25	22
GN0 Burrage Grove	Roadside	N/a	99	*25*	28	28	27	*28 (30)*	23 (23.1)	22
GN2 Millennium Village	Background	N/a	60	20	*22*	25	23	26	26 (25.5)	17
GN3 Plumstead High St	Roadside	N/a	72	20	20	22	21	*20 (18)*	23	18
GB6 Falconwood	Roadside	N/a	100	*23*	27	27	26	*30 (28)*	25 (22.7)	17
GN4 Fiveways	Roadside	N/a	100	-	-	30	30	*31 (33)*	29	23

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%

Comment - With respect to PM_{10} levels have remained below the air quality objective over the last seven years

Figure 3 Annual Mean PM_{10} levels automatic sites

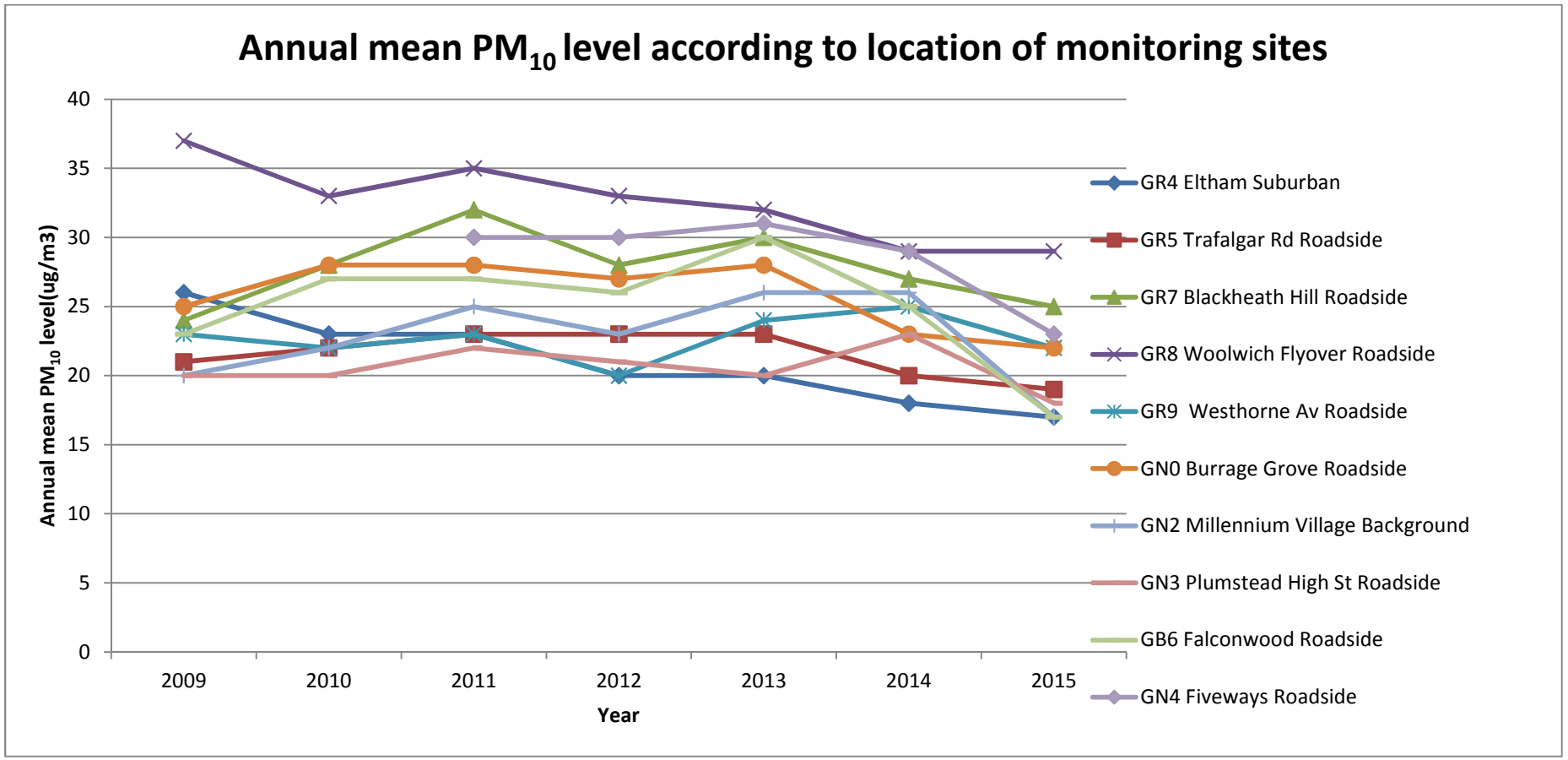


Table G. PM_{10} Automatic Monitor Results: Comparison with 24-Hour Mean Objective

Site ID	Site Type	Valid Data Capture for monitoring Period %	Valid Data Capture 2015 %[a]	Number of Exceedences of 24-Hour Mean (50 µg m^{-3})						
				2009	2010	2011	2012	2013[b]	2014[b]	2015
Eltham (GR4)	Suburban	N/a	99	*11*	*4*	22	9	5	7 (28.12)	4
Trafalgar Road (GR5)	Roadside	N/a	91	4	2	18	16	8	5	2
Blackheath Hill (GR7)	Roadside	N/a	93	*12*	20	**41**	26	29	18	12
Woolwich Flyover (GR8)	Roadside	N/a	96	**44**	33	**42**	33	26	17 (45.8)	18
Westhorne Avenue (GR9)	Roadside	N/a	98	*13*	9	25	16	17	19	9
Burrage Grove (GN0)	Roadside	N/a	99	*0*	18	32	28	*18 (**50**)*	15 (37.3)	5
Millennium Village (GN2)	Urban background	N/a	60	12	9	25	20	*20 (46)*	16 (48.36)	1
Plumstead High St (GN3)	Roadside	N/a	72	*6*	7	16	8	*3 (34)*	14 (38.24)	3
Falconwood (GB0)	Roadside	N/a	100	*9*	16	*25 (47)*	27	*28 (**52**)*	13 (43.92)	1
Fiveways Sidcup Rd (GN4)	Roadside	N/a	100	-	-	*26 (49)*	*24 (**54**)*	*31 (**53**)*	25	3

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%

Table H. Annual Mean $PM_{2.5}$ Automatic Monitoring Results (µg m^{-3})

Site ID	Site Type	Valid data capture for monitoring period % [a]	Valid data capture 2015 % [b]	Annual Mean Concentration (µgm^{-3})						
				2009[c]	2010[c]	2011[c]	2012[c]	2013[c]	2014[c]	2015[c]
Fiveways Sidcup Road GR4	Roadside	99	99	17.6	16.6	16.1	13.3	15.2	*11.5*	10.6
Woolwich Flyover GR8	Roadside	96	96	18.6	16.4	17.2	15.4	14.9	14.6	12.2
Westhorne Avenue GR9	Roadside	98	98	15.5	17.1	17	15.8	17.2	15.8	12.7
Burrage Grove GN0	Roadside	99	99	19.8	19.7	24.5	18.1	17.5	*17.1*	12.1
Millennium Village GN2	Urban background	60	60	15.4	16.4	19.1	15.2	15.4	*15.5*	11.5
Plumstead High St GN3	Roadside	72	72	14.2	15.1	18.7	19.1	15.3	16.3	14.7
Falconwood GB0	Roadside	100	100	16.8	18.2	17.8	18.6	16.4	*14.4*	14.3

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%

Figure 4 Annual Mean $PM_{2.5}$ levels automatic sites

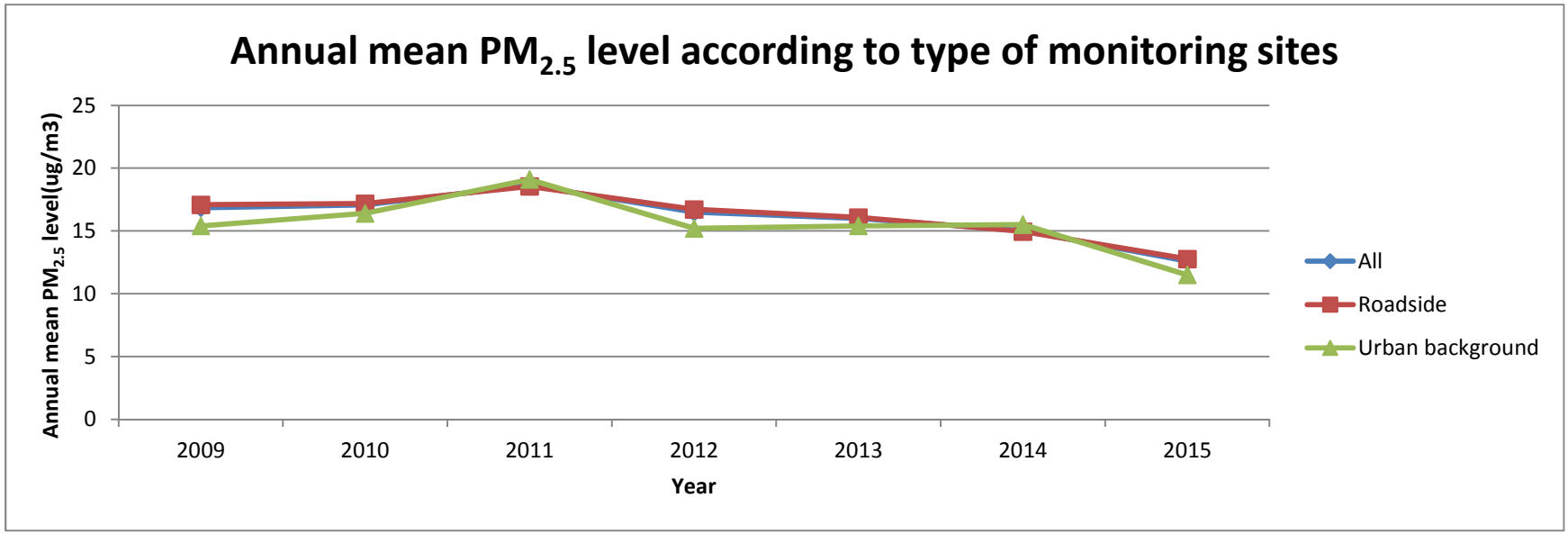


Table I. SO_2 Automatic Monitor Results for 2015: Comparison with Objectives

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2015 % [b]	Number of: [c]		
			15-minute means > 266 µgm^{-3}	1-hour mean > 350 µgm^{-3}	24-hour mean > 125 µgm^{-3}
Eltham (GR4)	99	99	2	0	0

Exceedances of the SO_2 AQOs are shown in **bold** (15-min mean = 35 allowed a year, 1-hour mean = 24 allowed a year, 24-hour mean = 3 allowed / year)

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

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

[c] Means should be "annualised" as in Box 3.2 of TG(09) (http://laqm.defra.gov.uk/technical-guidance/index.html?d=page=38), if valid data capture is less than 75%

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*	The Council's member lead 'air quality action task force' endorses and supports Greenwich's participation in the Cleaner Air Borough project
	1.b	Provided an up-to-date Air Quality Action Plan (AQAP), fully incorporated into LIP funding and core strategies.	*Y*	The current AQAP is available online at *http://www.royalgreenwich.gov.uk/info/413/pollution_control_-_air_quality/580/air_quality* The new AQAP is being issued for consultation in July 2016 Incorporated into the Council's core policies on planning – specifically policy E(c) Air Pollution Obtained LIP funding for air quality projects – public high capacity electric charging points.
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*	We have an active School Travel Planning programme encouraging increased active travel and sustainable transport to and from school rather than use of private motor vehicles. This programmes – and specific initiatives such as no idling campaigns – contribute to improved air quality around schools throughout the Borough.
	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*	The Council has subscribed to EcoStars – a scheme which promotes energy and pollution efficient driving for business fleets operating in the borough.
	2.c	Integrated transport and air quality, including by improving traffic flows on borough roads to reduce stop/start conditions	*Y*	Various initiatives aim to improve flows and reduce pollution in doing so. A recent example is Eltham High Street, where as part of a multimillion pound upgrade flows will be improved through a 20mph limit, implementation of a traffic control system and other measures. Together these contribute to the improved air quality objective of the scheme.

	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 Council ensures that major developments contribute to improving air quality through the negotiation of contributions from developers through the use of Community Infrastructure Levy (CIL) and S106 planning agreements
3. Leading by example	**3.a**	Invested sufficient resources to complement and drive action from others	*Y*	One full time equivalent AQ officer post and one part time air pollution monitoring officer
	3.b	Maintained an appropriate monitoring network so that air quality impacts within the borough can be properly understood	*Y*	The Council has London's largest network of 'real time' air quality monitoring stations and an extensive network of NO_2 diffusion tubes
	3.c	Reduced emissions from council operations, including from buildings, vehicles and all activities.	*Y*	The Council has funded the installation of 20 electric vehicle charging points at its Birchmere Depot to enable the replacement of light duty diesel vehicles with equivalent electric vehicles. The Council uses electric vans for its asbestos inspection team
	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 contract with the Council's Highways contractor specifies their vehicles are FORS compliant
4. Using the planning system	**4.a**	Fully implemented the Mayor's policies relating to air quality neutral, combined heat and power and biomass.	*Y*	All approved planning applications must meet the Mayor's requirements relating to AQ neutral and CHPs
	4.b	Collected s106 from new developments	*Y*	S106 & CIL money is collected from qualifying developments
	4.c	Provided additional enforcement of construction and demolition guidance, with regular checks on medium and high risk building sites.	*Y*	Sites are inspected where specific environmental issues are identified. Environmental monitoring is required from selected high profile sites.
5. Integrating air quality into the public health system	**5**	Included air quality in the borough's Health and Wellbeing Strategy and/or the Joint Strategic Needs Assessment	*Y*	Air Quality is a key focus of the Environment chapter of the JSNA which is under development and will be published late summer 2016
6. Informing the public	**6.a**	Raised awareness about air quality locally	*Y*	The Council subscribes to the. airTEXT promotion.

2.1 Air Quality Action Plan Progress

Table K provides a brief summary of The Royal Borough of Greenwich's progress against the Air Quality Action Plan, showing progress made.

Table K. Delivery of Air Quality Action Plan Measures

The Council's air quality action plan is in the course of being updated. Therefore a selection of key achievements has been selected from the current action plan. A new list of achievements against the new action plan currently under preparation will be provided in the 2016 Annual Status Report

Action	Progress	Further information
20 mph Residential Traffic Zones	70% of the Borough's residential road networks are now 20mph zones; the Council has committed to rolling this out to all residential roads in the Borough subject to local consultation. In addition where appropriate 20mph limits are being introduced on busier roads, such as Eltham High Street, as part of wider urban renewal programmes	
Home Zones	The Deptford Green home zone has been implemented on public highway.	The principles of home zone design are considered as part of new developments where appropriate.
Funding for Alternative Fuels & Technologies	LIP funding has been used to install 12 low capacity and 4 high capacity electric vehicle charging points in the Borough.	Charging points have been transferred to TfL preferred provider Source London: https://www.sourcelondon.net/
Council Fleet	26 of the 36 fleet of refuse vehicles are now Euro VI	Vehicles will be replaced with Euro VI or low/zero emission where possible as part of a rolling vehicle replacement programme.
Section 106 planning agreements	Funding is sought from major projects to support air quality work	S106 money has been used to facilitate the infrastructure to support the purchase of

		light duty electric vehicles at Birchmere Depot
Pedestrianisation	Pedestrianisation of a number of streets in Woolwich town centre have been implemented. In other locations pavements have been significantly widened (such as Eltham High Street) at the expense of carriageway space	
Walking Provision and Promotion	Significant improvement of urban realm for pedestrians in town centres including Woolwich and Eltham. Various upgrades of pedestrian crossings throughout the Borough, accessibility improvements and Greenways programmes such as the Ridgeway scheme. Supported through behaviour change programmes including Walking Month and Health Walks	
Cycling Provision and Promotion	Cycling Strategy launched in April 2014 has led to variety of schemes including new off-road paths in the Avery Hill area, upgrades to the Thames Path and improvements to highways corridors including the Woolwich Road and Rochester Way. Cycle mode share in the Borough has increased from 0.9% to 2.3% in the last 5 years. Cycle promotions take place in schools, workplaces and with all residents through programmes such as Dr Bike, cycle training and Bike Week events	
Traffic Calming/Restraint	in addition to 20mph programme traffic calming measures introduced as part of Local Safety Schemes, delivering improvements based on road casualty statistics for both main road corridors and residential areas	
Bus Prioritisation and Promotion	A number of new bus priority programmes have been introduced in recent years. New bus lanes	

	have been installed on Western Way in Thamesmead and on Bugsby's Way in Charlton. In addition £1.2m is being spent currently on introducing a new westbound bus lane between Plumstead and Woolwich on Plumstead Road	
Green Travel Plan	In addition to the Council's own workplace travel plan, Travel Plans are secured through the planning process for all significant new developments. Voluntary travel plans are also established for existing organisations outside of the planning process, including at large workplaces/faith centres etc.	The staff travel pan is currently being upgraded
Safer routes to school	A dedicated school engineering programme is delivered each year to improve safety around school locations. As part of Greenways schemes safe, traffic-free corridors are provided to certain schools – one example is the Kidbrooke Greenways networks of paths providing better connections to Thomas Tallis school.	

3. Planning Update and Other New Sources of Emissions

3.1 New or significantly changed industrial or other sources

No new sources identified which would trigger assessment under the Mayor's Technical Guidance

Appendix A Details of Monitoring Site QA/QC

A.1 Automatic Monitoring Sites

Local Site Operator (LSO) visits the monitoring site every two weeks to visually inspect and check the site operation and to carry out zero/span calibration of the gas analysers. Six monthly UKCAS accredited independent equipment audits are carried out by the National Physical Laboratory (NPL) which also carry out on-site certification of gas cylinders. Additional six monthly equipment service visits by Enviro Technology Services Plc

PM_{10} Monitoring Adjustment

PM10 measurements are automatically recalculated as EU reference equivalent using the Volatile Correction Model (VCM) – Correction applied to TEOM measurements

A.2 Diffusion Tube Quality Assurance / Quality Control

- Diffusion Tubes are prepared and analysed by UKAS accredited Gradko International Ltd
- Diffusion Tubes are prepared using 50% triethanolamine with acetone method and analysed using UV spectrometry
- The lab follows the procedures set out in the Defra Technical Guidance for LAQM TG(09)
- For details attaining to 'results' – precision, bias adjustment factors; and reference methods please refer to - 'London Wide Environment Program Nitrogen Dioxide diffusion tube survey report,2015':
  http://www.royalgreenwich.gov.uk/downloads/download/183/air_quality_reports

Factor from Local Co-location Studies

For details attaining to Local Co-location Studies please refer to - 'London Wide Environment Program Nitrogen Dioxide diffusion tube survey report, 2015':
http://www.royalgreenwich.gov.uk/downloads/download/183/air_quality_reports

Discussion of Choice of Factor to Use

For details attaining to choice of adjustment factors please refer to - 'London Wide Environment Program Nitrogen Dioxide diffusion tube survey report, 2015':
http://www.royalgreenwich.gov.uk/downloads/download/183/air_quality_reports

A.3 Adjustments to the Ratified Monitoring Data

For details attaining to choice of adjustments to the Ratified Monitoring Data please refer to - 'London Wide Environment Program Nitrogen Dioxide diffusion tube survey report, 2015': http://www.royalgreenwich.gov.uk/downloads/download/183/air_quality_reports

Appendix B Full Monthly Diffusion Tube Results for 2015

For details attaining to 'full monthly diffusion tube results' – see Appendix A – Monthly and Annual Mean NO2 Concentrations: All Sites, 2015: 'London Wide Environment Program Nitrogen Dioxide diffusion tube survey report, 2015': http://www.royalgreenwich.gov.uk/downloads/download/183/air_quality_reports