London Borough of Ealing Air Quality Annual Status Report for 2018
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This report provides a detailed overview of air quality in Ealing during 2018. 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
CHP	Combined Heat and Power
DsPH	Directors of Public Health
EV	Electric Vehicle
GLA	Greater London Authority
LAEI	London Atmospheric Emissions Inventory
LAQM	Local Air Quality Management
LIP	Local Implementation Plan
LLAQM	London Local Air Quality Management
NRMM	Non-Road Mobile Machinery
PM_{10}	Particulate matter less than 10 microns in diameter
$PM_{2.5}$	Particulate matter less than 2.5 microns in diameter
TEB	Transport Emissions Benchmark
TfL	Transport for London

Table A. Summary of National Air Quality Standards and Objectives

Pollutant	Objective (UK)	Averaging Period	Date[1]
Nitrogen dioxide - NO_2	200 μg m^{-3} not to be exceeded more than 18 times a year	1-hour mean	31 Dec 2005
	40 μg m^{-3}	Annual mean	31 Dec 2005
Particles - PM_{10}	50 μg m^{-3} not to be exceeded more than 35 times a year	24-hour mean	31 Dec 2004
	40 μg m^{-3}	Annual mean	31 Dec 2004
Particles - $PM_{2.5}$	25 μg m^{-3}	Annual mean	2020
	Target of 15% reduction in concentration at urban background locations	3 year mean	Between 2010 and 2020
Sulphur dioxide (SO_2)	266 μg m^{-3} not to be exceeded more than 35 times a year	15 minute mean	31 Dec 2005
	350 μg m^{-3} not to be exceeded more than 24 times a year	1 hour mean	31 Dec 2004
	125 μg m^{-3} mot to be exceeded more than 3 times a year	24 hour mean	31 Dec 2004

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

1. Air Quality Monitoring

1.1 Locations

In 2018, four automatic monitoring stations were operated in the London Borough of Ealing. The most recent of these to be opened, on 23rd November 2017, was Ealing Acton Vale, which monitors nitrogen dioxide (NO_2) and Particulate Matter (PM_{10}) and is classified as an urban background site. Of the three remaining monitoring stations, two are roadside sites (Ealing Hanger Lane Gyratory and Ealing Western Avenue) and one is classified as an industrial site (Ealing Horn Lane).

All sites are operated as part of the London Air Quality Network. Two different analysers for PM_{10} are active at the Horn Lane monitoring station, a TEOM and a TEOM-FDMS. Consistent with the London Air Quality Network classification, data from the two instruments are reported as two separate stations (EA8 Horn Lane and EI8 Horn Lane TEOM). Details of the relevant Quality Assurance/Quality Control (QA/QC) procedures that were followed during the monitoring are provided in Appendix A.

Figure 1 and Table B provide details of the automatic monitoring sites located in the Borough. All the currently operational monitoring sites measure NO_2 and PM_{10}.

Figure 1. Map of Automatic Monitoring Sites

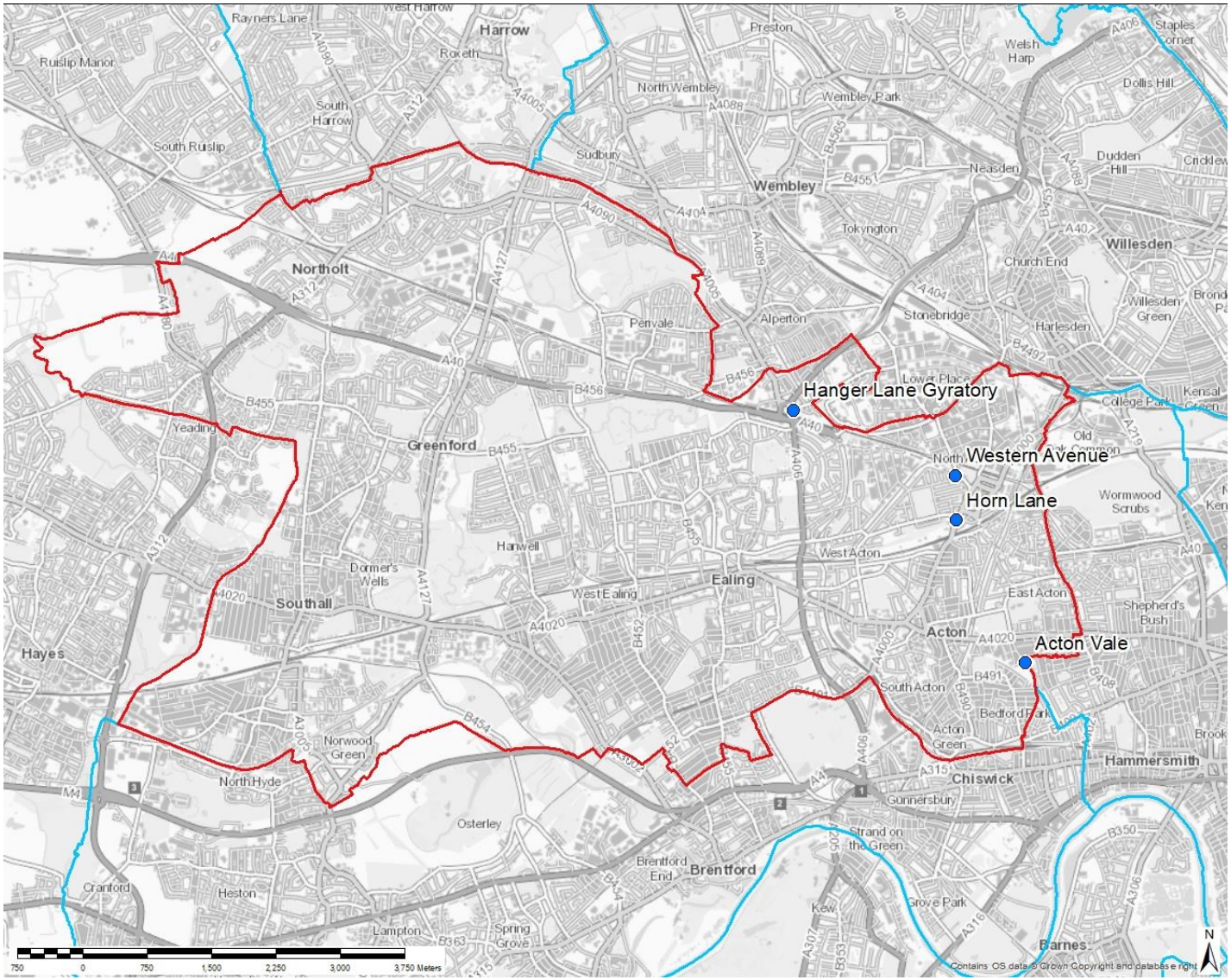


Table B. Details of Automatic Monitoring Sites for 2018

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
EA6 Hanger Lane Gyratory	Hanger Lane Gyratory	518537	182708	Roadside	Y	4	3	2.0	NO_2, PM_{10}	Chemiluminescence, TEOM
EA8 Horn Lane	Horn Lane	520432	181428	Industrial	Y	8	2.5	1.8	NO_2, PM_{10}	Chemiluminescence, PM_{10} by FDMS
EI8 Horn Lane TEOM	Horn Lane	520432	181428	Industrial	Y	8	2.5	1.8	PM_{10}	TEOM
EI1 Western Avenue	Western Avenue	520430	181950	Roadside	Y	4	4	2.0	NO_2, PM_{10}	Chemiluminescence, TEOM
EI3 Acton Vale	Acton Vale	521234	179771	Urban Background	Y	N/A	N/A	2.55	NO_2, PM_{10}	Chemiluminescence, PM_{10} by FDMS

The London Borough of Ealing historically monitored annual mean NO_2 concentrations using passive diffusion tubes at 126 sites located throughout the Borough. The number of sites has reduced over the years and in 2018, the Council had 61 diffusion tubes at 55 sites. There are three triplicate sites, co-located with the three automatic air quality monitoring stations. Figure 2 and Table C provide details of the diffusion tube sites operated within the Borough during 2018. Changes to the diffusion tube network since 2016 include discontinuation of monitoring at 23 sites to focus on the worst locations of

relevant exposure by removing sites that had been compliant with the annual mean objective for several years. There have been no changes to the network since 2017.

Figure 2. Map of Non-Automatic Monitoring Sites (2018 Sites IDs)

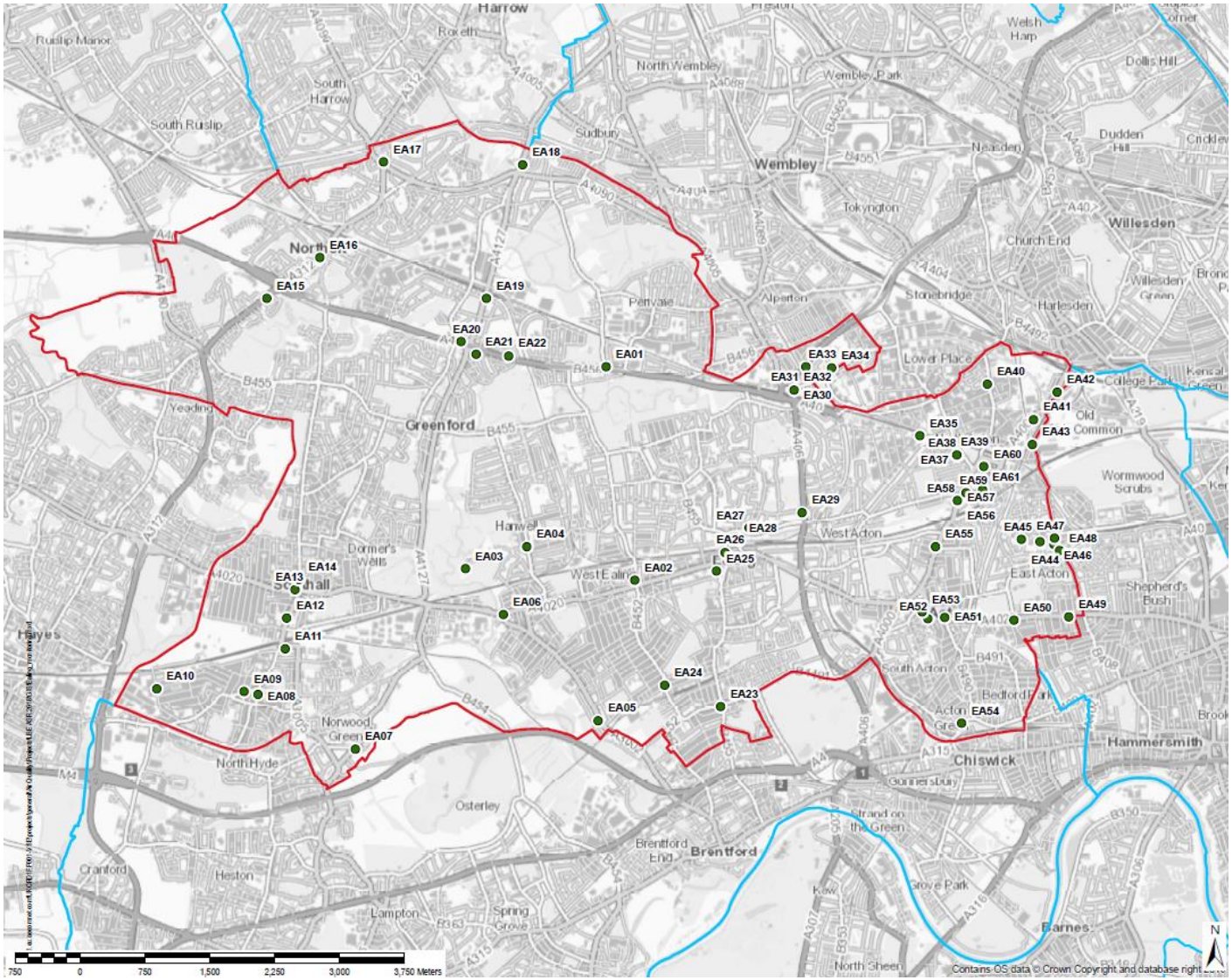


Table C. Details of Non-Automatic Monitoring Sites for 2018

Site ID (2018)	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)
EA01	2 Horsenden Lane South, Greenford, UB6 8AB	516368	182978	Roadside	Y	0	5	2 – 2.5	NO_2	N
EA02	1 Kirn Road, West Ealing, W13 0UB	516699	180509	Roadside	Y	0	2	2 – 2.5	NO_2	N
EA03	Brent Lodge Park, Church Road, Hanwell, W7 3BP	514740	180643	Background	Y	0	30	2 – 2.5	NO_2	N
EA04	74a Greenford Avenue, Hanwell, W7 3QS	515451	180894	Roadside	Y	0	5	2 – 2.5	NO_2	N
EA05	6 Boston Gardens, Boston Road, Hanwell, W7 2AN	516277	178882	Roadside	Y	0	10	2 – 2.5	NO_2	N
EA06	200 Uxbridge Road, Hanwell, W7 3TB	515180	180111	Roadside	Y	0	3.3	2 – 2.5	NO_2	N
EA07	2 St Marys Avenue South, Southall, UB2 4LS	513468	178553	Roadside	Y	0	12	2 – 2.5	NO_2	N
EA08	55 King Street, Southall, UB2 4DQ	512341	179186	Roadside	Y	0	3.3	2 – 2.5	NO_2	N
EA09	18 Western Road, Southall, UB2 5DU	512181	179219	Roadside	Y	0	7.5	2 – 2.5	NO_2	N
EA10	150 Brent Road, Southall, UB2 5LD	511170	179251	Roadside	Y	0	7.7	2 – 2.5	NO_2	N
EA11	2 Merrick Road, Southall, UB2 4AU	512657	179712	Roadside	Y	0	12	2 – 2.5	NO_2	N
EA12	Hambrough Primary School, South Road, Southall, UB1 1SF	512673	180069	Roadside	Y	0	10	2 – 2.5	NO_2	N
EA13	11 The Broadway, Southall, UB1 3PX	512768	180400	Roadside	Y	0	4	2 – 2.5	NO_2	N
EA14	25 Lady Margaret Road, Southall, UB1 2RA	512812	180516	Roadside	Y	0	6.3	2 – 2.5	NO_2	N

Site ID (2018)	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)
EA15	213 Church Road, Northolt, UB5 5BE	512442	183769	Roadside	Y	0	12.4	2 – 2.5	NO_2	N
EA16	31 Mandeville Road, Northolt, UB5 5HF	513056	184241	Roadside	Y	0	9	2 – 2.5	NO_2	N
EA17	126 Petts Hill, Northolt, UB5 4NW	513794	185348	Roadside	Y	0	9	2 – 2.5	NO_2	N
EA18	1504 Greenford Road, Greenford, UB6 0HR	515402	185313	Roadside	Y	0	5.3	2 – 2.5	NO_2	N
EA19	914 Greenford Road, Greenford, UB6 8QN	514985	183770	Roadside	Y	0	3.3	2 – 2.5	NO_2	N
EA20	6 Karoline Gardens, Greenford, UB6 9JP	514691	183269	Roadside	Y	0	9.1	2 – 2.5	NO_2	N
EA21	12 Blenheim Close, Greenford, UB6 8ET	514863	183122	Roadside	Y	0	9.5	2 – 2.5	NO_2	N
EA22	19 Runnymede Gardens, Greenford, UB6 8SX	515240	183102	Roadside	Y	0	1.2	2 – 2.5	NO_2	N
EA23	158 South Ealing Road, Ealing, W5 4QL	517694	179045	Roadside	Y	0	3.5	2 – 2.5	NO_2	N
EA24	213 Northfields Ave, West Ealing, W13 9QU	517045	179292	Roadside	Y	0	5.2	2 – 2.5	NO_2	N
EA25	12 Bond Street, Ealing W5 5AP	517644	180613	Roadside	Y	0	2.7	2 – 2.5	NO_2	N
EA26	8 Spring Bridge Road, Ealing, W5 2AA	517745	180827	Roadside	Y	0	3	2 – 2.5	NO_2	N
EA27	21 Haven Lane, Ealing, W5 2HZ	518022	181114	Roadside	Y	0	2.4	2 – 2.5	NO_2	N
EA28	41-42 Haven Green, Ealing, W5 2NX	517909	180971	Roadside	Y	0	3	2 – 2.5	NO_2	N
EA29	64 Hanger Lane, Ealing, W5 2JH	518635	181288	Roadside	Y	0	0.7	2 – 2.5	NO_2	N
EA30	Fernlea House, Hanger Lane,	518541	182707	Roadside	Y	0	4	2 – 2.5	NO_2	Y

Site ID (2018)	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)
	Ealing, W5 1EF (AQMS) (Tri)									
EA31	Fernlea House, Hanger Lane, Ealing, W5 1EF (AQMS) (Tri)	518541	182707	Roadside	Y	0	4	2 – 2.5	NO_2	Y
EA32	Fernlea House, Hanger Lane, Ealing, W5 1EF (AQMS) (Tri)	518541	182707	Roadside	Y	0	4	2 – 2.5	NO_2	Y
EA33	25 Waverley Gardens, Park Royal, NW10 7EX	518680	182979	Roadside	Y	0	1.8	2 – 2.5	NO_2	N
EA34	3 Iveagh Terrace, Park Royal, NW10 7SY	518976	182963	Roadside	Y	0	33	2 – 2.5	NO_2	N
EA35	Wendover Court, Western Avenue, Acton, W3 0TG	519997	182178	Roadside	Y	0	11	2 – 2.5	NO_2	N
EA36	322 & 324 Western Avenue, Acton, W3 OPL (AQMS) (Tri)	520430	181950	Roadside	Y	3.5	5	2 – 2.5	NO_2	Y
EA37	322 & 324 Western Avenue, Acton, W3 OPL (AQMS) (Tri)	520430	181950	Roadside	Y	3.5	5	2 – 2.5	NO_2	Y
EA38	322 & 324 Western Avenue, Acton, W3 OPL (AQMS) (Tri)	520430	181950	Roadside	Y	3.5	5	2 – 2.5	NO_2	Y
EA39	326 Western Avenue, Acton, W3 0PL	520426	181958	Roadside	Y	0	11.4	2 – 2.5	NO_2	N
EA40	94 North Acton Road, Park Royal, NW10 7AY	520780	182775	Roadside	Y	0	6	2 – 2.5	NO_2	N
EA41	1 Shaftesbury Gardens, Park Royal, NW10 6LJ	521312	182366	Roadside	Y	0	5	2 – 2.5	NO_2	N
EA42	39 Old Oak Lane, Park Royal, NW10 6EJ	521587	182684	Roadside	Y	0	5	2 – 2.5	NO_2	N
EA43	165 Wells House Road, Park Royal, NW10 6EA	521301	182076	Roadside	Y	0	5	2 – 2.5	NO_2	N
EA44	4 St Andrews Road, Acton, W3 7NE	521389	180953	Roadside	Y	0	8.6	2 – 2.5	NO_2	N
EA45	98 Western Avenue, Acton, W3 7TZ	521173	180981	Roadside	Y	0	10	2 – 2.5	NO_2	N

Site ID (2018)	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)
EA46	6 Western Avenue, Acton, W3 7UD	521549	180923	Roadside	Y	0	4.6	2 – 2.5	NO_2	N
EA47	71 Old Oak Common Lane (PO), Acton, W37DD	521557	180996	Roadside	Y	0	11	2 – 2.5	NO_2	N
EA48	205 Old Oak Road, Acton, W3 7HH	521614	180852	Roadside	Y	0	4.7	2 – 2.5	NO_2	N
EA49	17 The Vale, Acton, W3 7SH	521720	180084	Roadside	Y	0	19.4	2 – 2.5	NO_2	N
EA50	Warple Way, Acton, W3 0RH	521088	180046	Roadside	Y	0	2.2	2 – 2.5	NO_2	N
EA51	88 High Street, Acton, W3 6QX	520285	180075	Roadside	Y	0	5	2 – 2.5	NO_2	N
EA52	15a Church Road, Acton, W3 8QE	520092	180063	Roadside	Y	0	10	2 – 2.5	NO_2	N
EA53	182 High Street, Acton, W3 9NN	520026	180141	Roadside	Y	0	4	2 – 2.5	NO_2	N
EA54	44 Acton Lane, Chiswick, W4 5ED	520480	178854	Roadside	Y	0	5	2 – 2.5	NO_2	N
EA55	156 Horn Lane, Acton, W3 6PH	520180	180896	Roadside	Y	0	6	2 – 2.5	NO_2	N
EA56	317 Horn Lane, Acton, W3 0BU (AQMS) (Tri)	520432	181428	Roadside	Y	10	3	2 – 2.5	NO_2	Y
EA57	317 Horn Lane, Acton, W3 0BU (AQMS) (Tri)	520432	181428	Roadside	Y	10	3	2 – 2.5	NO_2	Y
EA58	317 Horn Lane, Acton,W3 0BU (AQMS) (Tri)	520432	181428	Roadside	Y	100	3	2 – 2.5	NO_2	Y
EA59	5 Leamington Park, Acton, W3 6TJ	520532	181517	Roadside	Y	0	11	2 – 2.5	NO_2	N
EA60	Lyra Court, Portal Way, Acton, W3 6DB	520739	181824	Roadside	Y	0	5	2 – 2.5	NO_2	N
EA61	36 Wales Farm Road, Acton, W3 6UE	520724	181552	Roadside	Y	0	5	2 – 2.5	NO_2	N

1.2 Comparison of Monitoring Results with AQOs

The results presented in Table D are after adjustments for "annualisation". Details of these adjustments are described in Appendix A.

Currently, the London Borough of Ealing operates a network of 61 diffusion tubes across 55 sites (including 3 triplicate sites co-located with continuous analysers). The diffusion tubes are prepared and analysed by Socotec (formerly Environmental Scientifics Group Didcot) using the 20% Triethanolamine (TEA) in water preparation. Details of the QA/QC procedures applied to the diffusion tube results are summarised in Appendix A.

Currently there are four automatic monitoring stations in operation, which measure NO_2: Hanger Lane Gyratory (EA6), Horn Lane (EA8), Western Avenue (EI1) and Acton Vale (EI3).

The annual mean NO_2 results from the automatic monitoring stations and diffusion tube locations for the last seven years are shown in Table D. Data capture was good in 2018 for Acton Vale and Horn Lane, with both stations achieving a data capture rate above 95%. Data capture at Western Avenue was 67% and at Hanger Lane was 79%. All the diffusion tube monitoring locations had at least 9 months of valid data for 2018 (i.e. 75% data capture or greater).

Exceedances of the NO_2 annual mean objective of 40 $\mu g.m^{-3}$ were observed at the automatic monitoring stations Hanger Lane Gyratory, Horn Lane and Western Avenue in all years between 2012 and 2018. The NO_2 annual mean was 29 $\mu g.m^{-3}$ at Acton Vale monitoring station. The highest annual mean concentration in 2018 (67.9 $\mu g.m^{-3}$) was recorded at the Hanger Lane Gyratory site. None of the automatic sites exceeded the 1 hour mean NO_2 objective (200 $\mu g\ m^{-3}$ not to be exceeded more than 18 times a year) in 2018.

In total, 32 diffusion tubes at 28 locations recorded concentrations greater than the 40 $\mu g.m^{-3}$ air quality objective in 2018. The diffusion tubes at the Horn Lane triplicate site however, were below the objective after distance adjustment, see Table N. Of these 32 tubes, 5 tubes at 3 locations recorded concentrations above 60 $\mu g.m^{-3}$. Concentrations greater than 60 $\mu g.m^{-3}$ indicate the likelihood of the 1 hour mean NO_2 objective being exceeded. The maximum NO_2 concentration recorded at diffusion tube sites in 2018 was 69.8 $\mu g.m^{-3}$ at site EA30 at Fernlea House, Hanger Lane, Ealing. This location also had the highest concentration in 2017 and has recorded concentrations of 70 $\mu g.m^{-3}$ and above in each of the last seven years.

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

Site ID	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2018 % [b]	Annual Mean Concentration (μg m^{-3})						
				2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]	2017 [c]	2018 [c]
EA6 Hanger Lane Gyratory	Automatic	79	79	**95.0**	**74.3**	**70.8**	**85**	**76**	**72.3**	**67.9**
EA8 Horn Lane	Automatic	98	98	**53.4**	**56.6**	**47.6**	**48**	**48**	**44.2**	**43.9**
EI1 Western Avenue	Automatic	67	67	**69.8**	**63.9**	**65.7**	**60.3**	**60.1**	**51.2**	**47.7**
EI3 Acton Vale	Automatic	100	100	N/A	N/A	N/A	N/A	N/A	N/A	29.0
EA01	Diffusion tube	83	83	**61.4**	**53.1**	**61.7**	**64.3**	**61.0**	**54.0**	**49.4**
EA02	Diffusion tube	100	100	**51.4**	**46.8**	**48.9**	**50.1**	**47.9**	**40.1**	**42.0**
EA03	Diffusion tube	100	100	28.9	23.5	23.5	24.7	23.8	20.2	21.0
EA04	Diffusion tube	100	100	N/A	36.5	37.4	36.4	36.2	32.4	30.1
EA05	Diffusion tube	100	100	36.5	33.1	32.4	33.5	34.2	29.7	30.7
EA06	Diffusion tube	100	100	N/A	**52.6**	**54.5**	**49.5**	**49.8**	**42.8**	**42.8**
EA07	Diffusion tube	83	83	28.9	25.1	25.0	25.6	31.9	29.4	30.5
EA08	Diffusion tube	83	83	**56.3**	**47.3**	**47.9**	**48.6**	**48.9**	**50.6**	**41.1**
EA09	Diffusion tube	100	100	**41.9**	36.4	36.3	36.7	36.6	31.9	30.9
EA10	Diffusion tube	100	100	**41.0**	37.6	39.5	**40.3**	38.5	34.6	35.0
EA11	Diffusion tube	92	92	38.4	32.6	30.5	31.9	33.4	28.6	28.6
EA12	Diffusion tube	100	100	**44.9**	**41.1**	39.2	37.1	39.3	31.4	34.4
EA13	Diffusion tube	100	100	**60.9**	**55.2**	**54.2**	**53.5**	**52.7**	**45.1**	**46.0**
EA14	Diffusion tube	100	100	N/A	N/A	N/A	N/A	**48.0**	**44.1**	**40.2**
EA15	Diffusion tube	100	100	**44.6**	**42.1**	**41.7**	**42.5**	**42.5**	36.2	37.2
EA16	Diffusion tube	100	100	**46.2**	**40.2**	39.6	**42.5**	40.0	37.1	33.9
EA17	Diffusion tube	100	100	**40.8**	32.5	35.6	37.5	37.3	33.4	33.4
EA18	Diffusion tube	100	100	38.6	33.5	34.4	34.5	33.9	31.5	31.8
EA19	Diffusion tube	100	100	39.5	36.5	39.1	**40.6**	39.3	34.7	35.0
EA20	Diffusion tube	100	100	N/A	**42.2**	**47.5**	**48.8**	**42.2**	**41.0**	**41.6**
EA21	Diffusion tube	100	100	**43.2**	38.6	36.6	39.4	39.0	34.2	34.4
EA22	Diffusion tube	92	92	**44.7**	39.4	**41.2**	**41.9**	39.1	37.9	33.1
EA23	Diffusion tube	100	100	N/A	**57.3**	**60.3**	**62.4**	**62.1**	**53.5**	**50.6**
EA24	Diffusion tube	100	100	N/A	37.9	34.6	35.4	36.6	36.1	33.5
EA25	Diffusion tube	92	92	**49.3**	**50.7**	**47.3**	**49.0**	**48.6**	**44.3**	**52.5**
EA26	Diffusion tube	92	92	**66.8**	**61.4**	**61.3**	**62.3**	**61.9**	**54.4**	**60.4**

Site ID	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2018 % [b]	Annual Mean Concentration (µg m^{-3})						
				2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]	2017 [c]	2018 [c]
EA27	Diffusion tube	100	100	36.8	33.8	32.4	35.2	35.4	31.2	31.2
EA28	Diffusion tube	100	100	**52.1**	**48.4**	**51.4**	**49.4**	**48.0**	39.8	**42.3**
EA29	Diffusion tube	100	100	**44.4**	38.7	39.4	38.4	39.5	35.6	36.4
EA30	Triplicate Diffusion tube	100	100	**75.0**	**75.1**	**79.6**	**80.3**	**71.5**	**70.3**	**69.8**
EA31	Triplicate Diffusion tube	100	100	**81.7**	**74.3**	**81.6**	**79.1**	**74.8**	**71.4**	**68.8**
EA32	Triplicate Diffusion tube	100	100	**79.3**	**74.7**	**79.6**	**79.6**	**73.4**	**74.0**	**69.5**
EA33	Diffusion tube	83	83	**51.8**	**49.7**	**50.0**	**52.6**	**49.8**	**43.3**	**54.5**
EA34	Diffusion tube	100	100	**45.0**	**40.6**	**40.9**	**41.1**	39.6	34.6	35.2
EA35	Diffusion tube	100	100	**56.0**	**59.3**	**56.0**	**56.4**	**55.7**	**47.3**	**49.7**
EA36	Triplicate Diffusion tube	100	100	**73.8**	**68.2**	**70.5**	**69.9**	**62.1**	**56.3**	**54.0**
EA37	Triplicate Diffusion tube	100	100	**75.1**	**66.7**	**70.0**	**68.1**	**57.7**	**56.8**	**55.2**
EA38	Triplicate Diffusion tube	100	100	**74.5**	**67.6**	**70.6**	**68.8**	**60.9**	**54.9**	**54.0**
EA39	Diffusion tube	100	100	**59.9**	**57.3**	**55.6**	**58.1**	**52.1**	**45.0**	**48.3**
EA40	Diffusion tube	100	100	38.9	34.2	35.5	38.0	38.1	33.4	33.1
EA41	Diffusion tube	100	100	**43.4**	37.8	36.5	**40.2**	37.7	32.6	32.6
EA42	Diffusion tube	92	92	**51.1**	**50.5**	**53.0**	**54.4**	**49.6**	**45.3**	**44.4**
EA43	Diffusion tube	100	100	36.7	39.8	**41.3**	**45.7**	**40.5**	36.9	36.6
EA44	Diffusion tube	100	100	**42.3**	35.8	**40.2**	**40.0**	38.1	34.7	32.0
EA45	Diffusion tube	92	92	**51.8**	**48.2**	**50.8**	**49.8**	**49.9**	**43.9**	**46.7**
EA46	Diffusion tube	100	100	**70.8**	**69.2**	**77.4**	**82.5**	**75.3**	**67.9**	**67.6**
EA47	Diffusion tube	100	100	**49.6**	**48.1**	**47.8**	**49.4**	**49.2**	**43.7**	**43.0**
EA48	Diffusion tube	100	100	**55.2**	**58.6**	**57.4**	**60.7**	**58.9**	**50.9**	**52.6**
EA49	Diffusion tube	100	100	**49.5**	**44.3**	**40.3**	**41.4**	**40.9**	34.6	37.5
EA50	Diffusion tube	100	100	N/A	**43.1**	39.8	38.2	39.4	32.6	36.2
EA51	Diffusion tube	100	100	**54.7**	**56.2**	**56.9**	**55.5**	**56.0**	**49.0**	**48.1**
EA52	Diffusion tube	92	92	39.5	30.6	36.4	33.7	35.1	28.6	29.6
EA53	Diffusion tube	100	100	**48.9**	**59.0**	**53.9**	**55.8**	**54.7**	**44.4**	**47.7**
EA54	Diffusion tube	100	100	**40.1**	38.4	38.0	**41.1**	37.8	37.6	**44.3**

Site ID	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2018 % [b]	Annual Mean Concentration (µg m^{-3})						
				2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]	2017 [c]	2018 [c]
EA55	Diffusion tube	92	92	**40.7**	**42.2**	**42.3**	**42.2**	**43.1**	36.5	**40.5**
EA56	Triplicate Diffusion tube	100	100	**54.7**	**51.8**	**48.2**	**52.3**	**51.0**	**45.3**	**44.2**
EA57	Triplicate Diffusion tube	100	100	**47.0**	**50.1**	**50.7**	**51.6**	**51.1**	**44.4**	**43.9**
EA58	Triplicate Diffusion tube	100	100	**53.2**	**51.5**	**46.4**	**52.2**	**50.4**	**42.7**	**44.9**
EA59	Diffusion tube	100	100	**46.6**	**41.9**	**40.9**	**43.7**	**43.7**	36.4	38.4
EA60	Diffusion tube	83	83	N/A	N/A	**43.1**	**47.8**	**47.5**	**40.0**	39.2
EA61	Diffusion tube	100	100	**44.8**	**44.7**	**43.2**	**45.6**	**43.9**	38.9	37.6

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

NO_2 annual means in excess of 60 µg m^{-3}, indicating a potential exceedance of the NO_2 hourly mean AQS objective are shown in bold and underlined.

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

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

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

Fig. 3 shows the trends in NO_2 concentrations at automatic monitoring sites in the Borough for the 2012 – 2018 period, whilst Fig. 4 to Fig. 11 show the trends in NO_2 concentrations for the same period at diffusion tube monitoring sites grouped by monitoring site type: urban background, near road sites and roadside sites.

At the automatic monitoring sites (Fig. 3) there is evidence of small reductions in NO_2 concentrations between 2012 and 2018, although there is significant variability from year to year. At Horn Lane, concentrations of NO_2 have remained steady since 2014, with a slight decrease in concentration in 2017. Similarly, at Western Avenue concentrations have fallen or remained constant since 2014. Larger year-to-year variations in NO_2 concentrations have been observed at Hanger Lane Gyratory, although concentrations from 2015 have decreased.

At the urban background diffusion tube site, Brent Lodge Park (Fig. 4), there is evidence of a slight decrease in NO_2 concentrations between 2011 and 2013, followed by stable concentrations between 2013 and 2016, a decrease in concentrations in 2017, and then a slight rise in NO_2 annual mean concentrations in 2018. Concentrations at the background site have continually been within the annual mean objective of 40 µgm^{-3}; suggesting that background concentrations are not the cause of exceedances at other locations. For the majority of near-road and roadside sites (Fig. 5 to Fig. 11) the reductions in NO_2 concentrations between 2011 and 2013 are smaller than the apparent downward trend of the urban background site. Between 2013 and 2017 NO_2

concentrations at roadside locations have remained stable or have decreased slightly. This has been followed by an increase at the majority of sites in 2018. In figure 7, the 12 Bond Street site (EA25) and 8 Spring Bridge Road site (EA26) have shown a sharp increase in concentrations in 2018. The June result for EA25 was uncharacteristically high due to construction work nearby and this has skewed the annual mean. EA26 had an uncharacteristically high concentration in October, twice the concentrations for the remainder of the year. However, as no explanation can be offered for this the data has been included to remain conservative, and it has increased the annual mean for 2018.

Figure 3. Annual Mean NO_2 concentrations at Automatic Monitoring sites

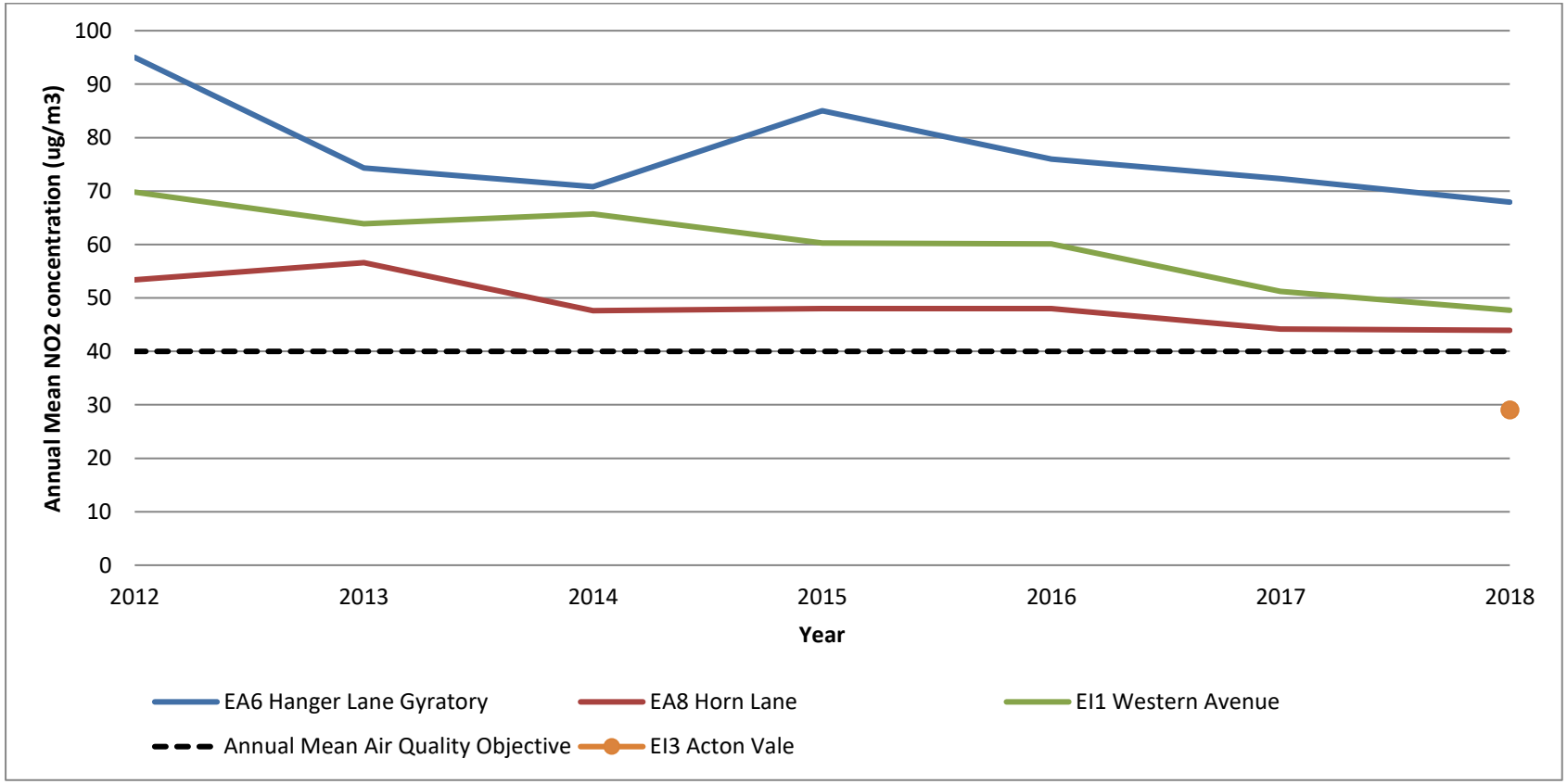


Figure 4. Annual Mean NO_2 concentrations at Urban Background sites

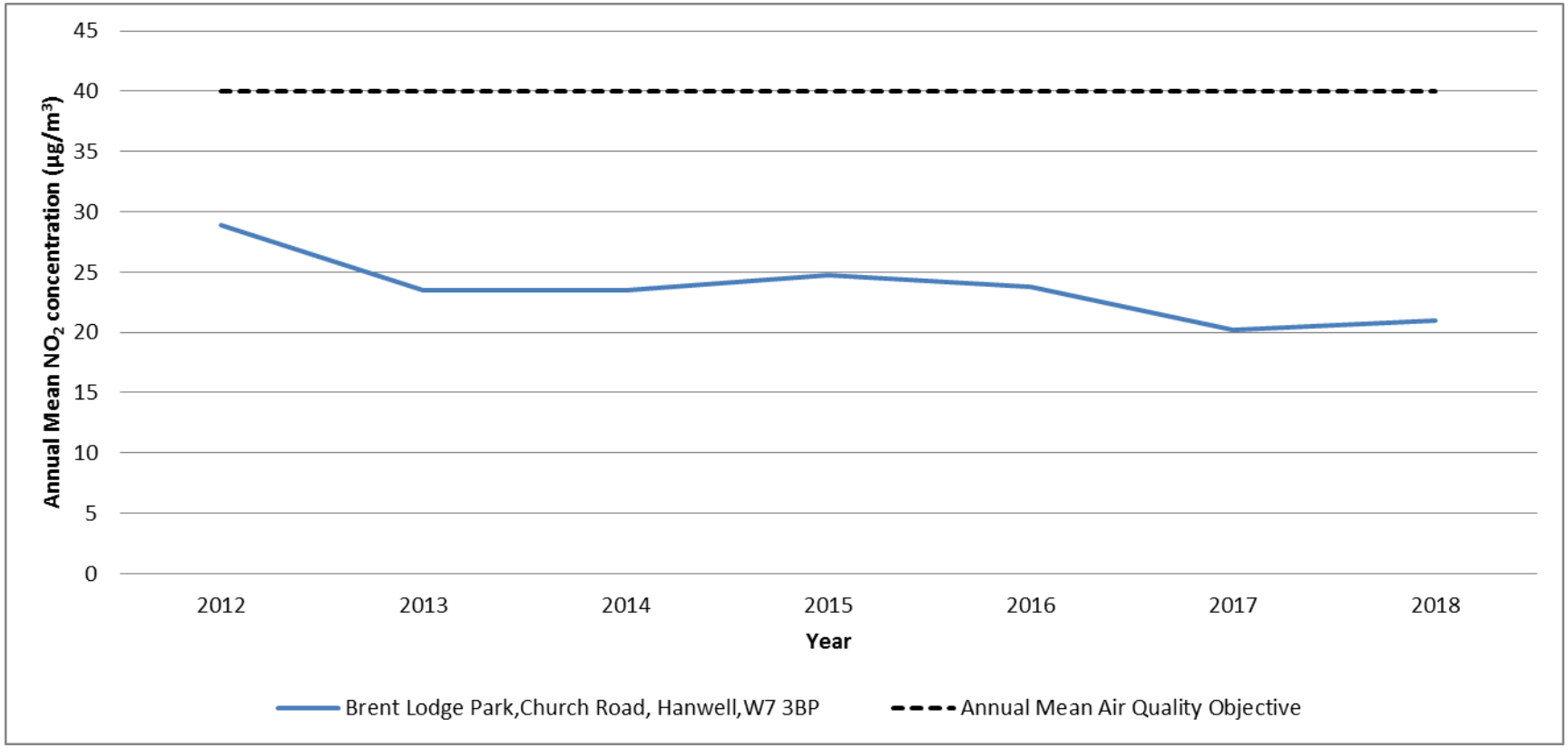


Figure 5. Annual Mean NO_2 concentrations at Roadside sites (1)

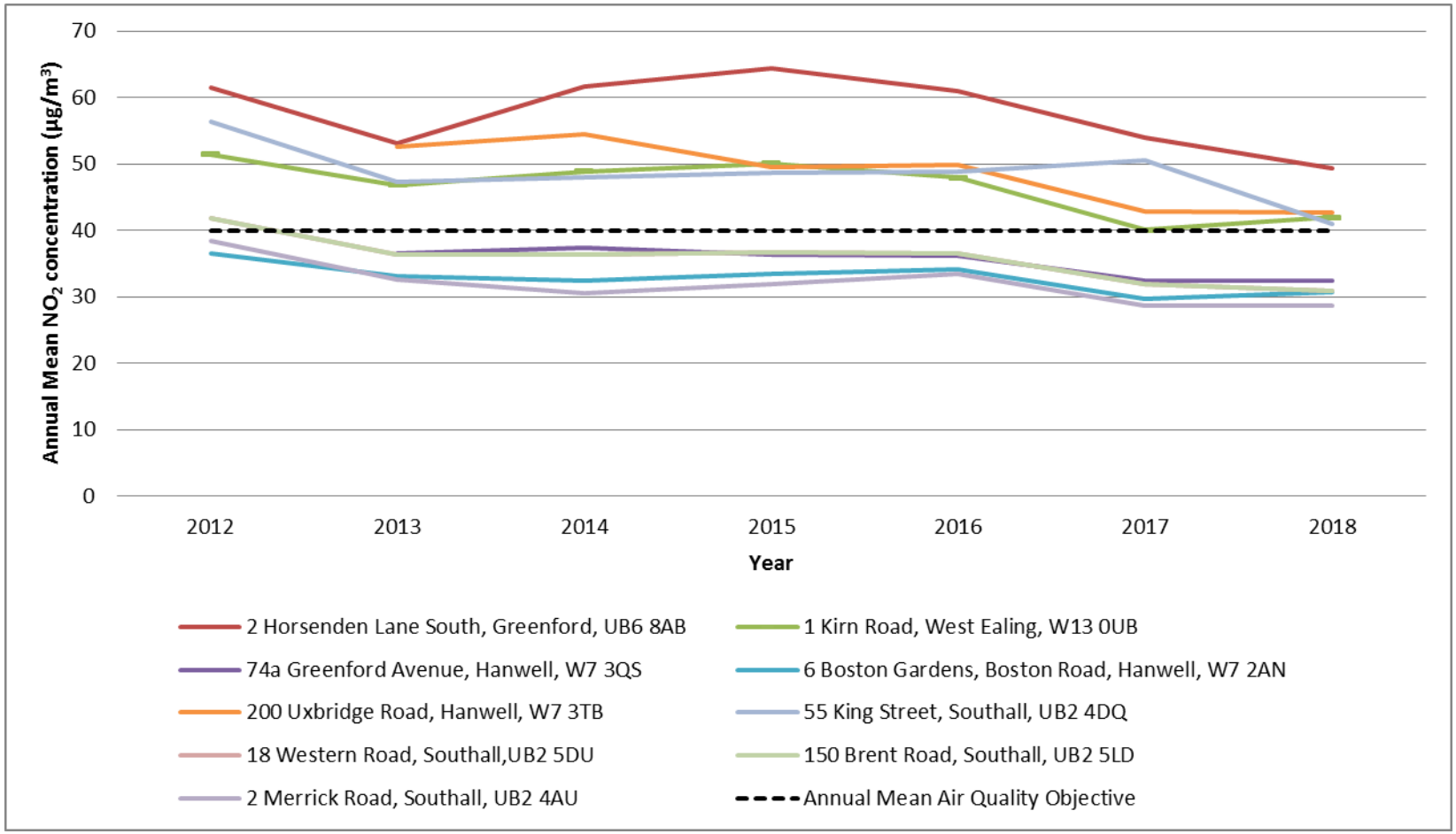


Figure 6. Annual Mean NO_2 concentrations at Roadside sites (2)

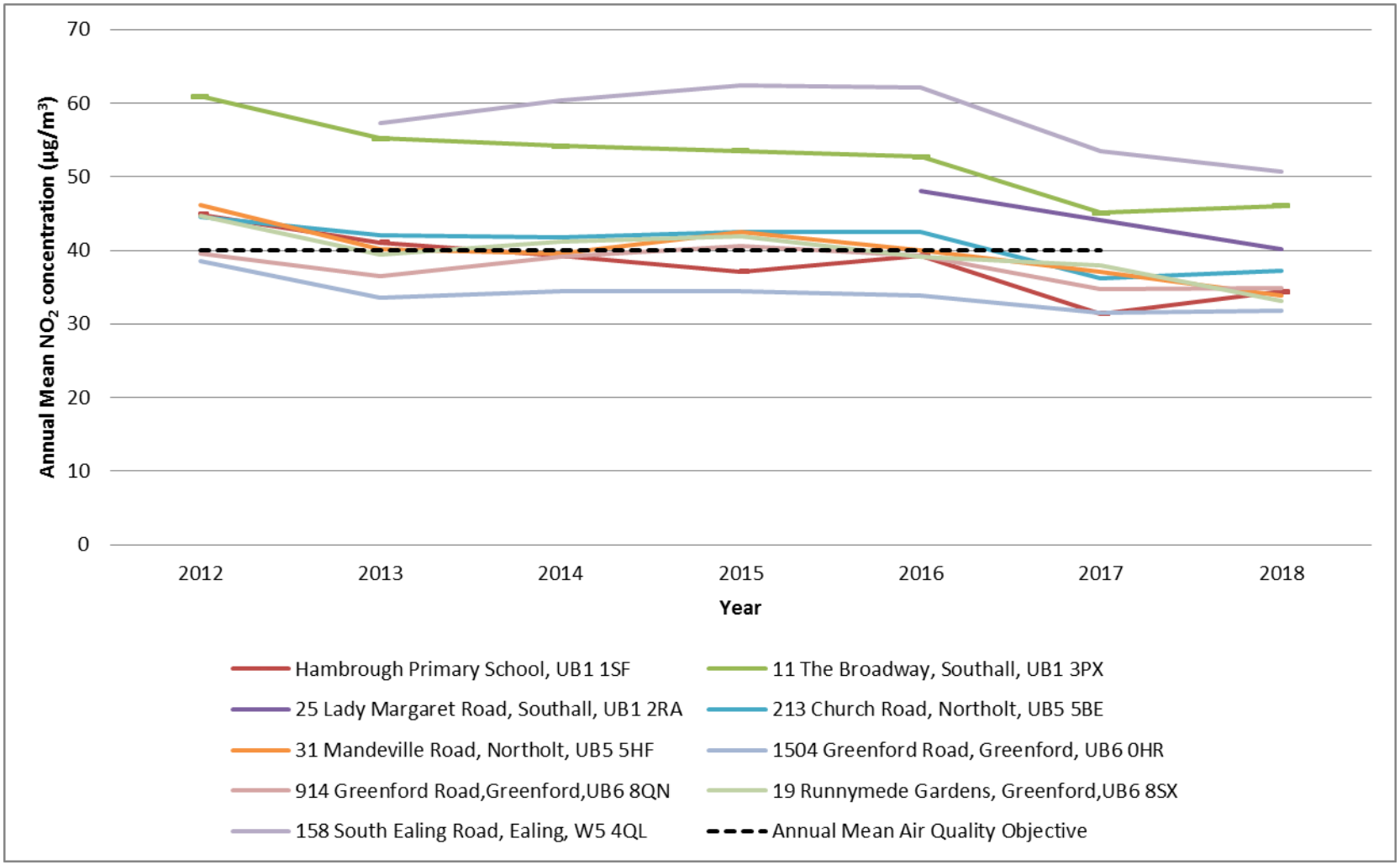


Figure 7. Annual Mean NO_2 concentrations at Roadside sites (3)

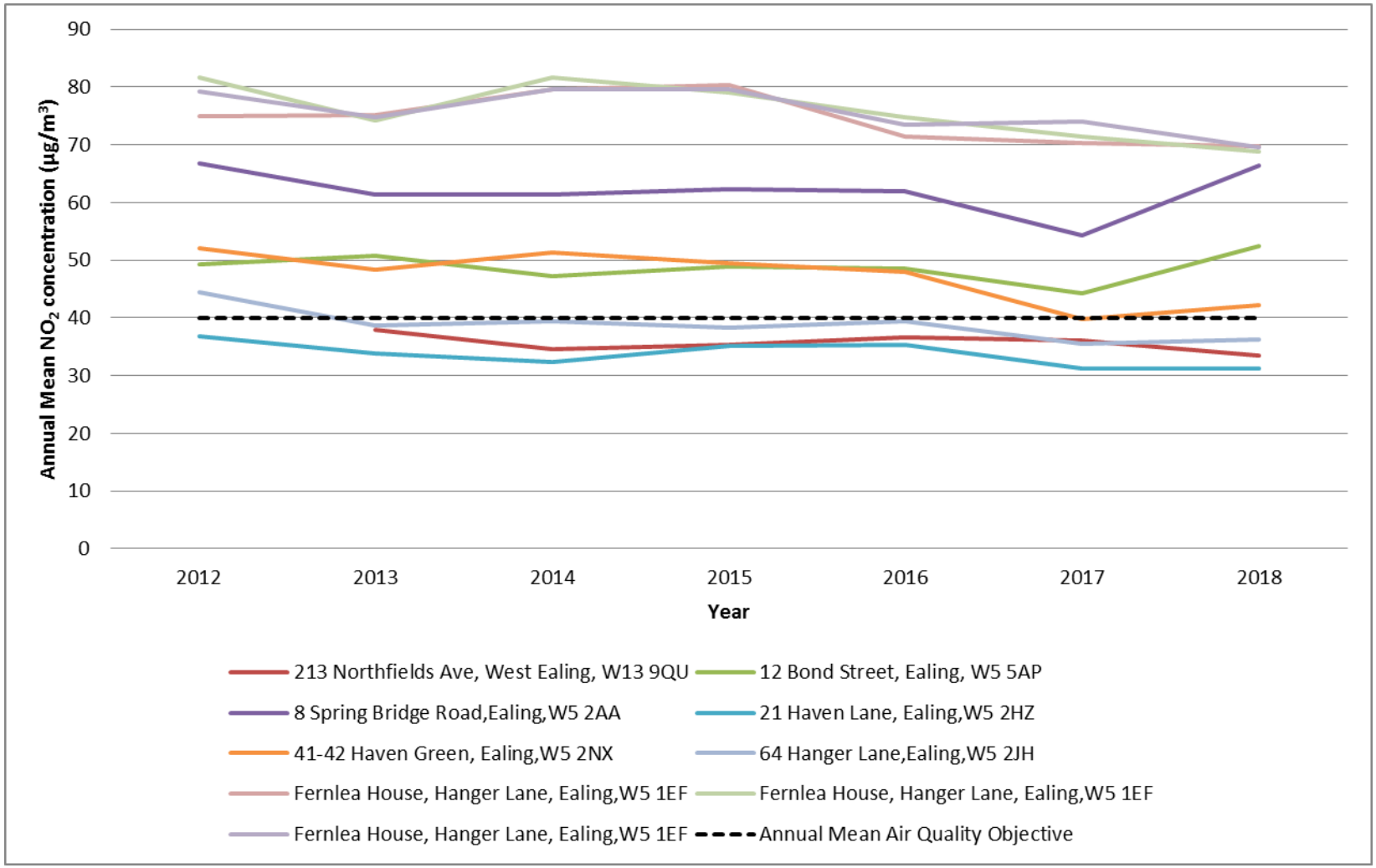


Figure 8. Annual Mean NO_2 concentrations at Roadside sites (4)

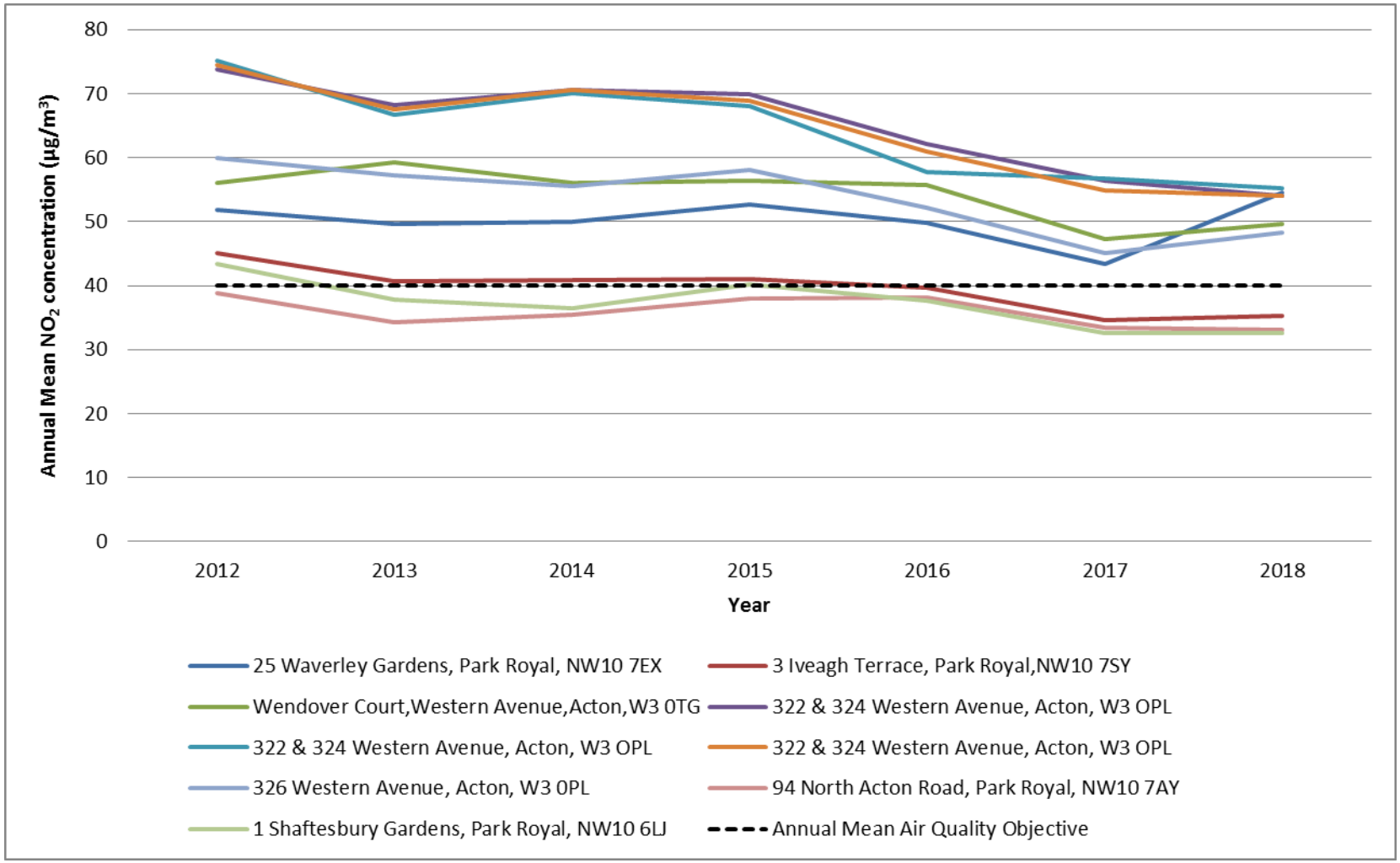


Figure 9. Annual Mean NO_2 concentrations at Roadside sites (5)

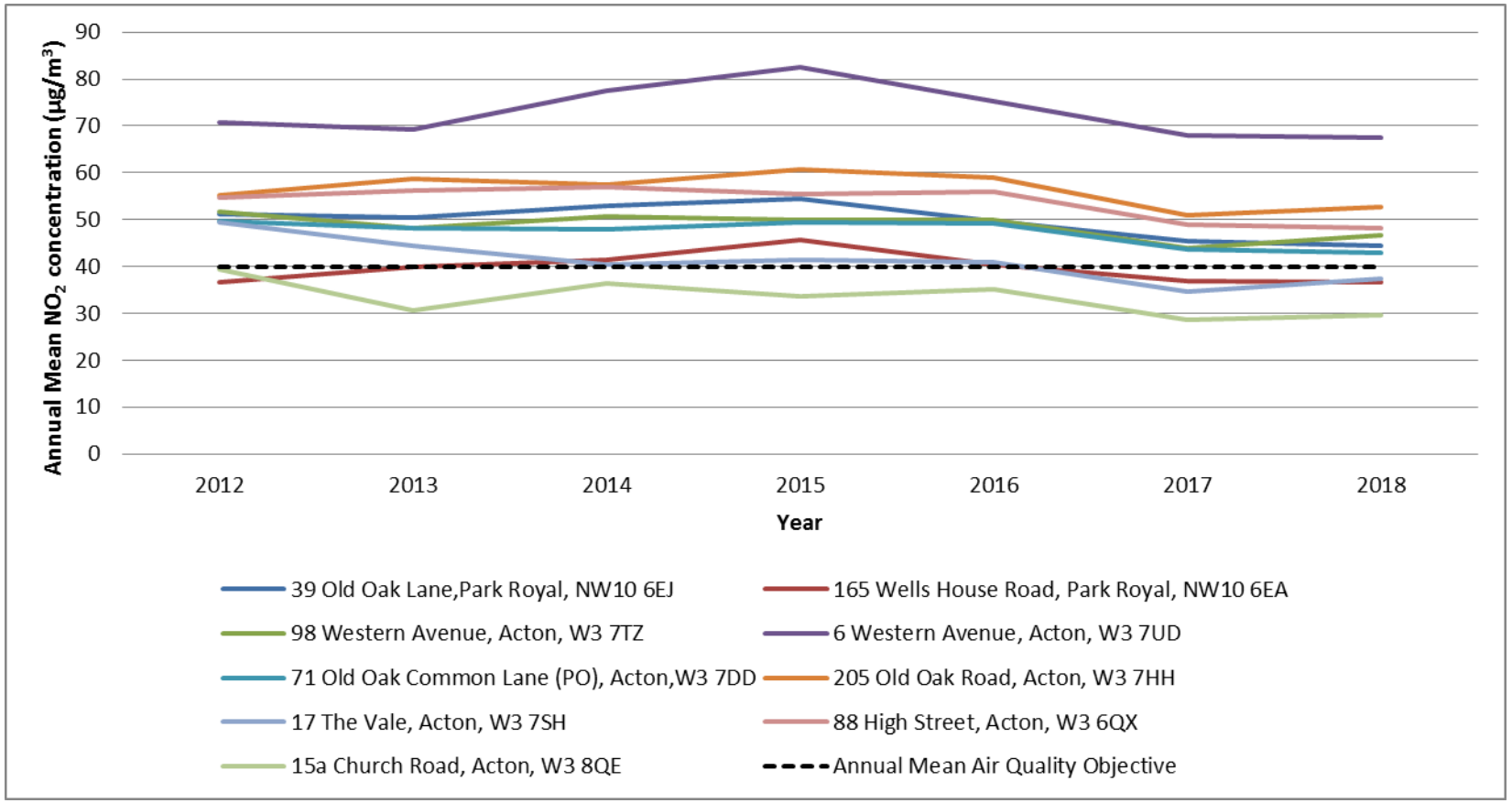


Figure 10. Annual Mean NO_2 concentrations at Roadside sites (6)

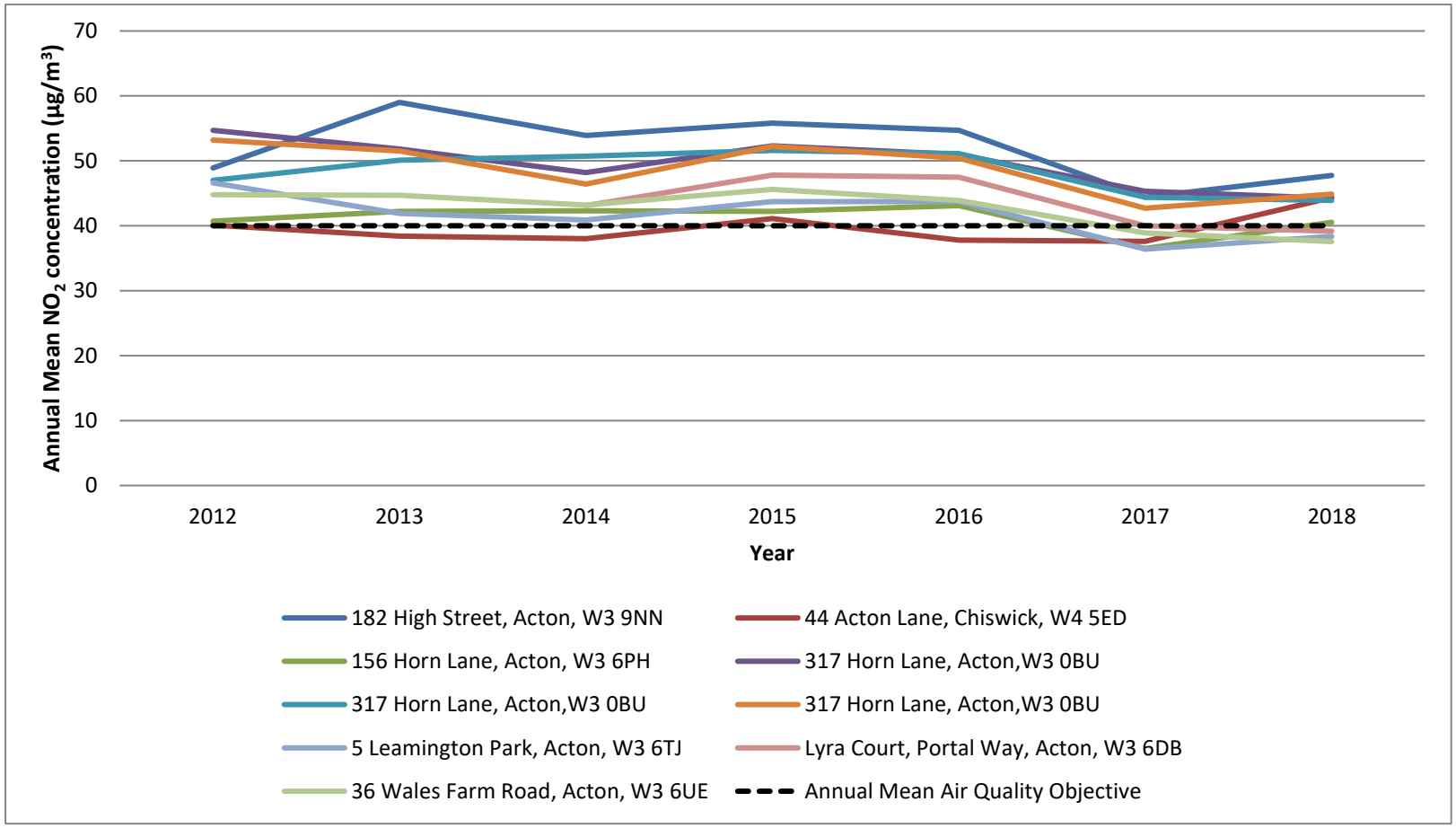


Figure 11. Annual Mean NO_2 concentrations at Near Road sites

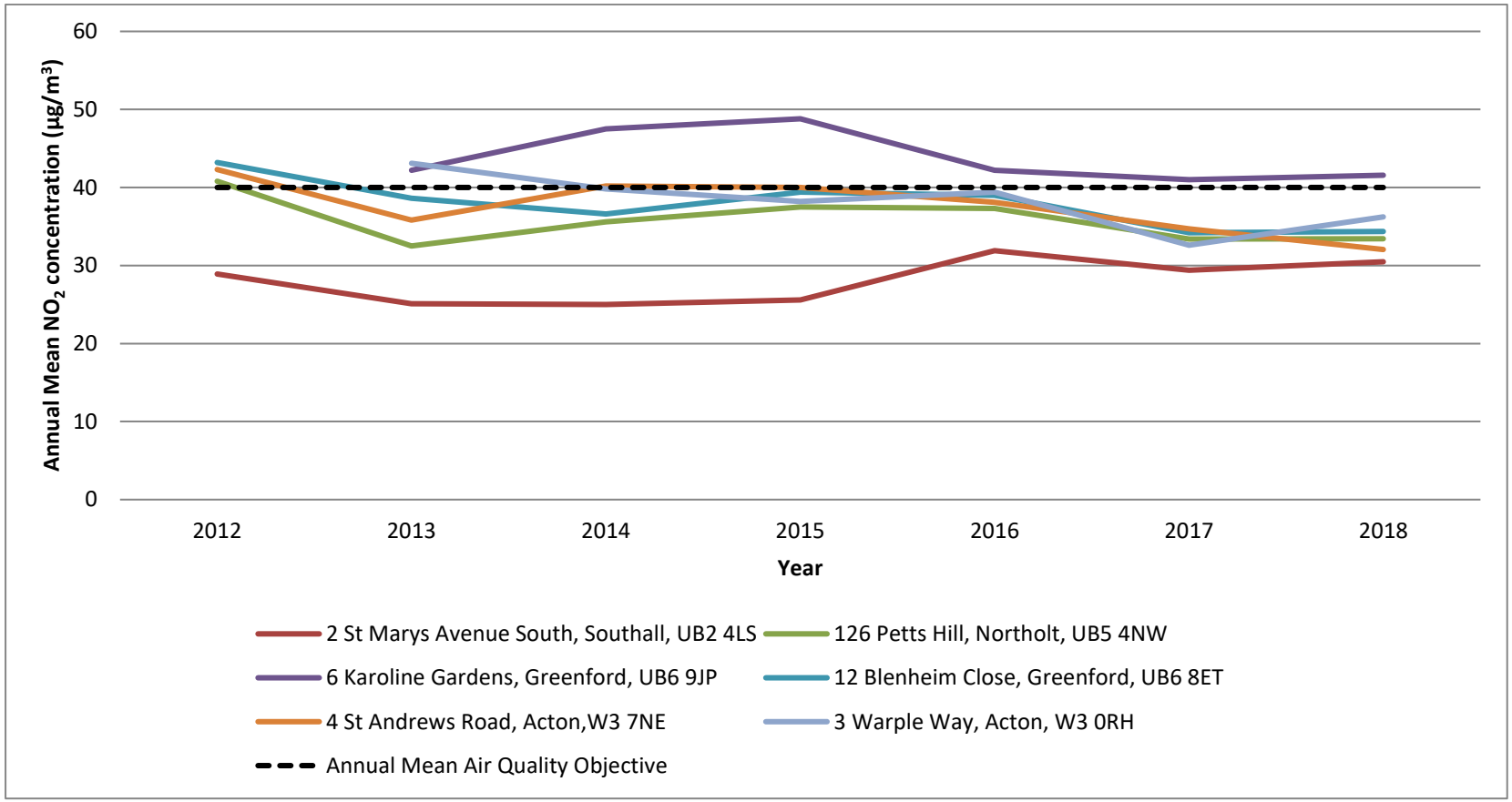


Table E. NO_2 Automatic Monitor Results: Comparison with 1-hour Mean Objective

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2018 % [b]	Number of Hourly Means > 200 µg m^{-3}						
			2012[c]	2013[c]	2014[c]	2015[c]	2016[c]	2017[c]	2018[c]
EA6 Hanger Lane Gyratory	79	79	**173**	**56**	17 (**205**)	**98**	**45**	9	0
EA8 Horn Lane	98	98	2	0 (152)	0	3	1	2	0
EI1 Western Avenue	67	67	10	17 (**202**)	17	2 (179)	**22**	0	0
EI3 Acton Vale	100	100	N/A	N/A	N/A	N/A	N/A	N/A	0

Notes: Exceedance of the NO_2 short term AQO of 200 µg m^{-3} over the permitted 18 days per year are shown in **bold**.

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

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

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

Table E shows the 1-hour mean NO_2 monitoring results for 2012 to 2018. Monitored hourly mean NO_2 concentrations at the 4 monitoring sites did not exceed 200 µg.m^{-3} in 2018. These results are within the 18 hours permitted on a yearly basis to comply with the 1-hour mean objective. It is first time in the last 7 years that the 1-hour NO_2 objective has not been exceeded once across all 4 sites.

PM_{10} concentrations are currently measured at all automatic monitoring locations in the London Borough of Ealing. TEOMs are used to monitor PM_{10} at all sites. The Horn Lane station is equipped with both TEOM and TEOM-FDMS analysers for PM_{10} monitoring and results from both are presented separately. The annual mean PM_{10} results are shown in Table F and the 24-hour mean PM_{10} results are presented in Table G. Data capture in 2018 was good (i.e. >85%) at all locations.

Annual mean PM_{10} concentrations in 2018 at all sites were found to achieve the annual mean objective of 40 µg.m^{-3}. The annual mean objective has been achieved at all automatic monitoring locations in the Borough since 2012. The highest annual mean PM_{10} concentration in 2018 was recorded at EA6 Hanger Lane Gyratory and EI1 Western Avenue (28 µg.m^{-3}).

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

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2018 % [b]	Annual Mean Concentration (µg m^{-3})						
			2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]	2017 [c]	2018 [c]
EA6 Hanger Lane Gyratory	87	87	29	30	26	25	24	26	28
EA8 Horn Lane	99	99	N/A	N/A	31	31	28	27	25
EI8 Horn Lane TEOM	100	100	34	38	34	27	26	26	26
EI1 Western Avenue	98	98	30	31	28	29	30	26	28
EI3 Acton Vale	93	93	N/A	N/A	N/A	N/A	N/A	N/A	19

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

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

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

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

The 24-hour mean PM_{10} monitoring results are shown in Table G. The 24-hour mean air quality objective (50 µg.m^{-3}, not to be exceeded more than 35 times a year) was achieved at all monitoring locations in 2018. This has been achieved at all sites since 2015.

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 2018 % [b]	Number of Daily Means > 50 µg m^{-3}						
			2012[c]	2013[c]	2014[c]	2015[c]	2016[c]	2017[c]	2018[c]
EA6 Hanger Lane Gyratory	87	87	18	19	10	6	12	10	12
EA8 Horn Lane	99	99	N/A	N/A	22 (**51**)	11 (46)	19	16	7
EI8 Horn Lane TEOM	100	100	**49**	**76**	**55**	17	17	10	7
EI1 Western Avenue	98	98	10 (45)	22 (46)	22	22 (43)	24	9	14
EI3 Acton Vale	93	93	N/A	N/A	N/A	N/A	N/A	N/A	2

Notes: Exceedance of the PM_{10} short term AQO of 50 µg m^{-3} over the permitted 35 days per year or where the 90.4th percentile exceeds 50 µg m^{-3} are shown in **bold**.
Where the period of valid data is less than 85% of a full year, the 90.4th percentile is shown in brackets after the number of exceedances.

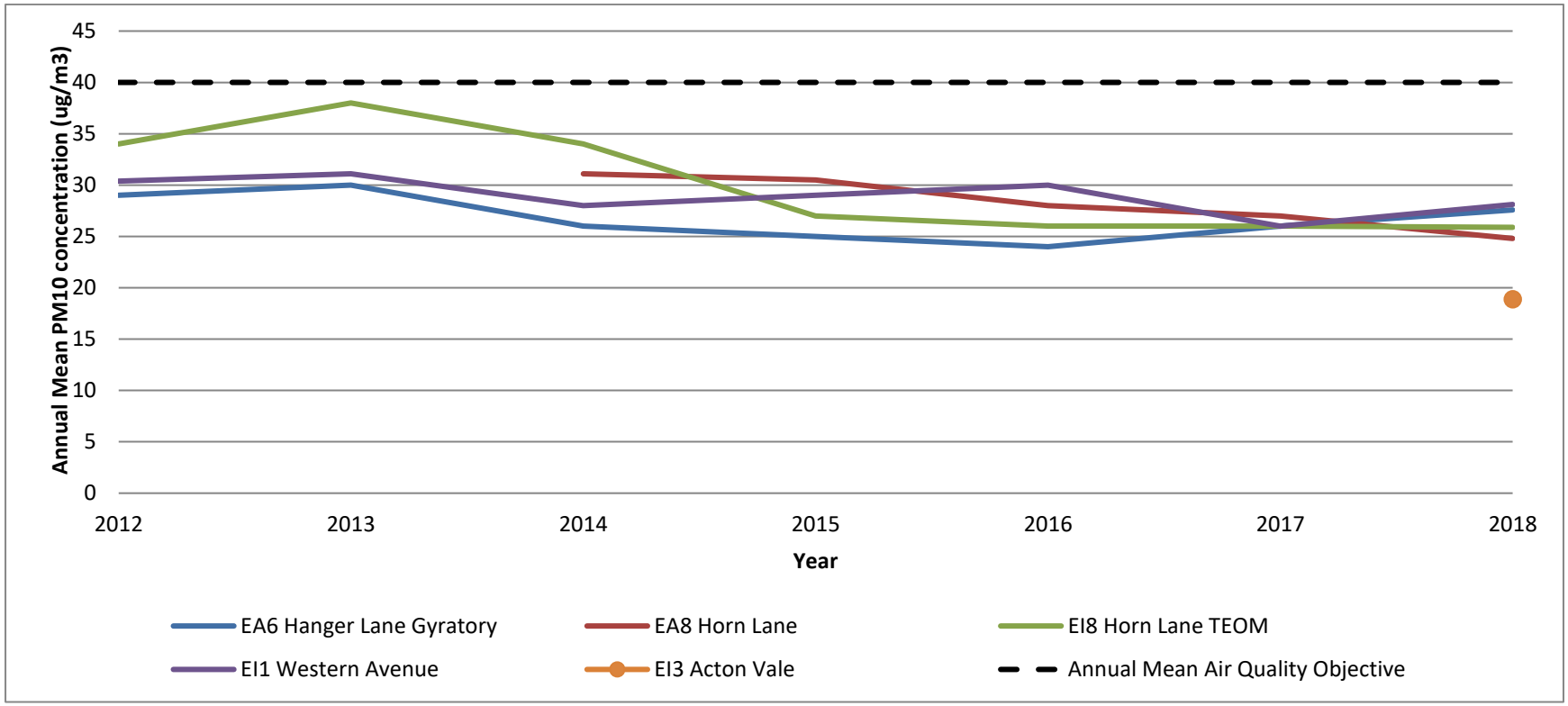
[a] data capture for the monitoring period, in cases where monitoring was only carried out for part of the year

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

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

Fig. 12 shows the trends in PM_{10} concentrations between 2012 and 2018 for all currently operational monitoring sites. Excluding Acton Vale, there is evidence of annual PM_{10} concentrations decreasing slightly over this period at all sites.

Figure 12. Annual Mean PM_{10} concentrations at Automatic Monitoring sites



2. Action to Improve Air Quality

2.1 Air Quality Action Plan Progress

The current Air Quality Action Plan (AQAP) for Ealing was published in 2003. A new AQAP has been drafted and consulted upon in 2017 with the Secretary of State, the Mayor of London, the Environment Agency, Transport for London and all neighbouring local authorities, including the West London Cluster Group. A large number of other bodies and organisations have also been consulted, including Ealing Friends of the Earth, residents' groups, Ealing Civic Society and Ealing Public Transport User Group. Completion and signing-off of the final document were delayed pending the publication of the new LLAQM action matrix but is now expected in late 2019.

In 2018, Ealing has full compliance with the Air Quality Objectives for PM_{10} at the Council's Horn Lane air quality monitoring station for the fourth successive year. The Borough also had compliance with the hourly Air Quality Objective for NO_2 for the second successive year at Ealing Hanger Lane Gyratory air quality monitoring station.

Table J provides a brief summary of progress on projects started in previous years, highlighting progress made this year. A priority for 2019 is participation in the pan-London MAQF-funded Non-Road Mobile Machinery (NRMM) project. This will include roll of NRMM enforcement across the borough, increasing idling awareness activity and enforcement at idling hotspots.

All measures detailed below which aim to reduce PM_{10} will also have an impact on $PM_{2.5}$. The impacts of these measures, when assessed, will be linked to Public Health England's Outcomes Framework. $PM_{2.5}$ monitoring (by TEOM) has previously taken place at Acton Town Hall, a roadside monitoring site, from 9 September 1996 to 17 January 2012, and at Southall from 2012 to 26 January 2016.

Table J. Delivery of Air Quality Action Plan Measures

Measure	Action	Progress	Further information
PM mitigation	Further actions to mitigate PM_{10} and $PM_{2.5}$ emissions from industrial sources and resuspension in Horn Lane, Acton	COMPLETED A landscaping scheme in Horn Lane adjacent to Goods Yard to provide planting of species for capture of particulates was completed in Summer 2018. ONGOING Indicative monitoring continued in Acton Goods Yard in 2018/19 and is ongoing. Data is online at www.llecp.org.uk	Contact air quality officer for updates
Ealing Broadway Station	Forecourt improvements at Ealing Broadway Station	ONGOING Works to improve pedestrian and cycle access to Ealing Broadway Station were in progress during 2018 and completion is expected by the end of 2020 as part of Crossrail works.	https://www.ealing.gov.uk/downloads/download/3256/ealing_broadway_station_forecourt_improvement_plans
Cycling	Cycling	ONGOING Ealing was the first London Borough to introduce Mobike dockless cycle hire in September 2017, followed by neighbouring London Borough of Hounslow. In December 2018 the Lime e-bike operation also commenced throughout the entire borough plus neighbouring London Borough of Brent. Ruislip Road East Quietway dedicated cycle route linking two schools and leisure centre opened in autumn 2017. Ealing Mini-Holland segregated cycle route on Uxbridge Road, Ealing Common, was completed Spring 2018. Two successful 'Summer of Cycling' events took place in June and July 2018, with the event to be repeated in July 2019.	https://www.ealing.gov.uk/info/201173/transport_and_parking/150/cycling

Measure	Action	Progress	Further information
Student Cycling	West London Student Cycling Champion project	ONGOING Update for 2018: Healthy Campus champions worked at sites including University of West London to promote cycling among students. They ran events in autumn and spring which offered free cycle training, bike maintenance and led rides. They also promoted active travel through Twitter and giveaways. Hundreds of students interacted with the events and some took part in the cycle loan scheme.	Contact WestTrans for further information.
Access to transport	Improved access to public transport	ONGOING In 2018 there was ongoing work at Acton Mainline, Ealing Broadway, Hanwell, Southall and West Ealing Stations along the Paddington Main Line as part of the Crossrail programme. Completion is now expected by the end of 2020.	For details of access improvements at these stations, see http://www.crossrail.co.uk/route/western-section/
Building emissions	Control of emissions from developments and buildings	ONGOING During 2018, planning conditions were imposed to: • Ensure that particulate emissions from construction and demolition are minimised. • Control emissions from Non-Road Mobile Machinery (NRMM). • Control emissions from combined heat and power (CHP) and biomass boilers and to ensure that smaller developments use ultra-low NO_X gas boilers. • Enforce Air Quality Neutral policies.	
Green space	Ensuring adequate, appropriate, and well-located green space and infrastructure is included in new developments	ONGOING The London Borough of Ealing's Development (Core) Strategy DPD includes a chapter "Protecting and Enhancing Ealing's Green and Open Spaces".	The focus is on larger developments to implement on-site green space.

Measure	Action	Progress	Further information
Air quality impacts	Investigate the potential for larger development areas to proactively assess air quality impacts cumulatively	ONGOING S.106 funding is in place to develop a Low Emissions Strategy for the major regeneration scheme in progress at the former Southall Gas Works site and to implement recommended measures. Opportunities have been identified at Old Oak Common and Park Royal.	
Energy efficiency	Promoting and delivering energy efficiency retrofitting projects in workplaces and homes using the GLA RE:NEW and RE:FIT programmes to replace old boilers/top-up loft insulation in combination with other energy conservation measures.	ONGOING In 2018/19 the Council's Facilities Management department continued with boiler upgrades to more efficient models and heating controls across its portfolio.	
Local authority knowledge	Ensure that Directors of Public Health (DsPH) have been fully briefed on the scale of the problem in your local authority area; what is being done, and what is needed. A briefing should be provided.	ONGOING Public Health (led by the Department of Public Health) has led a Joint Strategic Needs Assessment in this area to inform local decision making. A new borough Transport Strategy and Local Implementation Plan (LIP) were produced in 2018 which have improving public health and air quality as key objectives.	
Engagement	Public Health through the health protection forum that there is engagement with wider stakeholders in this agenda).	ONGOING We are working with Ealing's Clinical Commission Group, through the JSNA and its recommendations. Air Quality is now a standing item on the Council's Health Protection Forum.	

Measure	Action	Progress	Further information
Public health	Strengthening co-ordination with Public Health by ensuring that at least one Consultant-grade public health specialist within the borough has air quality responsibilities outlined in their job profile	COMPLETE Health protection and air quality responsibilities are embedded in Public Health consultants' roles and close working relationships are maintained between air quality, public health and transport planning staff.	
Schools	Encourage schools to join the TfL STARS accredited travel planning programme by providing information on the benefits to schools and supporting the implement-ation of such a programme	ONGOING **STARS Accreditation 2018 Update** • Gold **24** schools • Silver **2** schools • Bronze **9** schools • Engaged (registered on STARS only) **3** schools • Working towards engagement **81** schools **12** STARS Surgeries were held to support schools in progression towards accreditation.	For information on the London-wide STARS scheme, see https://stars.tfl.gov.uk/About/About
Schools	Air quality at schools	ONGOING School air quality audit reports for Christ the Saviour C of E Primary School and for Ark Priory Primary Academy published by the Mayor in May 2018. Additional School Air Quality Audit for Ark Byron Primary Academy funded by L.B. Ealing and report published in February 2019. Further support for audited schools in completion of implementation plans.	Focus on minimising further exposure by siting new schools away from busy roads. See Ealing Council's *Sustainable Modes of Travel to School Strategy* https://www.ealing.gov.uk/downloads/201182/transport_strategies_and_plans

Measure	Action	Progress	Further information
Policies	Update Procurement policies to ensure sustainable logistical measures are implemented (and include requirements for preferentially scoring bidders based on their sustainability criteria)	ONGOING The contract for waste handling includes sustainable logistics. During 2018 (and since 1st April 2016), all suppliers of WestTrans member boroughs have been required to comply with Work Related Road Risk (WRRR) requirements. This is a Responsible Procurement project designed to ensure greater road safety for vulnerable road users and improve air quality via lower emissions from heavy goods vehicles used by our suppliers.	Most significant measure identified as reducing trip distance (and hence emissions). http://www.westtrans.org/wla/wt2.nsf/pages/WT-211
Freight	Re-organisation of freight to support consolidation (or micro-consolidation) of deliveries, by setting up or participating in new logistics facilities, and/or requiring that council suppliers participate in these	ONGOING Ealing Broadway Business Improvement District Air Quality Exemplar project undertaken with MAQF funding project has continued and is now fully funded by Ealing Business Improvement District. This project has saved around 9,000 diesel vehicle trips each year.	See https://www.london.gov.uk/sites/default/files/mayors_air_quality_fund_report_2016.pdf
Green Infrastructure	Green Infrastructure	ONGOING Planning policies encourage green roofs, green walls, Sustainable Urban Drainage Systems etc. In 2018, the Defra air quality grant-funded landscaping was completed, providing improvements to green infrastructure in Horn Lane, Acton. West Ealing Liveable Neighbourhood initial prototype phase implemented (includes parklets, decorative pedestrian crossing points and street art) to promote walking and cycling journeys.	

Measure	Action	Progress	Further information
Anti-idling	Discouraging unnecessary idling by taxis, coaches and other vehicles (e.g. through anti-idling campaigns or enforcement activity)	ONGOING In 2018 new electronic variable message signs were installed at Churchfield Road level crossing at Acton Central Station and displays a No Idling message. Ongoing community engagement with parents and residents re anti-idling measures. In 2018, Ealing joined a group of other London local authorities in applying (successfully) for Mayor's Air Quality Fund support for a pan-London idling awareness and enforcement project.	
Low emission vehicles	Increasing the proportion of electric, hydrogen and ultra-low emission vehicles in Car Clubs	ONGOING Work undertaken within WestTrans Partnership to increase EV fleet within car clubs. Officers working with Source London and Drive Now to bring EV car clubs to Ealing in late 2019. Officers and Source London collaborated to install 70 on-street EV charge points in Spring 2019 (funded by Source London). Officers and Siemens collaborated to install 49 on-street lamp column EV charge points in spring 2019 (funded by Go Ultra Low City scheme and the Council).	
Pedestrian days	Very Important Pedestrian Days (e.g. no vehicles on certain roads on a Sunday) and similar initiatives	ONGOING Play Streets programmes in 25 different areas of the Borough. Multiple Play Street events for World Car Free day held in September 2018 with further Play Streets, plus a festival in West Ealing for September 2019.	

3. Planning Update and Other New Sources of Emissions

Table K gives a summary of planning requirements relating to air quality in the London Borough of Ealing in 2018. All planning applications, including those for the discharge of conditions relating to air quality, are logged and validated by the Planning Support Team. A consultation request for each application is sent to the Planning Enforcement and Environment Team, where air quality officers will identify matters needing their input and will recommend appropriate conditions to the planning case officer. The air quality officer will, if necessary, request further details and will liaise as required with the applicant and/or their air quality consultant to ensure that any recommendations to the case officer are soundly based and provide the necessary coverage of all air quality matters.

Currently planning conditions relating to air quality will be investigated and enforced in response to complaint, for example where there is a dust issue at a construction site and a construction management plan is in place that was required by a planning condition.

NRMM enforcement will commence in 2019 now that Ealing Council is part of a group of London local authorities that have been successful in gaining Mayor's Air Quality Fund support for a pan-London NRMM enforcement project.

Table K. Planning requirements met by planning applications in Ealing in 2018

Condition	Number
Number of planning applications reviewed for air quality impacts	432*
Number of planning applications required to monitor for construction dust	136**
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	5
Number of developments required to install Ultra-Low NO_x boilers	52
Number of AQ Neutral building and/or transport assessments undertaken	20
Number of AQ Neutral building and/or transport assessments not meeting the benchmark and so required to include additional mitigation	0
Number of planning applications with S106 agreements including other requirements to improve air quality	30
Number of planning applications with CIL payments that include a contribution to improve air quality	0
NRMM: Central Activity Zone and Canary Wharf Number of conditions related to NRMM included. Number of developments registered and compliant. Please include confirmation that you have checked that the development has been registered at www.nrmm.london and that all NRMM used on-site is compliant with Stage IIIB of the Directive and/or exemptions to the policy.	N/A
NRMM: Greater London (excluding Central Activity Zone and Canary Wharf) Number of conditions related to NRMM included. Number of developments registered and compliant. Please include confirmation that you have checked that the development has been registered at www.nrmm.london and that all NRMM used on-site is compliant with Stage IIIA of the Directive and/or exemptions to the policy.	15 conditions included (NRMM informative included for other applications where plant used) 45 sites (37 active) were registered in 2018. 12 are compliant, 10 have no plant listed, 3 are non-compliant and 12 are generally compliant with queries on some items of plant.***

** This is the number of full planning applications initially reviewed by officers for air quality impacts. It does not include condition discharge applications where an air quality condition has been set and details are submitted in compliance with the condition.*

***Monitoring is taken to include visual monitoring.*

****NRMM enforcement will commence in 2019 now that Ealing Council is part of a group of London local authorities that have been successful in gaining Mayor's Air Quality Fund support for a pan-London NRMM enforcement project.*

3.1 New or significantly changed industrial or other sources

Demolition work has begun for the High Speed 2 railway. This is in the Park Royal area and also on the Old Oak Common Depot site just across the boundary in the London Borough of Hammersmith and Fulham.

Appendix A Details of Monitoring Site QA/QC

A.1 Automatic Monitoring Sites

During 2018, the four active automatic monitoring sites in the Borough were operated as part of the London Air Quality Network (LAQN). Data have traceability to national standards and operational procedures defined for the LAQN. The Horn Lane site is also part of the national Automatic Urban and Rural Network (AURN), operated by the Environment Agency to monitor compliance with the EU Directives. AURN QA/QC procedures involve 4-weekly calibration of NOx and SO_2 analysers and maintenance of particulate samplers, and quarterly calibration of O_3 analysers.

PM_{10} Monitoring Adjustment

Monitoring is conducted using TEOMs at two of the four automatic monitoring stations. There is therefore a need to eliminate the effect of changing humidity on the mass measurement; the TEOM is required to maintain the sample filter at an elevated temperature, which may lead to losses of semi-volatile species such as ammonium nitrate. The Volatile Correction Model (VCM) uses local FDMS monitoring sites to correct TEOM measurements for the loss of volatile components of particulate matter that occur due to the high sampling temperatures employed by this instrument. This adjustment to PM_{10} data is provided by the London Air Quality Network.

A.2 Diffusion Tube Quality Assurance / Quality Control

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

AIR NO_2 PT forms an integral part of the UK NO_2 Network's QA/QC and is a useful tool in assessing the analytical performance of those laboratories supplying diffusion tubes to Local Authorities for use in the context of Local Air Quality Management (LAQM). Defra and the Devolved Administrations advise that diffusion tubes used for LAQM should be obtained from laboratories that have demonstrated satisfactory performance in the AIR-PT scheme.

The results for Socotec (formerly Environmental Scientifics Group (ESG) Didcot) were overall satisfactory. The laboratory scored 100% satisfactory results between January 2018 to February 2018 (AR024), 100% between April 2018 to May 2018 (AR025), 100% between July 2018 and August 2018 (AR027), and 100% satisfactory results between September 2018 and October 2018 (AR028).

Factor from Local Co-location Studies

Bias adjustment is a calculated factor, which shows whether diffusion tubes are over or under reading ambient concentrations and therefore allows for a correction to be made.

Ealing carries out studies at three sites where triplicate diffusion tubes are co-located with automatic monitors for the purpose of deriving a local bias adjustment factor. In 2018, the average local bias adjustment factor, derived from these studies, was 0.78.

The automatic monitor at Horn Lane had very good data capture (100% of months had a data capture >90%). However, only 64% and 42% of months had a data capture >90% at Hanger Lane and

Western Avenue respectively. Therefore, only the data from Horn Lane was used to calculate the local bias adjustment factor of 0.84. Figures 13 to 15 show the details of the calculation of the local bias adjustment factors. The calculation of local bias adjustment factors takes into account both data capture from diffusion tubes and automatic monitors, and also the coefficient of variation (CV) of the triplicate diffusion tubes. If the CV is too high for a particular period, that period is not taken into account when calculating the local bias adjustment factor. Periods where automatic monitoring data capture rates are less than 90% are also excluded.

Figure 13. Local bias adjustment factor calculation for Hanger Lane Gyratory co-location site

Hanger Lane	EA30	EA31	EA32

Need to enter
Calculated for you
Result

			DIFFUSION TUBE DATA						AUTOMATIC DATA	
	Period	Start Date	End Date	Tube 1	Tube 2	Tube 3	Triplicate Mean	Standard Deviation	Coefficient of Variation	Period Mean	Data Capture (%)
January	1	04/01/2018	30/01/2018	98.7	100.5	100.6	99.93	1.1	1.1	69.8	99.7
February	2	30/01/2018	05/03/2018	82.3	81.9	87.2	83.80	3.0	3.5	69.1	99.8
March	3	05/03/2018	30/03/2018	104.2	106.2	103.9	104.77	1.3	1.2	79.3	99.8
April	4	30/03/2018	01/05/2018	88.7	98.7	95.3	94.23	5.1	5.4	67.8	99.1
May	5	01/05/2018	14/06/2018	76.4	63.8	74	71.40	6.7	9.4	63.5	64.2
June	6	14/06/2018	04/07/2018	61.2	64.4	76.9	67.50	8.3	12.3	#DIV/0!	0.0
July	7	04/07/2018	02/08/2018	109.7	97.1	102.5	103.10	6.3	6.1	#DIV/0!	0.0
August	8	02/08/2018	04/09/2018	93.8	83.9	81.3	86.33	6.6	7.6	63.6	65.2
Septembe	9	30/08/2017	27/09/2017	90.9	85.1	79.7	85.23	5.6	6.6	#DIV/0!	#DIV/0!
October	10	02/10/2018	29/10/2018	80.9	88.3	82.6	83.93	3.9	4.6	66.7	99.7
November	11	29/10/2018	04/12/2018	87.6	83.1	82.7	84.47	2.7	3.2	62.9	99.4
December	12	04/12/2018	08/01/2019	85.9	92.7	89.2	89.27	3.4	3.8	75.0	99.9
	13										
										% with DC >=90%	63.6

	DTs	AUTOMATIC
Weighted Mean	90.7	69.7
Local Bias Adjustment Factor	0.77	

Figure 14. Local bias adjustment factor calculation for Horn Lane co-location site

Horn Lane	EA56	EA57	EA58

Need to enter
Calculated for you
Result

			DIFFUSION TUBE DATA						AUTOMATIC DATA	
	Period	Start Date	End Date	Tube 1	Tube 2	Tube 3	Triplicate Mean	Standard Deviation	Coefficient of Variation	Period Mean	Data Capture (%)
January	1	04/01/2018	30/01/2018	66.6	67.7	57.8	64.03	5.4	8.5	46.6	99.8
February	2	30/01/2018	05/03/2018	63.6	55.8	60.3	59.90	3.9	6.5	49.6	99.8
March	3	05/03/2018	28/03/2018	0	70.5	69.2	69.85	0.9	1.3	52.0	99.6
April	4	28/03/2018	01/05/2018	58	56.6	53.9	56.17	2.1	3.7	45.6	99.9
May	5	01/05/2018	14/06/2018	51.2	51.4	55.8	52.80	2.6	4.9	44.9	99.1
June	6	14/06/2018	04/07/2018	50.5	54.8	59.1	54.80	4.3	7.8	40.3	99.8
July	7	04/07/2018	02/08/2018	52.5	47.2	53	50.90	3.2	6.3	42.8	98.9
August	8	02/08/2018	04/09/2019	45.7	44.5	48.2	46.13	1.9	4.1	41.3	96.0
Septembe	9	04/09/2018	02/10/2018	48.6	48.4	50.6	49.20	1.2	2.5	41.5	99.7
October	10	02/10/2018	29/10/2018	52	58.4	57.8	56.07	3.5	6.3	42.9	99.7
November	11	29/10/2018	04/12/2018	57.3	58	58.9	58.07	0.8	1.4	42.7	99.7
December	12	04/12/2018	08/01/2019	54.9	53.5	56.7	55.03	1.6	2.9	42.6	91.5
	13										
										% with DC >=90%	100.0

	DTs	AUTOMATIC
Weighted Mean	50.9	42.8
Local Bias Adjustment Factor	0.84	

Figure 15. Local bias adjustment factor calculation for Western Avenue co-location site, including average local bias adjustment factor

Western Avenue	EA36	EA37	EA38

Need to enter
Calculated for you
Result

DIFFUSION TUBE DATA								
Period	Start Date	End Date	Tube 1	Tube 2	Tube 3	Triplicate Mean	Standard Deviation	Coefficient of Variation
January 1	04/01/2018	30/01/2018	75.9	71.7	76	74.53	2.5	3.3
February 2	30/01/2018	05/03/2018	71.3	72.6	74.1	72.67	1.4	1.9
March 3	05/03/2018	29/03/2018	86.3	89.5	88.6	88.13	1.7	1.9
April 4	29/03/2018	01/05/2018	69.4	72.7	69.3	70.47	1.9	2.7
May 5	01/05/2018	14/06/2018	52.8	54.7	48.4	51.97	3.2	6.2
June 6	14/06/2018	04/07/2018	54.5	60.2	54.5	56.40	3.3	5.8
July 7	04/07/2018	02/08/2018	69.6	70.1	74.1	71.27	2.5	3.5
August 8	02/08/2018	04/09/2018	64.1	67	64.4	65.17	1.6	2.4
September 9	04/09/2018	02/10/2018	59.4	63.8	61	61.40	2.2	3.6
October 10	02/10/2018	29/10/2018	63.4	69.7	64.5	65.87	3.4	5.1
November 11	29/10/2018	04/12/2018	75.9	71.5	69.3	72.23	3.4	4.7
December 12	04/12/2018	08/01/2019	77.3	75.1	75.7	76.03	1.1	1.5
13								

AUTOMATIC DATA	
Period Mean	Data Capture (%)
55.3	97.6
56.2	89.6
60.8	99.0
55.6	99.9
49.7	66.3
#DIV/0!	0.0
#DIV/0!	0.0
#DIV/0!	0.0
44.5	48.5
48.6	88.9
50.5	99.4
56.3	99.9

No. of periods with data capture >=90% 5
% with DC >=90% 41.7

	DTs	AUTOMATIC
Weighted Mean	75.7	55.4
Local Bias Adjustment Factor	0.73	

The national bias adjustment factor for co-location diffusion tube studies in 2018 analysed by Socotec (formerly Environmental Scientifics Group (ESG) Didcot) using a preparation method of 20% TEA/water was calculated to be 0.74. This has been taken from the national bias adjustment spreadsheet 03/19, as shown in Figure 16.

Figure 16. 2018 National bias adjustment factor

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/19

Follow the steps below in the correct order to show the results of relevant co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2019
LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List. If a laboratory is not shown, we have no data for this laboratory.

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

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

Step 4: Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.

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

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[2] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[4]	Bias Adjustment Factor (A) (Cm/Dm)
SOCOTEC Didcot	20% TEA in water	2018	KS	South Lakeland District Council	12	38	22	70.0%	G	0.59
SOCOTEC Didcot	20% TEA in water	2018	KS	Marylebone Road Intercomparison	9	96	87	9.6%	G	0.91
SOCOTEC Didcot	20% TEA in water	2018		Overall Factor[3] (2 studies)				Use		0.74

Discussion of Choice of Factor to Use

For 2018 data it was decided to use the local bias adjustment factor on the basis that:

- it is locally-derived from co-location sites, and therefore considered most representative of local conditions;
- it is a more conservative factor, as it is slightly greater than the national bias factor (0.84 vs 0.74); and
- the national bias adjustment factor is based on two studies only.

The bias adjustment factors used for LAQM purposes for the last seven years are as follows:

- 2012 – 0.96
- 2013 – 0.76
- 2014 – 0.78
- 2015 – 0.83
- 2016 – 0.81
- 2017 – 0.72
- 2018 – 0.84

A.3 Adjustments to the Ratified Monitoring Data

Short-term to Long-term Data Adjustment

Where data capture is less than 75% of a full calendar year (less than 9 months), the mean should be "annualised" – i.e. adjusted using the methodology outlined in LLAQM.TG(16) before being compared to annual mean objectives. Data capture for NO_2 at the Western Avenue automatic monitoring site was 67% and therefore required annualisation.

The 3 continuous monitoring sites chosen for annualisation were Hillingdon Harlington, Wandsworth Putney and Acton Vale.

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

Site	Site Type	Annual Mean (μg/m^3)	Period Mean (μg/m^3)	Ratio
Hillingdon Harlington	Urban Background	30.3	33.6	0.90
Wandsworth Putney	Urban Background	34.8	39.0	0.89
Acton Vale	Urban Background	29.0	32.7	0.89
			Average	0.89

Appendix B Full Monthly Diffusion Tube Results for 2018

Table M. NO_2 Diffusion Tube Results

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2018 % [b]	NO_2 Concentration ($\mu g/m^3$)														
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean – raw data [c]	Annual mean – bias adjusted [c]	Annual mean – distance corrected
EA1	83	83		**62.2**	**79.5**	**64.1**	**51.3**	**59.3**	**63.9**	**59.5**	**59.7**	**60.2**	**65.2**		62.5	**49.4**	**49.4**
EA2	100	100	**56.2**	**59.2**	**64.8**	**52.9**	**47.1**	**48.3**	**51.2**	**50.4**	**46.9**	**51.0**	**55.2**	**54.5**	53.1	**42.0**	**42.0**
EA3	100	100	33.1	31.1	34.4	25.0	19.4	20.2	22.1	21.9	24.3	23.1	32.2	31.5	26.5	21.0	21.0
EA4	92	92	**42.5**	**46.9**	**51.0**	37.6	38.6	37.8	36	30.1		38.9	**45.8**	**47.2**	41.1	32.5	32.5
EA5	100	100	**45.1**	**43.3**	**48.1**	**40.4**	33.8	37.7	32.6	29.4	32.9	39.0	39.6	**43.7**	38.8	30.7	30.7
EA6	100	100	**57.1**	**47.6**	**67.9**	**54.9**	**54.8**	**50.9**	**62.3**	**45.8**	**46.4**	**49.9**	**57.5**	**54.5**	**54.1**	**42.8**	**42.8**
EA7	83	83	**40**	**41.7**	**41.7**	33.4	34.6			35.4	36.8	39.6	39.2	**43.6**	38.6	30.5	30.5
EA8	75	75	**50.2**	**58.4**	**60.7**	**41.3**		**51**	**52**			**49.4**	**51.0**	**53.7**	**52.0**	**41.1**	**41.1**
EA9	100	100	**44.3**	**43**	**44.2**	39.5	33.5	35.2	35.9	32.3	36.5	**41.1**	**40.2**	**43.6**	39.1	30.9	30.9
EA10	100	100	**47.7**	**51.5**	**55.4**	**44.6**	38.9	33.9	**42.5**	36.8	39.1	**44.5**	**46.7**	**50.8**	**44.4**	35.0	35.0
EA11	92	92		**40.0**	**44.3**	32.4	36.1	32.5	35.9	32.9	33.8	36.4	34.5	**40.0**	36.3	28.6	28.6
EA12	100	100	**47.9**	**46.4**	**49.6**	**46.3**	**50.0**	38.0	**42.6**	33.7	35.3	**43.4**	**49.0**	**40.3**	**43.5**	34.4	34.4
EA13	100	100	**61.4**	**52.7**	**70.8**	**63.0**	**50.4**	**41.5**	**69.1**	**62.7**	**51.3**	**53.4**	**60.6**	**62.1**	**58.3**	**46.0**	**46.0**
EA14	100	100	**59.7**	**54.9**	**56.0**	**54.6**	**42.1**	**42.0**	**58.0**	**48.8**	**50.9**	**42.3**	**42.4**	**58.2**	**50.8**	**40.2**	**40.2**
EA15	100	100	**51.4**	**54.0**	**56.7**	**44.9**	**42.1**	**46.8**	**41.7**	37.8	**43.6**	**46.7**	**49**	**50.4**	**47.1**	37.2	37.2
EA16	100	100	**51.6**	**46.6**	29.3	**45.5**	**42.7**	30.6	**49.1**	**42.1**	**43.3**	**44.1**	**41.3**	**48.4**	**42.9**	33.9	33.9
EA17	100	100	**47.9**	**45.4**	**53.3**	**42.9**	31.7	28.5	**41.5**	33.6	**41.5**	**43.7**	**46**	**51.7**	**42.3**	33.4	33.4
EA18	100	100	**46.7**	**45.7**	**51.1**	**41.1**	30.4	33	35.1	32.5	38.8	**40.6**	**43.6**	**44.3**	**40.2**	31.8	31.8
EA19	100	100	**51**	**46.5**	**55.4**	**41.3**	35.2	36.1	**42.4**	38.5	**41.6**	**47.1**	**44.5**	**51.3**	**44.2**	35.0	35.0
EA20	92	92	**58.7**	**48.8**	**68.7**	**55.7**	**43.5**	**42.0**	**57.5**	**51.2**	**50.3**	**49.4**		**52.8**	**52.6**	**41.6**	**41.6**
EA21	100	100	**49.4**	**55.2**	**48.1**	**44.1**	**45.4**	**44.4**	36.8	31.7	37.0	**46.2**	**40.4**	**43.1**	**43.5**	34.4	34.4
EA22	92	92	**53**		**56.5**	**44.3**	31.6	24.3	38.6	**41.4**	38.7	39.7	**43.7**	**48.8**	**41.9**	33.1	33.1
EA23	100	100	**61.1**	**66.0**	**74.3**	**69.1**	**50.7**	**41.8**	**68.3**	**61.8**	**66.0**	**72.0**	**67.2**	**70.6**	**64.1**	**50.6**	**50.6**
EA24	100	100	**49.9**	**47.2**	**53.7**	**42.3**	37.4	38.5	37.5	30.3	34.5	**40.2**	**49.4**	**47.4**	**42.4**	33.5	33.5
EA25	92	92	**55.7**	**59.2**	**65.3**	**54.9**		**157.0**	**64.2**	**54.4**	**59.2**	**55.7**	**54.4**	**50.9**	**66.4**	**52.5**	**52.5**
EA26	83	83	**79.1**	**70.6**	**84.3**	**72.7**		**65.3**	**83.9**	**76.0**	**76.8**	**157.6**		**73.8**	**84.0**	**66.4**	**66.4**

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2018 % [b]	NO_2 Concentration (µg/m³)														
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean – raw data [c]	Annual mean – bias adjusted [c]	Annual mean – distance corrected
EA27	100	100	**51.7**	**44.4**	**53.1**	35.8	30.2	29.4	32.8	30.3	33.8	**40.3**	**44.6**	**47.0**	39.5	31.2	31.2
EA28	100	100	**60.4**	**46.9**	**66.2**	**55.0**	**51.2**	**48.4**	**54.9**	**42.8**	**49.5**	**55.0**	**53.1**	**59.2**	**53.6**	**42.3**	**42.3**
EA29	100	100	**53.5**	**52.5**	**57.6**	**46.7**	38.9	36.9	**45.5**	37.7	**40.0**	**42.7**	**50.8**	**49.4**	**46.0**	36.4	36.4
EA30	100	100	**98.7**	**82.3**	**104.2**	**88.7**	**76.4**	**61.2**	**109.7**	**93.8**	**90.9**	**80.9**	**87.6**	**85.9**	**88.4**	**69.8**	**69.8**
EA31	100	100	**100.5**	**81.9**	**106.2**	**98.7**	**63.8**	**64.4**	**97.1**	**83.9**	**85.1**	**88.3**	**83.1**	**92.7**	**87.1**	**68.8**	**68.8**
EA32	100	100	**100.6**	**87.2**	**103.9**	**95.3**	**74.0**	**76.9**	**102.5**	**81.3**	**79.7**	**82.6**	**82.7**	**89.2**	**88.0**	**69.5**	**69.5**
EA33	83	83	**63.1**	**61.7**	**63.7**	**53.4**		**83.6**	**75.6**	**66.9**	**74.5**	**74.5**		**72.9**	**69.0**	**54.5**	**54.5**
EA34	100	100	**52.2**	**49.8**	**56.9**	**43.4**	**43.4**	**46.2**	38.5	36.8	37.3	39.8	**47**	**43.6**	**44.6**	**35.2**	**35.2**
EA35	100	100	**57.9**	**63.7**	**80.0**	**62.5**	**72.0**	**72.0**	**66.6**	**50.6**	**53.5**	**56.4**	**59.2**	**59.9**	**62.9**	**49.7**	**49.7**
EA36	100	100	**75.9**	**71.3**	**86.3**	**69.4**	**52.8**	**54.5**	**69.6**	**64.1**	**59.4**	**63.4**	**75.9**	**77.3**	**68.3**	**54.0**	**49.5**
EA37	100	100	**71.7**	**72.6**	**89.5**	**72.7**	**54.7**	**60.2**	**70.1**	**67**	**63.8**	**69.7**	**71.5**	**75.1**	**69.9**	**55.2**	**50.5**
EA38	100	100	**76.0**	**74.1**	**88.6**	**69.3**	**48.4**	**54.5**	**74.1**	**64.4**	**61**	**64.5**	**69.3**	**75.7**	**68.3**	**54.0**	**49.5**
EA39	100	100	**54.0**	**67.0**	**78.5**	**68.5**	**56.5**	**55.0**	**61.5**	**51.2**	**56.5**	**62.9**	**58.6**	**63.6**	**61.2**	**48.3**	**48.3**
EA40	100	100	**49.1**	**43.1**	**57.0**	**42.1**	32.4	33.2	38.4	37.2	36.6	**44.2**	**42.8**	**46.7**	**41.9**	33.1	33.1
EA41	100	100	**51.8**	**43.6**	**54.3**	**40.5**	32.0	36.4	36.3	35.2	37	**41.3**	**41.1**	**45.2**	**41.2**	32.6	32.6
EA42	92	92		**58**	**65.4**	**52.7**	**51.7**	**63.3**	**53.5**	**46.6**	**50.3**	**55.8**	**63.2**	**57.7**	**56.2**	**44.4**	**44.4**
EA43	100	100	**46.9**	**46.6**	**54.5**	**45.4**	**43.7**	**43.7**	**41.4**	**43.7**	38.2	**46.0**	**59.2**	**46.6**	**46.3**	36.6	36.6
EA44	100	100	**46.9**	**45.7**	**41.4**	**46.1**	33.9	33.4	37	35.1	37.3	**41.5**	**45**	**43.5**	**40.6**	32.0	32.0
EA45	92	92	**59.7**	**64.6**	**70.4**		**93.0**	**63.3**	**50.3**	**40.5**	**44**	**59.4**	**55.5**	**49.3**	**59.1**	**46.7**	**46.7**
EA46	100	100	**84.3**	**82.9**	**98.0**	**83.3**	**92.9**	**94.5**	**91.0**	**78.6**	**82.8**	**92.7**	**69.1**	**76.6**	**85.6**	**67.6**	**67.6**
EA47	100	100	**66.8**	**55.9**	**66.7**	**53.5**	**43.7**	**41.3**	**54.7**	**48.0**	**53.7**	**56.7**	**53.9**	**58.2**	**54.4**	**43.0**	**43.0**
EA48	100	100	**66.8**	**70.1**	**77.6**	**71.0**	**67.5**	**63.8**	**66.2**	**61.3**	**63.1**	**64.4**	**63.0**	**63.6**	**66.5**	**52.6**	**52.6**
EA49	100	100	**54.5**	**54.6**	**60.2**	**48.7**	**42.2**	**42.1**	38.8	**41.5**	39.7	**50.6**	**47.5**	**49.4**	**47.5**	37.5	37.5
EA50	100	100	**47.6**	**47.6**	**46.1**	38.1	**58.3**	**43.3**	**43.5**	**41**	**40.5**	**47.9**	**46.3**	**50.2**	**45.9**	36.2	36.2
EA51	100	100	**63.4**	**67.1**	**73.6**	**57.1**	**47.0**	**61.2**	**58.0**	**54.9**	**56.0**	**63.5**	**61.1**	**68.3**	**60.9**	**48.1**	**48.1**
EA52	92	92	**40.2**	**44.1**	**43.6**	35.4	37.3		27.3	29.7	34.7	**40.4**	35.6	**44.1**	37.5	29.6	29.6
EA53	100	100	**58.3**	**67.0**	**71.2**	**56.8**	**68.7**	**73.2**	**55.1**	**47.3**	**47.6**	**62.4**	**58.3**	**59.2**	**60.4**	**47.7**	**47.7**
EA54	100	100	**61.2**	**60.2**	**73.3**	**51.2**	**52.2**	**56.7**	**51**	**44.2**	**48.9**	**56.1**	**58.2**	**60.2**	**56.1**	**44.3**	**44.3**
EA55	92	92	**51.0**	**54.7**	**57.1**	**50.8**	**50.6**	**52.8**	**49.5**	**42.8**	**44.4**		**57.1**	**53.8**	**51.3**	**40.5**	**40.5**
EA56	100	100	**66.6**	**63.6**	**71.1**	**58.0**	**51.2**	**50.5**	**52.5**	**45.7**	**48.6**	**52.0**	**57.3**	**54.9**	**56.0**	**44.2**	37.4
EA57	100	100	**67.7**	**55.8**	**70.5**	**56.6**	**51.4**	**54.8**	**47.2**	**44.5**	**48.4**	**58.4**	**58**	**53.5**	**55.6**	**43.9**	37.2
EA58	100	100	**57.8**	**60.3**	**69.2**	**53.9**	**55.8**	**59.1**	**53.0**	**48.2**	**50.6**	**57.8**	**58.9**	**56.7**	**56.8**	**44.9**	37.8

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2018 % [b]	NO_2 Concentration (µg/m³)														
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean – raw data [c]	Annual mean – bias adjusted [c]	Annual mean – distance corrected
EA59	100	100	**52.9**	**53.2**	**59.4**	**53.9**	**46.5**	**49.5**	**41.9**	**39.3**	**42.1**	**46.3**	**50.5**	**47.3**	**48.6**	38.4	38.4
EA60	83	83	**60.0**		**58.7**	**47.1**	**42.0**	**52.8**	**41.0**	**42.5**	**45.4**	**52.6**		**53.6**	**49.6**	39.2	39.2
EA61	100	100	**54.6**	**50.8**	**56.2**	**47.7**	**41.5**	**45.9**	**48.1**	35.4	**46.7**	**45.8**	**49.1**	**48.8**	**47.6**	37.6	37.6

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

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

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

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

Table N. Distance-Corrected NO_2 Concentrations

Site Name/ID	Distance (m)		NO_2 Annual Mean Concentration (µg/m³)		
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor
EA36	5.0	8.5	25.5	54.0	**49.5**[a]
EA37	5.0	8.5	25.5	55.2	**50.5**[a]
EA38	5.0	8.5	25.5	54.0	**49.5**[a]
EA56	3.0	13.0	26.2	44.2	37.4[b]
EA57	3.0	13.0	26.2	43.9	37.2[b]
EA58	3.0	13.0	26.2	44.9	37.8[b]

Notes:

[a] Predicted concentration at Receptor above AQS objective.

[b] Predicted concentration at Receptor within 10% of the AQS objective.