London Borough of Ealing Air Quality Annual Status Report for 2022 (V.4)

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This report provides a detailed overview of air quality in London Borough of Ealing during 2022. It has been produced to meet the requirements of the London Local Air Quality Management (LLAQM) statutory process[1].

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[1] LLAQM Policy and Technical Guidance 2019 (LLAQM.TG(19))

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Abbreviations

Abbreviation	Description
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AQO	Air Quality Objective
AQS	Air Quality Strategy
AURN	Automatic Urban and Rural Network
CHP	Combined Heat and Power
COP26	Conference of the Parties (2021 United Nations Climate Change Conference)
CYP	Children and Young People
DPD	Development Plan Document
DPH	Department of Public Health
EV	Electric Vehicle
EVCP	Electric Vehicle Charge Point
FDMS	Filter Dynamics Measurement System
GLA	Greater London Authority
HPF	Health Protection Forum
JSNA	Joint Strategic Needs Assessment
LAQM	Local Air Quality Management
LAQN	London Air Quality Network
LES	Low Emission Strategy
LLAQM	London Local Air Quality Management
MAQF	Mayor's Air Quality Fund
NHS	National Health Service
NO_2	Nitrogen dioxide
NO_x	Nitrogen oxides
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

Abbreviation	Description
QA/QC	Quality assurance and quality control.
STARS	Sustainable Travel: Active, Responsible, Safe
TEOM	Tapered Element Oscillating Microbalance
TfL	Transport for London
VCM	Volatile Correction Model

Table A. Summary of National Air Quality Standards and Objectives

Pollutant	Standard / 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
Nitrogen dioxide (NO_2)	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
Particles (PM_{10})	40 µg m^{-3}	Annual mean	31 Dec 2004
Particles ($PM_{2.5}$)	20 µg m^{-3}	Annual mean	2020
Particles ($PM_{2.5}$)	Target of 15% reduction in concentration at urban background locations	3-year mean	Between 2010 and 2021
Sulphur dioxide (SO_2)	266 µg m^{-3} not to be exceeded more than 35 times a year	15-minute mean	31 Dec 2005
Sulphur dioxide (SO_2)	350 µg m^{-3} not to be exceeded more than 24 times a year	1-hour mean	31 Dec 2004
Sulphur dioxide (SO_2)	125 µg m^{-3} mot to be exceeded more than 3 times a year	24-hour mean	31 Dec 2004

Notes:

(1) Date by which to be achieved by and maintained thereafter

1. Air Quality Monitoring

1.1 Locations

In 2022, four automatic monitoring stations were operational in the London Borough of Ealing. These include Ealing Acton Vale (owned/operated by Tideway Tunnel Project), an urban background site, two roadside sites (Ealing Hanger Lane Gyratory and Ealing Western Avenue) and one industrial site (Ealing Horn Lane). All sites are operated as part of the London Air Quality Network (LAQN). Two different PM_{10} analysers are active at the Horn Lane monitoring station, a TEOM and a TEOM-FDMS (AURN). Consistent with the LAQN 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 automatic monitoring sites measure nitrogen dioxide (NO_2) and Particulate Matter (PM_{10}).

Figure 1. Map of Automatic Monitoring Sites

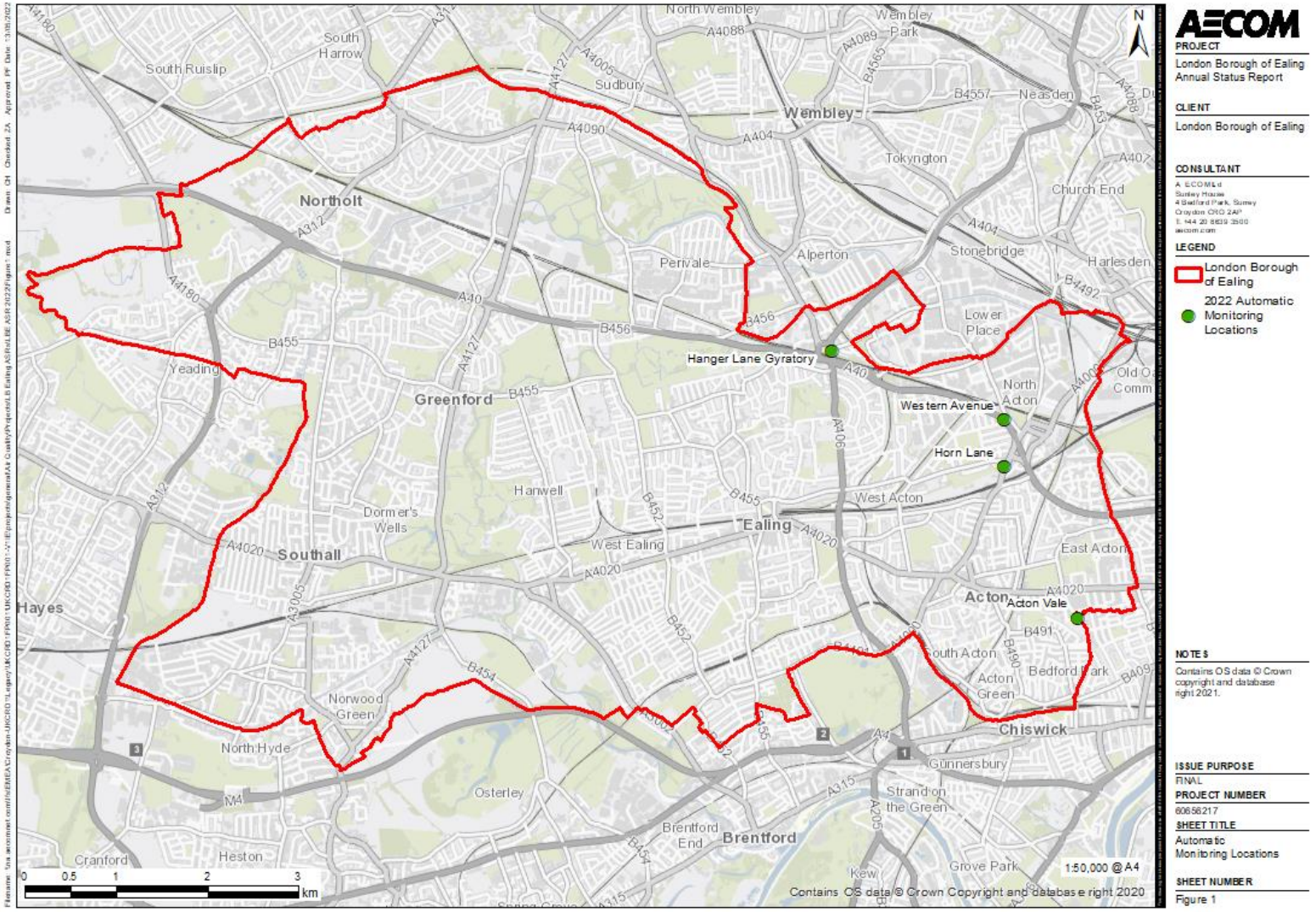


Table B. Details of Automatic Monitoring Sites for 2022

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA? If so, which AQMA?	Distance 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-Ealing	4	3	2.0	NO_2, PM_{10}	Chemiluminescence, TEOM
EA8 Horn Lane	Horn Lane	520432	181428	Industrial	Y-Ealing	8	2.5	1.8	NO_2, PM_{10}	Chemiluminescence, PM_{10} by FDMS
EI8 Horn Lane	Horn Lane	520432	181428	Industrial	Y-Ealing	8	2.5	1.8	PM_{10}	PM_{10} by TEOM
El1 Western Avenue	Western Avenue	520430	181950	Roadside	Y-Ealing	4	4	2.0	NO_2, PM_{10}	Chemiluminescence, TEOM
EI3 Acton Vale	Acton Vale	521134	179771	Urban Background	Y-Ealing	N/A	N/a	2.55	NO_2, PM_{10}	Chemiluminescence, TEOM

During 2022, the London Borough of Ealing also monitored annual mean NO_2 concentrations using a network of 66 passive diffusion tubes across 60 locations. There are three triplicate diffusion tube sites, co-located with three automatic air quality monitoring stations. Figure 2 and Table C provide details of the diffusion tube sites operated within the borough during 2022. In recent years, the Council has decommissioned 23 sites to focus on locations of most relevant exposure, by removing sites that had been compliant with the annual mean objective for several years.

Previously, London Borough of Ealing had two temporary diffusion tube sites located at St Mark's Primary School to basically investigate and gather evidence to address concerns expressed by some parents about potential exposure of children to pollution from traffic on Lower Boston Road. These sites were decommissioned at the end of 2021 as NO_2 monitoring data showed that the NO_2 annual mean concentration level was within the relevant annual mean objective, their results can be found in the 2021 ASR.

In 2022, 5 additional diffusion tube sites were installed at schools in the London Borough of Ealing. There were 6 diffusion tube locations which were relocated during 2022: EA3, EA5, EA10, EA34, EA43 and EA61.

Figure 2. Map of Diffusion Tube Monitoring Sites

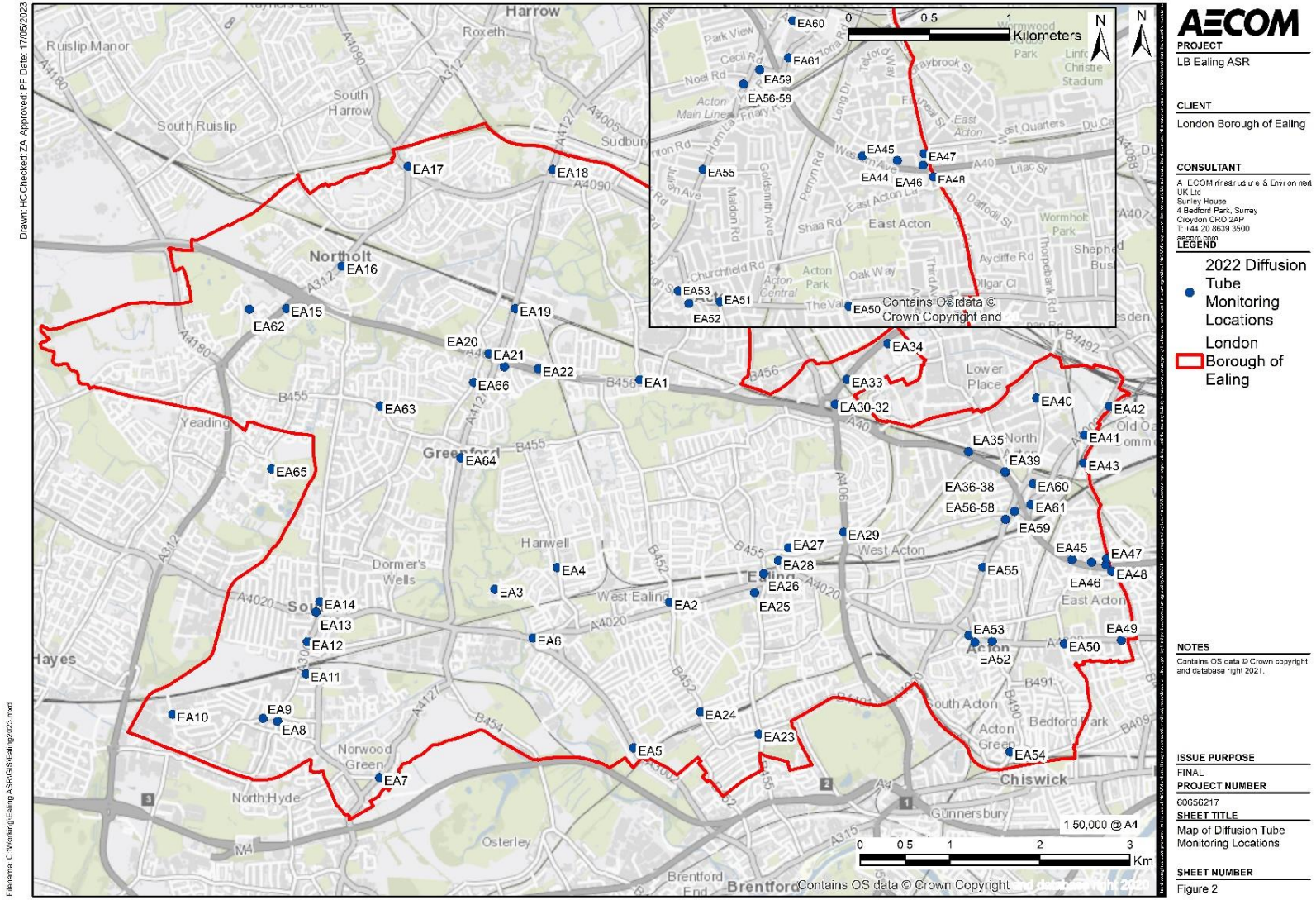


Table C. Details of Non-Automatic Monitoring Sites for 2022

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA? If so, which AQMA?	Distance 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)
EA1	2 Horsenden Lane South, Greenford, UB6 8AB	516368	182978	Roadside	Y- Ealing	0.0	5.0	2-2.5	NO_2	No
EA2	1 Kirn Road, West Ealing, W13 0UB	516699	180509	Roadside	Y- Ealing	0.0	2.0	2-2.5	NO_2	No
EA3	Brent Lodge Park, Church Road, Hanwell, W7 3BP	514756	180653	Background	Y- Ealing	0.0	30.0	2-2.5	NO_2	No
EA4	74a Greenford Avenue, Hanwell, W7 3QS	515451	180894	Roadside	Y- Ealing	0.0	5.0	2-2.5	NO_2	No
EA5	6 Boston Gardens, Boston Road, Hanwell, W7 2AN	516299	178892	Roadside	Y- Ealing	0.0	10.0	2-2.5	NO_2	No
EA6	200 Uxbridge Road, Hanwell, W7 3TB	515180	180111	Roadside	Y- Ealing	0.0	3.3	2-2.5	NO_2	No
EA7	2 St Marys Avenue South, Southall, UB2 4LS	513476	178561	Roadside	Y- Ealing	0.0	12.0	2-2.5	NO_2	No
EA8	55 King Street, Southall, UB2 4DQ	512341	179186	Roadside	Y- Ealing	0.0	3.3	2-2.5	NO_2	No

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA? If so, which AQMA?	Distance 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)
EA9	18 Western Road, Southall, UB2 5DU	512181	179219	Roadside	Y- Ealing	0.0	7.5	2-2.5	NO_2	No
EA10	148 Brent Road, Southall, UB2 5LD	511175	179265	Roadside	Y- Ealing	0.0	7.7	2-2.5	NO_2	No
EA11	2 Merrick Road, Southall, UB2 4AU	512657	179712	Roadside	Y- Ealing	0.0	12.0	2-2.5	NO_2	No
EA12	Hambrough Primary School	512673	180069	Roadside	Y- Ealing	0.0	10.0	2-2.5	NO_2	No
EA13	11 The Broadway, Southall, UB1 3PX	512768	180400	Roadside	Y- Ealing	0.0	4.0	2-2.5	NO_2	No
EA14	25 Lady Margaret Road, Southall, UB1 2RA	512812	180516	Roadside	Y- Ealing	0.0	6.3	2-2.5	NO_2	No
EA15	213 Church Road, Northolt, UB5 5BE	512442	183769	Roadside	Y- Ealing	0.0	12.4	2-2.5	NO_2	No
EA16	31 Mandeville Road, Northolt, UB5 5HF	513056	184241	Roadside	Y- Ealing	0.0	9.0	2-2.5	NO_2	No
EA17	126 Petts Hill, Northolt, UB5 4NW	513794	185348	Roadside	Y- Ealing	0.0	9.0	2-2.5	NO_2	No
EA18	1504 Greenford Road, Greenford, UB6 0HR	515402	185313	Roadside	Y- Ealing	0.0	5.3	2-2.5	NO_2	No

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA? If so, which AQMA?	Distance 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)
EA19	914 Greenford Road, Greenford, UB6 8QN	514985	183770	Roadside	Y-Ealing	0.0	3.3	2-2.5	NO_2	No
EA20	6 Karoline Gardens, Greenford, UB6 9JP	514691	183269	Roadside	Y-Ealing	0.0	9.1	2-2.5	NO_2	No
EA21	12 Blenheim Close, Greenford, UB6 8ET	514863	183122	Roadside	Y-Ealing	0.0	9.5	2-2.5	NO_2	No
EA22	19 Runnymede Gardens, Greenford, UB6 8SX	515240	183102	Roadside	Y-Ealing	0.0	1.2	2-2.5	NO_2	No
EA23	158 South Ealing Road, Ealing, W5 4QL	517694	179045	Roadside	Y-Ealing	0.0	3.5	2-2.5	NO_2	No
EA24	213 Northfields Ave, West Ealing, W13 9QU	517045	179292	Roadside	Y-Ealing	0.0	5.2	2-2.5	NO_2	No
EA25	12 Bond Street, Ealing, W5 5AP	517644	180613	Roadside	Y-Ealing	0.0	2.7	2-2.5	NO_2	No
EA26	8 Spring Bridge Road, Ealing, W5 2AA	517745	180826	Roadside	Y-Ealing	0.0	3.0	2-2.5	NO_2	No
EA27	21 Haven Lane, Ealing, W5 2HZ	518022	181114	Roadside	Y-Ealing	0.0	2.4	2-2.5	NO_2	No
EA28	41-42 Haven Green, Ealing, W5 2NX	517909	180971	Roadside	Y-Ealing	0.0	3.0	2-2.5	NO_2	No

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA? If so, which AQMA?	Distance 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)
EA29	64 Hanger Lane, Ealing, W5 2JH	518635	181288	Roadside	Y- Ealing	0.0	0.7	2-2.5	NO_2	No
EA30, EA31, EA32	Fernlea House	518541	182707	Roadside	Y- Ealing	0.0	4.0	2-2.5	NO_2	Yes
EA33	25 Waverley Gardens, Park Royal, NW10 7EX	518673	182982	Roadside	Y- Ealing	0.0	1.8	2-2.5	NO_2	No
EA34	3 Iveagh Terrace, Park Royal, NW10 7SY	519126	183383	Roadside	Y- Ealing	0.0	31.0	2-2.5	NO_2	No
EA35	5 Wendover Court, Western Avenue, Acton, W3 0TG	520020	182180	Roadside	Y- Ealing	0.0	11.0	2-2.5	NO_2	No
EA36, EA37, EA38	322 & 324 Western Avenue	520430	181950	Roadside	Y- Ealing	3.5	5.0	2-2.5	NO_2	Yes
EA39	326 Western Avenue, Acton, W3 0PL	520426	181958	Roadside	Y- Ealing	3.5	11.4	2-2.5	NO_2	No
EA40	94 North Acton Road, Park Royal, NW10 7AY	520780	182775	Roadside	Y- Ealing	3.5	6.0	2-2.5	NO_2	No
EA41	1 Shaftesbury Gardens, Park Royal, NW10 6LJ	521312	182366	Roadside	Y- Ealing	0.0	5.0	2-2.5	NO_2	No

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA? If so, which AQMA?	Distance 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)
EA42	39 Old Oak Lane, Park Royal, NW10 6EJ	521587	182685	Roadside	Y-Ealing	0.0	5.0	2-2.5	NO_2	No
EA43	165 Wells House Road, Park Royal, NW10 6EA	521303	182056	Roadside	Y-Ealing	0.0	5.0	2-2.5	NO_2	No
EA44	4 St Andrews Road, Acton, W3 7NE	521389	180953	Roadside	Y-Ealing	0.0	8.6	2-2.5	NO_2	No
EA45	98 Western Avenue, Acton, W3 7TZ	521173	180981	Roadside	Y-Ealing	0.0	10.0	2-2.5	NO_2	No
EA46	6 Western Avenue, Acton, W3 7UD	521549	180923	Roadside	Y-Ealing	0.0	4.6	2-2.5	NO_2	No
EA47	71 Old Oak Common Lane, Acton, W3 7DD	521557	180996	Roadside	Y-Ealing	0.0	11.0	2-2.5	NO_2	No
EA48	205 Old Oak Road, Acton, W3 7HH	521614	180852	Roadside	Y-Ealing	0.0	4.7	2-2.5	NO_2	No
EA49	17 The Vale, Acton, W3 7SH	521720	180084	Roadside	Y-Ealing	0.0	19.4	2-2.5	NO_2	No
EA50	3 Warple Way, Acton, W3 0RH	521088	180046	Roadside	Y-Ealing	0.0	2.2	2-2.5	NO_2	No
EA51	88 High Street, Acton, W3 6QX	520285	180075	Roadside	Y-Ealing	0.0	5.0	2-2.5	NO_2	No

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA? If so, which AQMA?	Distance 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)
EA52	15a Church Road, Acton, W3 8QE	520092	180063	Roadside	Y-Ealing	0.0	10.0	2-2.5	NO_2	No
EA53	182 High Street, Acton, W3 9NN	520026	180141	Roadside	Y-Ealing	0.0	4.0	2-2.5	NO_2	No
EA54	44 Acton Lane, Chiswick, W4 5ED	520484	178847	Roadside	Y-Ealing	10.0	5.0	2-2.5	NO_2	No
EA55	156 Horn Lane, Acton, W3 6PH	520180	180896	Roadside	Y-Ealing	0.0	6.0	2-2.5	NO_2	No
EA56, EA57, EA58	317 Horn Lane, Acton, W3 0BU (AQMS) (Tri)	520432	181428	Roadside	Y-Ealing	10.0	5.0	2-2.5	NO_2	Yes
EA59	5 Leamington Park, Acton, W3 6TJ	520532	181517	Roadside	Y-Ealing	0.0	3.0	2-2.5	NO_2	No
EA60	Lyra Court, Portal Way, Acton, W3 6DB	520739	181824	Roadside	Y-Ealing	0.0	5.0	2-2.5	NO_2	No
EA61	36 Wales Farm Road, Acton, W3 6UE	520713	181592	Background	Y-Ealing	0.0	5.0	2-2.5	NO_2	No
EA62	Alec Read and John Chilton School (30 Bengarth Road, Northolt, UB5 5LH)	512026	183762	Roadside	Y-Ealing	10.0	4.0	2-2.5	NO_2	No
EA63	Ravenor Primary School	513483	182686	Roadside	Y-Ealing	16.0	0.0	2-2.5	NO_2	No

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA? If so, which AQMA?	Distance 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)
	(Greenway Gardens, Greenford, UB6 9TT)									
EA64	Our Lady of the Visitation Roman Catholic Primary School (Greenford Business Centre, Greenford, UB6 9AP)	514378	182112	Roadside	Y-Ealing	12	0.0	2-2.5	NO_2	No
EA65	Brentside Primary School (31 Kennedy Road, Hanwell, W7 1JL)	515276	181990	Roadside	Y-Ealing	8	0.0	2-2.5	NO_2	No
EA66	Coston Primary School (69 Oldfield Lane South, Greenford, UB6 9JT)	514521	182949	Roadside	Y-Ealing	7.0	0.0	2-2.5	NO_2	No

1.2 Comparison of Monitoring Results with AQOs

The annual mean NO_2 concentration results from automatic monitoring stations and diffusion tube monitoring locations since 2016 are presented in Table D. The results presented are after adjustments for “annualisation” and for distance to a location of relevant public exposure (if required), the details of which are described in Appendix A.

Data capture was good at Hanger Lane Gyratory, Horn Lane and Western Avenue (EA6, EA8, EI1) automatic monitors in 2022, with these three stations achieving data capture rates above 95% for NO_2. Data capture for NO_2 at Acton Vale (EI3) was 45% and thus the results required annualisation. Data capture at most NO_2 diffusion tubes sites was good in 2022, with at least 9 months of valid data (i.e., 75% data capture or greater). EA53 was the only diffusion tube location with poor data capture, with a data capture of 24.8%.[2]

There have been exceedances of the NO_2 annual mean objective of 40 µg m^{-3} observed at automatic Hanger Lane Gyratory monitoring station since 2014, a trend which continued into 2022 with an annual mean concentration of 51.5 µg m^{-3}. Both Horn Lane and Western Avenue recorded NO_2 concentrations below the objective for the third year in a row. The annual mean NO_2 concentration was 20.6 µg m^{-3} at Acton Vale monitoring station. None of the automatic sites exceeded the 1 hour mean NO_2 objective (200 µg m^{-3} not to be exceeded more than 18 times a year) in 2022.

Amongst the diffusion tubes, there were 3 exceedances of the NO_2 annual mean objective in 2022, at sites EA26, EA30-32 and EA46. This is a reduction on 2021 where there were 4 exceedances. EA26 is located on Spring Bridge Road in central Ealing. EA30-32 is co-located with the automatic monitor on the Hanger Lane Gyratory, which also saw an exceedance of the annual mean NO_2 objective in 2022. EA46 is located on the A40 Western Avenue, a major A road through Ealing. As there were no diffusion tube

[2] This site has 3 months of data and has been annualised with results reported as directed by the Data Processing Tool v3.0. Data capture reported is calculated on number of days exposed as produced by the Data Processing Tool v3.0.

locations which saw annual mean concentrations above 60 µg m^{-3} in 2022, it is unlikely that the 1 hour mean NO_2 objective was exceeded at any monitoring location. The maximum NO_2 concentration recorded at diffusion tube sites in 2022 was 52 µg m^{-3} at triplicate site EA30-32 at Fernlea House, Hanger Lane. This location has historically seen the highest concentrations, previously in excess of 70 µg m^{-3}, but has shown a decreasing trend since 2016.

Table D. Annual Mean NO_2 Ratified and Bias-adjusted Monitoring Results

Site ID	Site type	Valid data capture for monitoring period %[a]	Valid data capture 2022 %[b]	2016	2017	2018	2019	2020	2021	2022
EA6 Hanger Lane Gyratory	Automatic	99.4	99.4	**76.0**	**72.3**	**67.9**	**64.5**	**51.0**	**49.4**	**51.5**
EA8 Horn Lane	Automatic	99.5	99.5	**48.0**	**44.2**	**43.9**	**41.8**	33.2	32.0	29.3
EI1 Western Avenue	Automatic	99.2	99.2	**60.1**	**51.2**	**47.7**	**48.6**	35.2	35.9	35.2
EI3 Acton Vale	Automatic	45.1	45.1	-	-	29.0	26.5	19.7	21.0	20.6
EA1	Diffusion Tube	100.0	100.0	**61.0**	**54.0**	**49.4**	**50.3**	36.1	34.6	33.5
EA2	Diffusion Tube	92.5	92.5	**47.9**	**40.1**	**42.0**	38.7	27.7	29.8	28.4
EA3	Diffusion Tube	92.6	92.6	23.8	20.2	21.0	20.5	15.2	14.9	15.9
EA4	Diffusion Tube	100.0	100.0	36.2	32.4	30.1	34.4	24.4	25.9	25.3
EA5	Diffusion Tube	73.0	73.0	34.2	29.7	30.7	29.8	21.2	21.1	26.2
EA6	Diffusion Tube	100.0	100.0	**49.8**	**42.8**	**42.8**	**43.0**	33.5	33.5	35.8

Site ID	Site type	Valid data capture for monitoring period %[a]	Valid data capture 2022 %[b]	2016	2017	2018	2019	2020	2021	2022
EA7	Diffusion Tube	92.5	92.5	31.9	29.4	30.5	28.9	21.0	22.0	20.2
EA8	Diffusion Tube	92.3	92.3	**48.9**	**50.6**	**41.1**	**40.5**	27.0	29.4	32.3
EA9	Diffusion Tube	100.0	100.0	36.6	31.9	30.9	31.5	22.4	22.9	23.4
EA10	Diffusion Tube	91.9	91.9	38.5	34.6	35.0	33.2	23.4	24.3	27.2
EA11	Diffusion Tube	92.3	92.3	33.4	28.6	28.6	27.5	17.6	20.8	19.3
EA12	Diffusion Tube	100.0	100.0	39.3	31.4	34.4	32.5	24.0	22.6	23.0
EA13	Diffusion Tube	100.0	100.0	**52.7**	**45.1**	**46.0**	**44.3**	35.2	32.9	36.2
EA14	Diffusion Tube	100.0	100.0	**48.0**	**44.1**	**40.2**	**41.2**	29.6	31.6	32.5
EA15	Diffusion Tube	100.0	100.0	**42.5**	36.2	37.2	35.2	24.3	27.3	25.2
EA16	Diffusion Tube	100.0	100.0	**40.0**	37.1	33.9	34.6	28.3	25.9	26.7
EA17	Diffusion Tube	100.0	100.0	37.3	33.4	33.4	32.8	24.8	23.6	23.1
EA18	Diffusion Tube	100.0	100.0	33.9	31.5	31.8	31.7	24.1	25.3	24.2
EA19	Diffusion Tube	100.0	100.0	39.3	34.7	35.0	34.3	24.4	26.7	25.2
EA20	Diffusion Tube	92.3	92.3	**42.2**	**41.0**	**41.6**	39.1	28.7	27.9	27.8
EA21	Diffusion Tube	92.3	92.3	39.0	34.2	34.4	30.0	20.2	22.6	20.7
EA22	Diffusion Tube	92.6	92.6	39.1	37.9	33.1	33.1	24.6	23.5	22.3

Site ID	Site type	Valid data capture for monitoring period %[a]	Valid data capture 2022 %[b]	2016	2017	2018	2019	2020	2021	2022
EA23	Diffusion Tube	92.0	92.0	**62.1**	**53.5**	**50.6**	**52.0**	35.2	31.4	34.1
EA24	Diffusion Tube	100.0	100.0	36.6	36.1	33.5	32.7	24.3	25.6	27.6
EA25	Diffusion Tube	92.3	92.3	**48.6**	**44.3**	**52.5**	**42.2**	30.9	30.7	31.8
EA26	Diffusion Tube	100.0	100.0	**61.9**	**54.4**	**60.4**	**56.2**	**42.5**	**44.3**	**43.6**
EA27	Diffusion Tube	100.0	100.0	35.4	31.2	31.2	30.2	22.6	22.5	21.5
EA28	Diffusion Tube	100.0	100.0	**48.0**	39.8	42.3	42.1	33.3	36.8	37.4
EA29	Diffusion Tube	100.0	100.0	39.5	35.6	36.4	35.1	27.1	25.6	25.4
EA30, EA31, EA32	Diffusion Tube	100.0	100.0	**73.2**	**71.9**	**69.4**	**66.2**	**50.2**	**50.3**	**52.0**
EA33	Diffusion Tube	92.3	92.3	**49.8**	**43.3**	**54.5**	**56.0**	**44.5**	**40.3**	35.9
EA34	Diffusion Tube	83.9	83.9	39.6	34.6	35.2	33.9	28.1	25.1	29.5
EA35	Diffusion Tube	100.0	100.0	**55.7**	**47.3**	**49.7**	**46.6**	35.7	33.7	35.0
EA36, EA37, EA38	Diffusion Tube	100.0	100.0	**60.2**	**56.0**	**54.4**	**49.4**	36.5	35.8	35.3
EA39	Diffusion Tube	100.0	100.0	**52.1**	**45.0**	**48.3**	**41.4**	31.2	28.4	27.1
EA40	Diffusion Tube	82.4	82.4	38.1	33.4	33.1	30.6	22.0	25.9	25.1
EA41	Diffusion Tube	92.0	92.0	37.7	32.6	32.6	30.0	25.2	24.2	23.2

Site ID	Site type	Valid data capture for monitoring period %[a]	Valid data capture 2022 %[b]	2016	2017	2018	2019	2020	2021	2022
EA42	Diffusion Tube	100.0	100.0	**49.6**	**45.3**	**44.4**	**45.9**	32.0	35.4	32.6
EA43	Diffusion Tube	91.9	91.9	**40.5**	36.9	36.6	33.2	24.9	24.4	25.4
EA44	Diffusion Tube	100.0	100.0	38.1	34.7	32.0	31.4	22.6	21.0	21.9
EA45	Diffusion Tube	100.0	100.0	**49.9**	**43.9**	**46.7**	39.6	29.3	29.4	29.7
EA46	Diffusion Tube	83.0	83.0	**75.3**	**67.9**	**67.6**	**59.6**	**46.1**	**45.3**	**46.0**
EA47	Diffusion Tube	91.9	91.9	**49.2**	**43.7**	**43.0**	**41.4**	32.9	30.5	29.0
EA48	Diffusion Tube	100.0	100.0	**58.9**	**50.9**	**52.6**	**47.1**	37.8	36.4	39.7
EA49	Diffusion Tube	100.0	100.0	**40.9**	34.6	37.5	35.3	26.7	25.4	24.5
EA50	Diffusion Tube	100.0	100.0	39.4	32.6	36.2	34.3	25.7	24.3	23.7
EA51	Diffusion Tube	100.0	100.0	**56.0**	**49.0**	**48.1**	**48.8**	39.0	39.4	39.9
EA52	Diffusion Tube	100.0	100.0	35.1	28.6	29.6	27.5	22.5	22.2	22.6
EA53	Diffusion Tube	24.8	24.8	**54.7**	**44.4**	**47.7**	**47.5**	36.2	34.5	37.2
EA54	Diffusion Tube	92.3	92.3	37.8	37.6	**44.3**	39.3	28.2	28.9	28.5
EA55	Diffusion Tube	100.0	100.0	**43.1**	36.5	40.5	34.9	27.6	28.2	26.8
EA56, EA57, EA58	Diffusion Tube	100.0	100.0	**50.8**	**44.1**	**44.3**	**41.2**	31.3	31.1	30.2
EA59	Diffusion Tube	100.0	100.0	**43.7**	36.4	38.4	34.1	26.6	26.0	26.1

Site ID	Site type	Valid data capture for monitoring period %[(a)]	Valid data capture 2022 %[(b)]	2016	2017	2018	2019	2020	2021	2022
EA60	Diffusion Tube	100.0	100.0	**47.5**	**40.0**	39.2	39.8	29.7	26.5	26.1
EA61	Diffusion Tube	84.2	84.2	**43.9**	38.9	37.6	37.1	28.6	26.3	26.9
EA62	Diffusion Tube	74.9	74.9	-	-	-	-	-	-	19.2
EA63	Diffusion Tube	100.0	100.0	-	-	-	-	-	-	24.4
EA64	Diffusion Tube	84.8	84.8	-	-	-	-	-	-	37.8
EA65	Diffusion Tube	92.5	92.5	-	-	-	-	-	-	18.2
EA66	Diffusion Tube	76.7	76.7	-	-	-	-	-	-	24.0

Notes:

The annual mean concentrations are presented as µg m^{-3}.

Exceedances 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**.

Means for diffusion tubes have been corrected for bias.

All means have been “annualised” in accordance with LLAQM Technical Guidance if valid data capture for the calendar year is less than 75% and greater than 25%.

Results have been distance corrected where applicable.

(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%).

Figure 3 shows the trends in NO_2 concentrations at automatic monitoring sites in the borough for the period of 2016 – 2022, whilst Figure 4 to Figure 10 show the trends in NO_2 concentrations for the same period at diffusion tube monitoring sites grouped by monitoring site type: urban background and roadside sites. At automatic monitoring sites (Figure 3), a decreasing trend in NO_2 concentrations can be seen since 2015, albeit with some natural variations. Since 2020, the trend has generally stabilised, although there was a slight increase in NO_2 concentrations at EA6 Hanger Lane. At the urban background diffusion tube site Brent Lodge Park (EA3) (Figure 5), there is evidence of a decrease in NO_2 concentrations between 2015 and 2021. This trend appears to have plateaued since 2020.

The majority of near-road and roadside sites show an overall decreasing trend in annual mean NO_2 concentrations since 2016, with evidence of a stabilisation between 2017 and 2019 and a stabilisation or slight increase from 2020 to 2022. The decrease in 2020 is likely to be the impact of COVID-19 and resulting lockdowns leading to a decrease in road traffic emissions, with subsequent increases likely attributable to a return to business as usual.

Figure 3. Annual Mean NO_2 Concentrations at Automatic Monitoring Sites

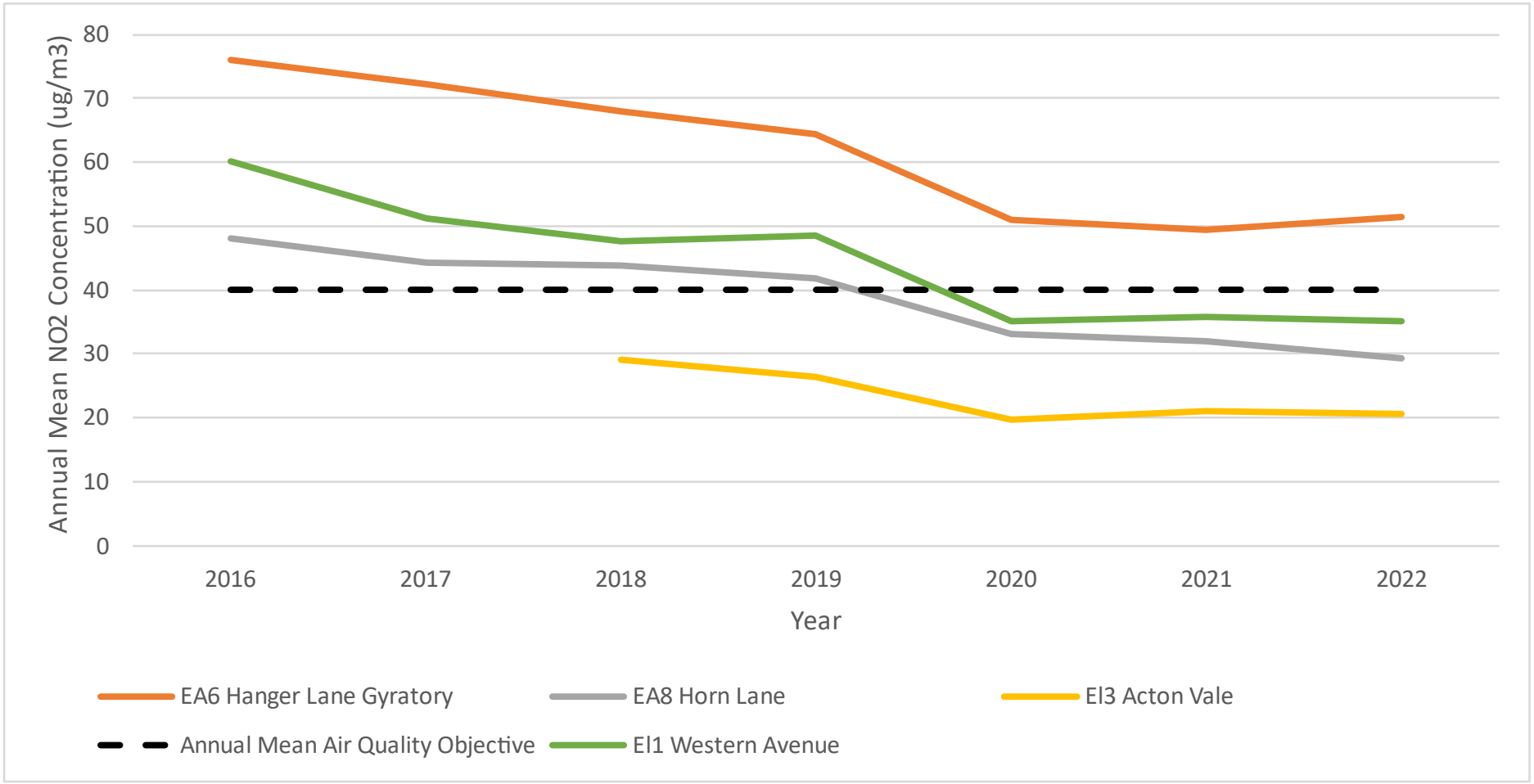


Figure 4. Annual Mean NO_2 Concentrations at Urban Background Diffusion Tube Site

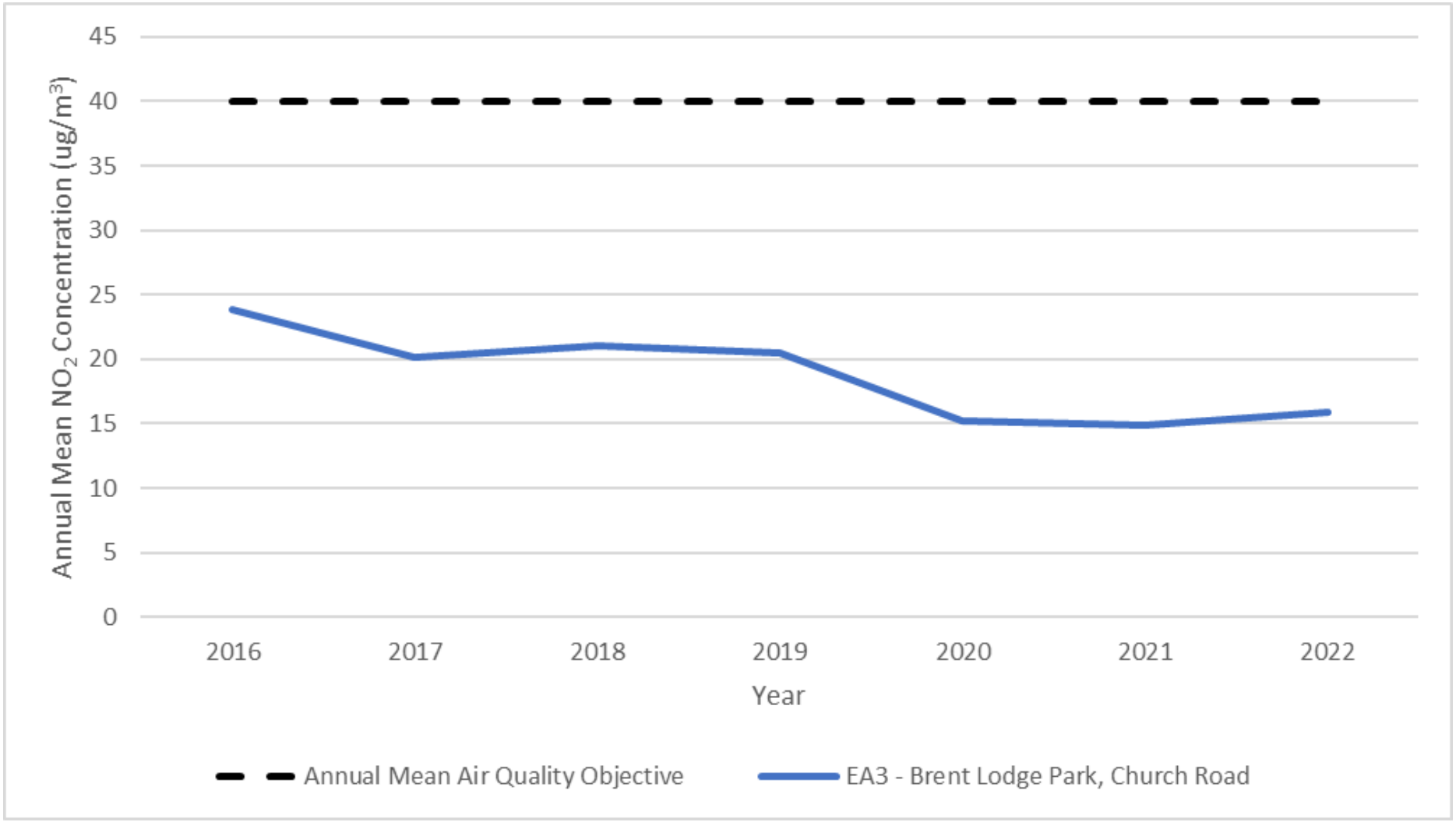


Figure 5. Annual Mean NO_2 Concentrations at Roadside Diffusion Tube Sites (1)

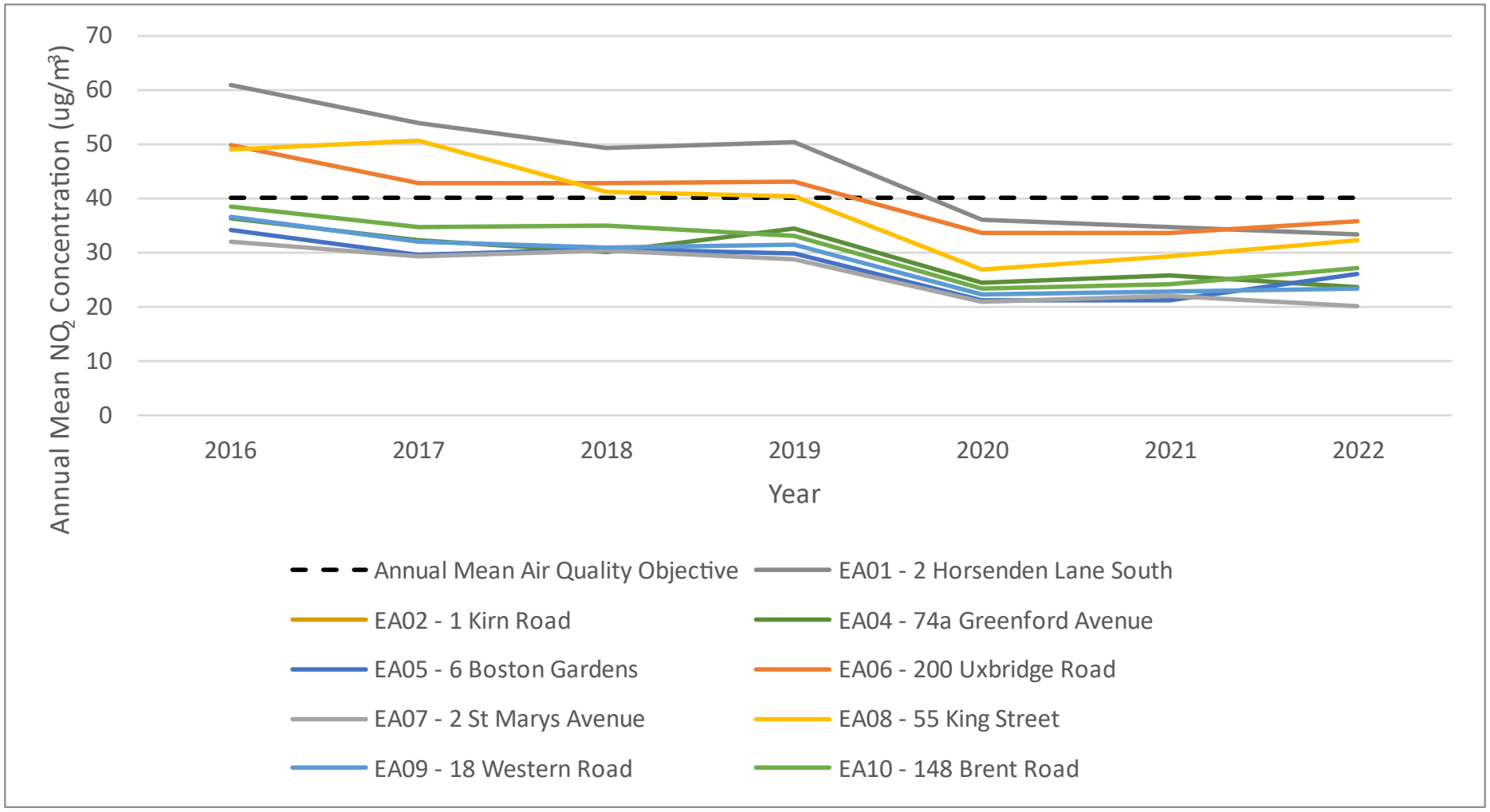


Figure 6. Annual Mean NO_2 Concentrations at Roadside Diffusion Tube Sites (2)

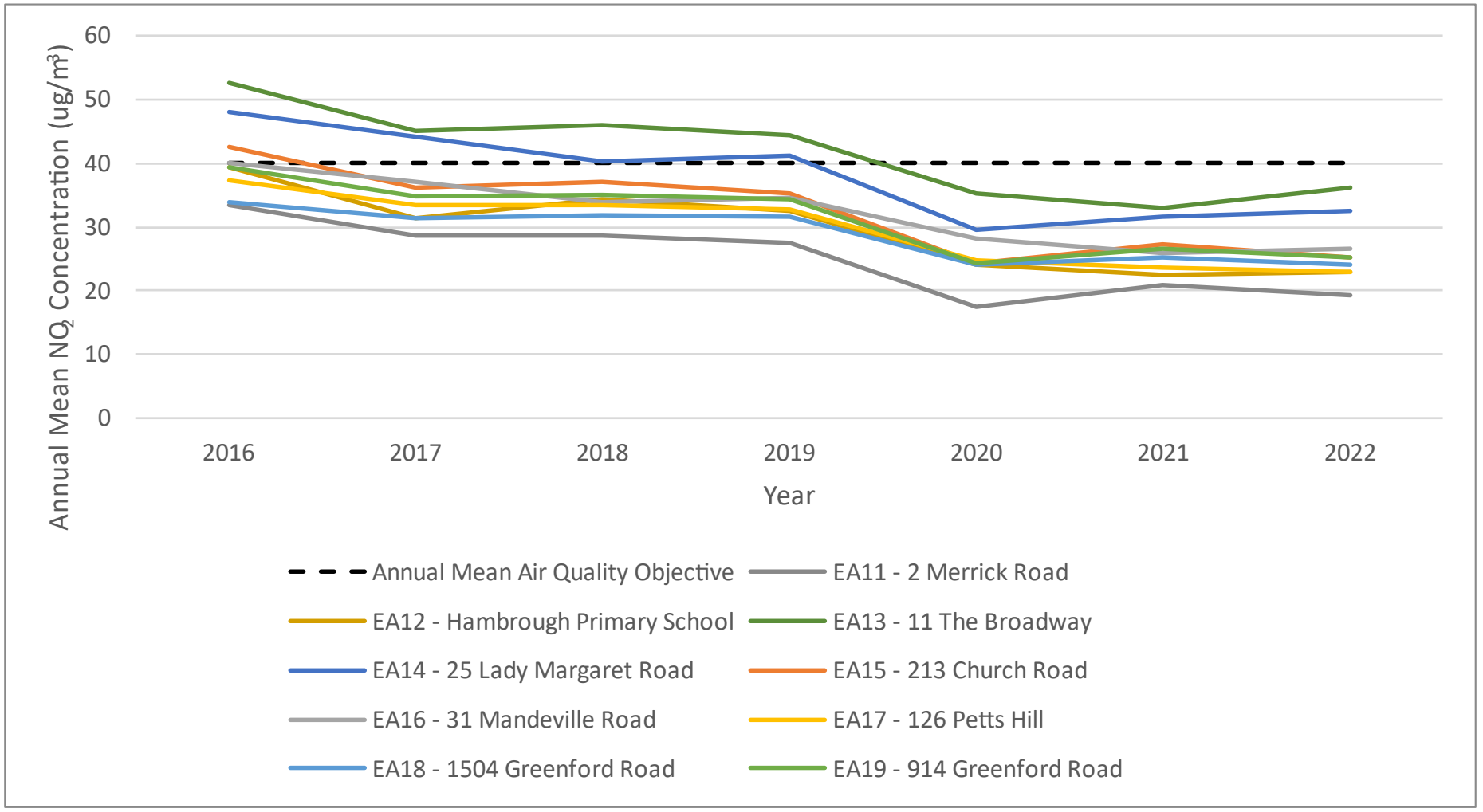


Figure 7. Annual Mean NO_2 Concentrations at Roadside Diffusion Tube Sites (3)

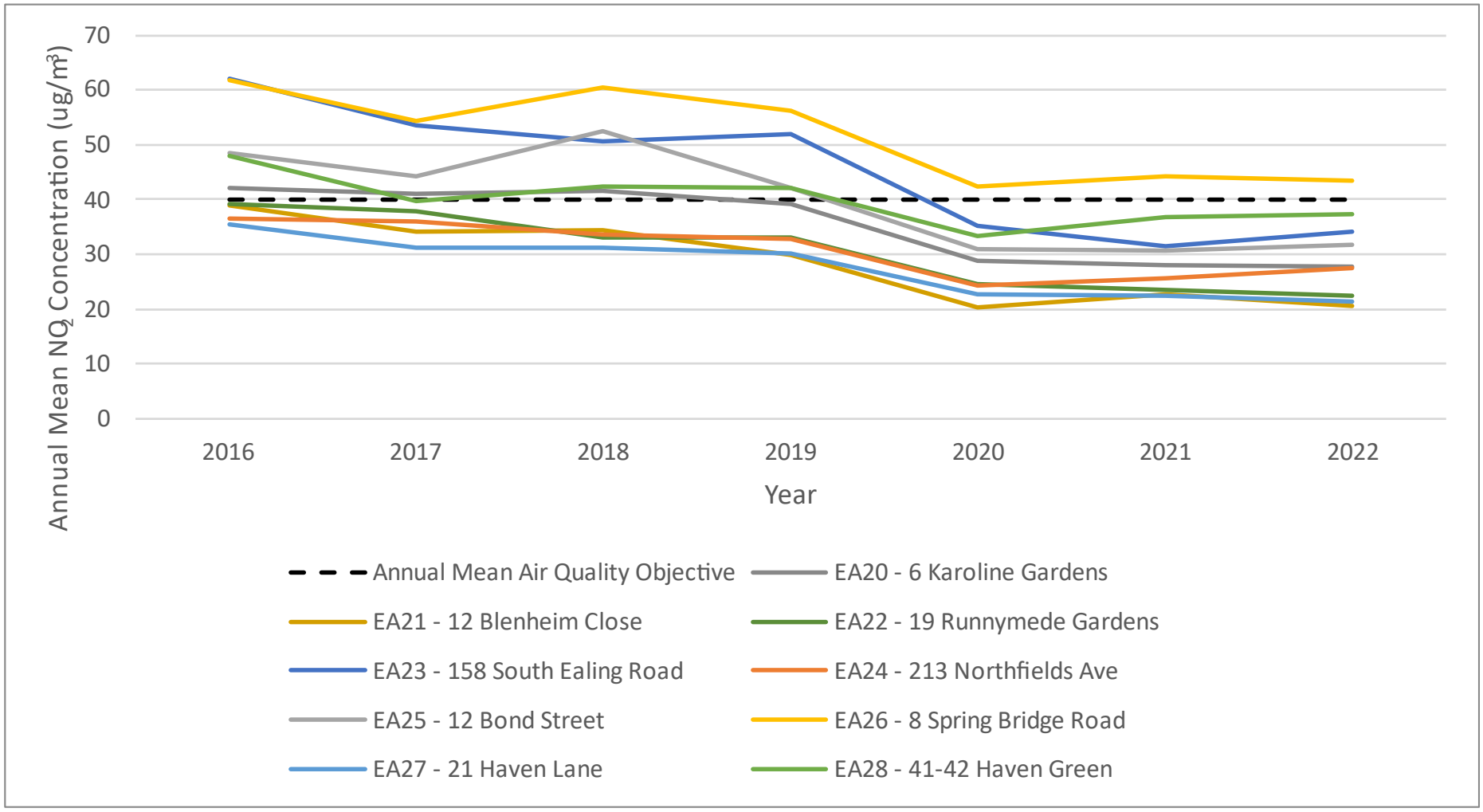


Figure 8. Annual Mean NO_2 Concentrations at Roadside Diffusion Tube Sites (4)

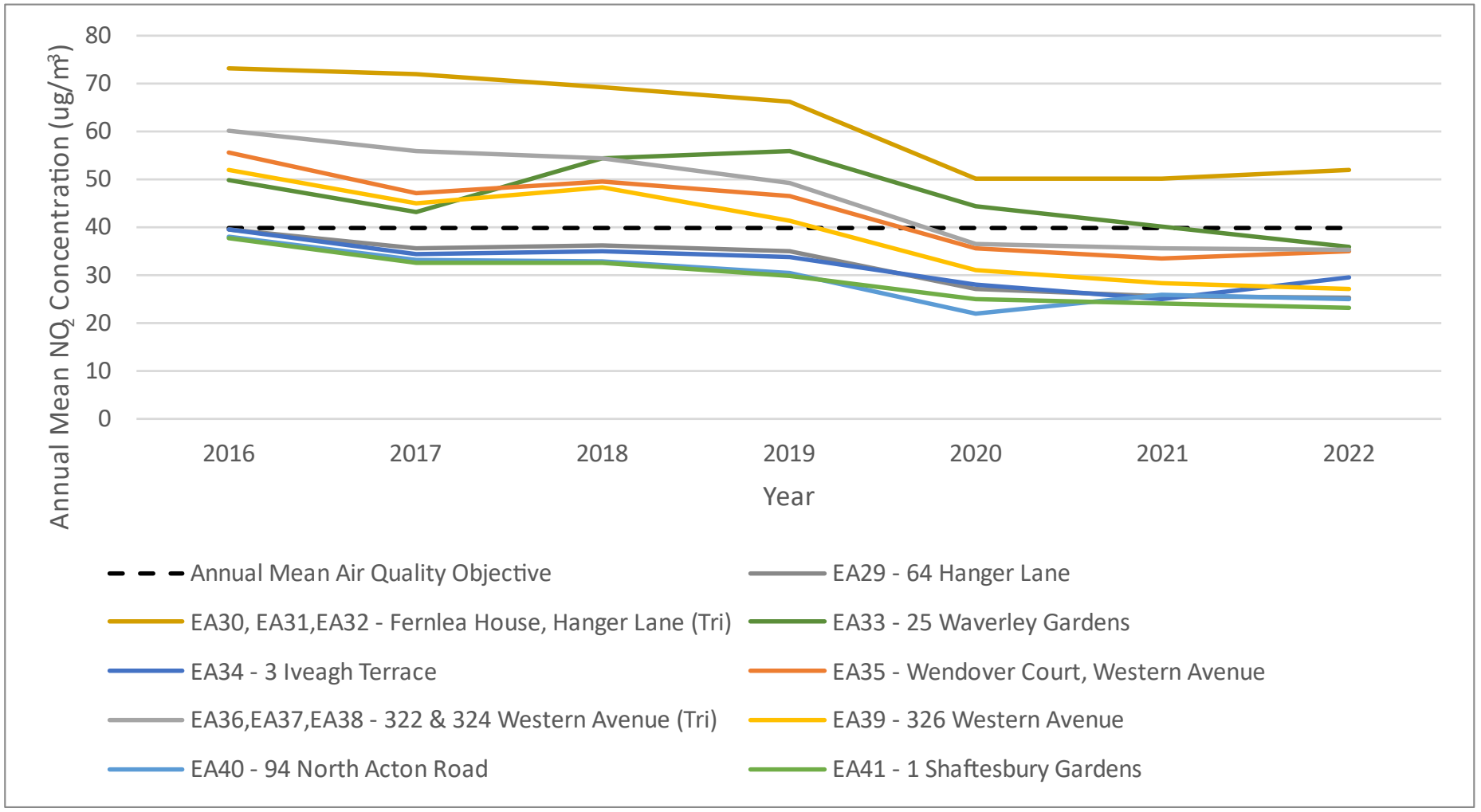


Figure 9. Annual Mean NO_2 Concentrations at Roadside Diffusion Tube Sites (5)

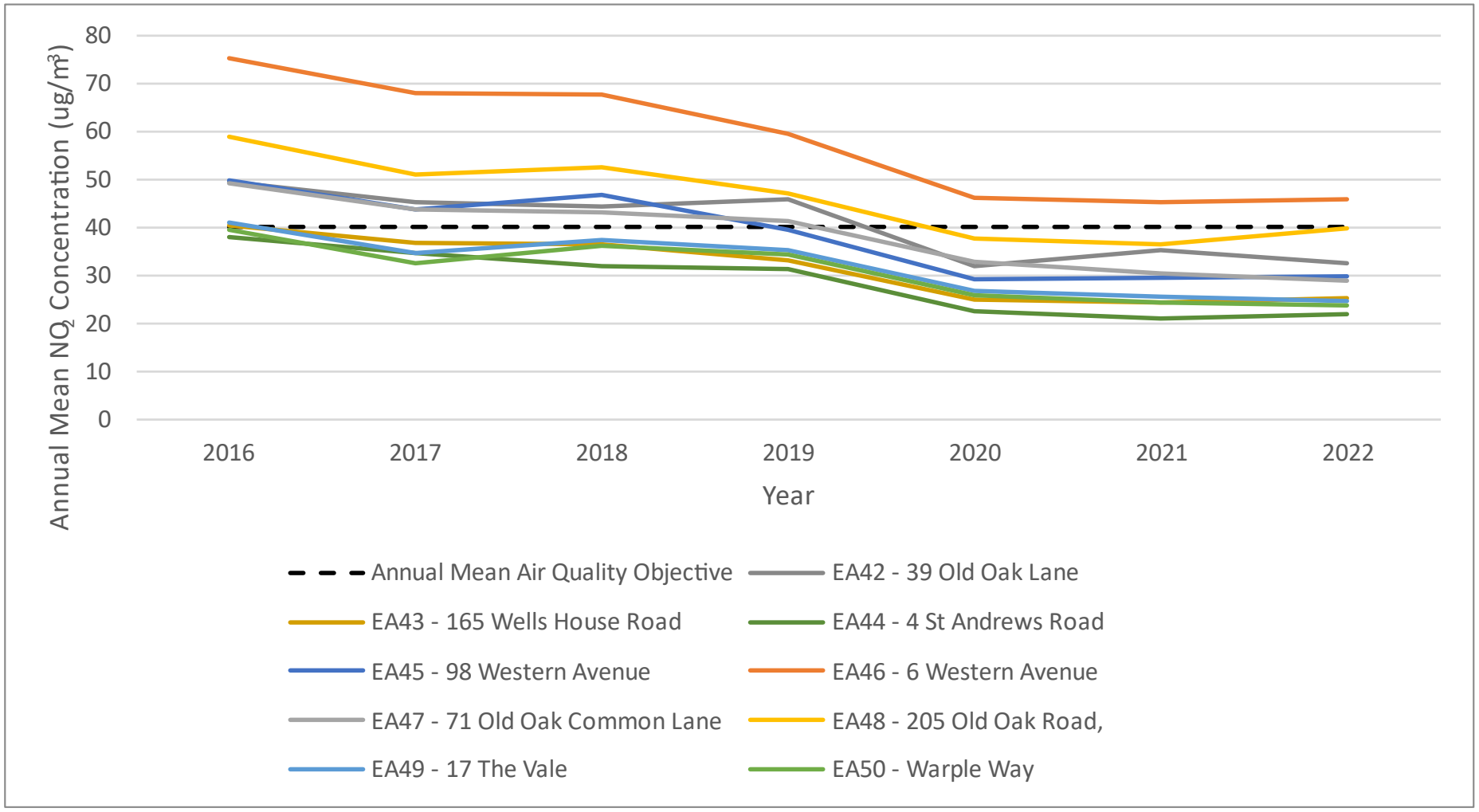


Figure 10. Annual Mean NO_2 Concentrations at Roadside Diffusion Tube Sites (6)

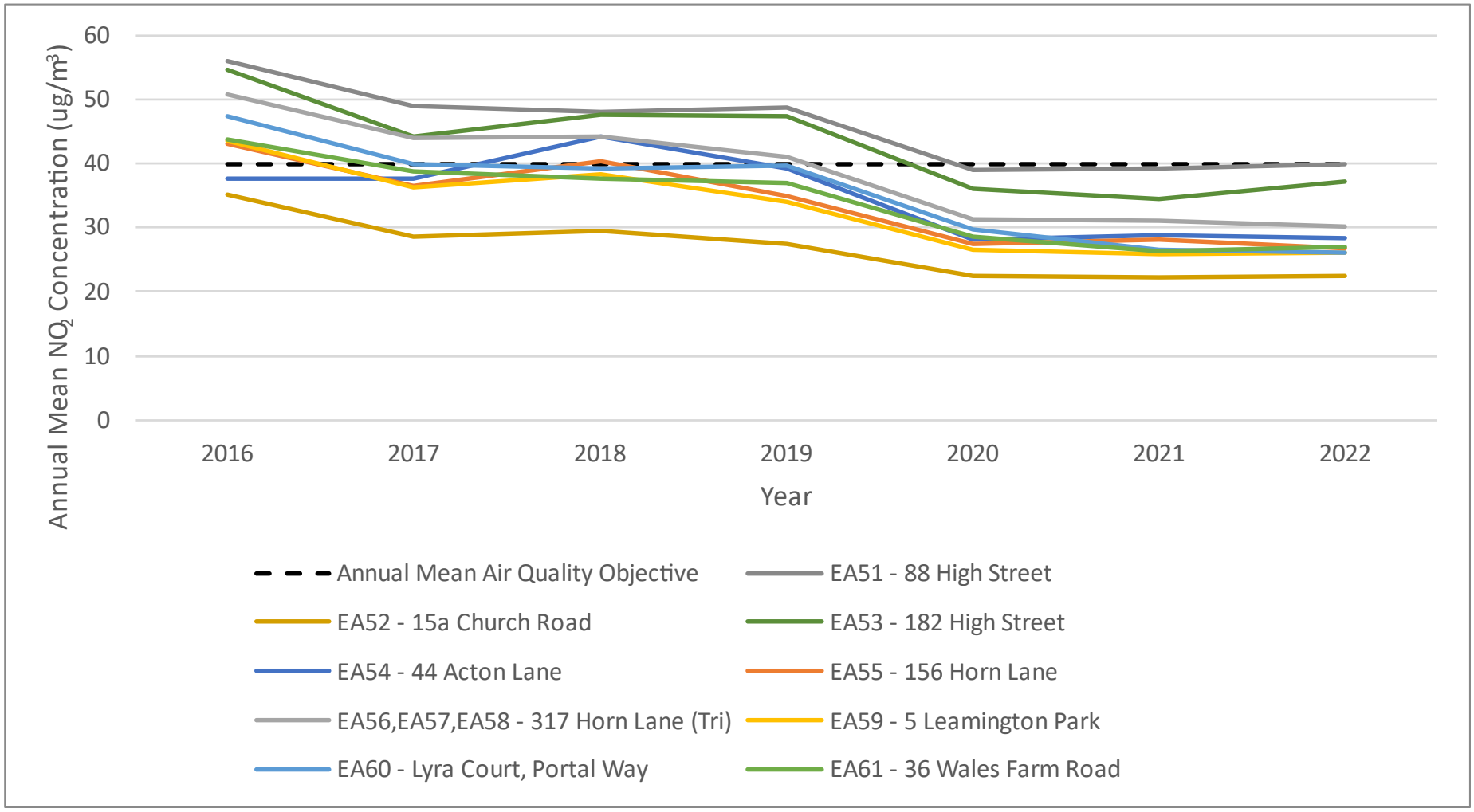


Table E presents the 1-hour mean NO_2 monitoring results at automatic monitoring stations between 2016 to 2022. None of the automatic sites exceeded the 1 hour mean NO_2 objective (200 µg m^{-3} not to be exceeded more than 18 times a year) in 2022. Whilst there were some hourly mean concentrations over the 200 µg m^{-3} threshold in 2019, all monitoring sites have been compliant with the objective since 2017.

Table E. NO_2 Automatic Monitoring Results: Comparison with 1-hour Mean Objective, Number of 1-Hour Means > 200 µg m^{-3}

Site ID	Valid data capture for monitoring period %([a])	Valid data capture 2022 %([b])	2016	2017	2018	2019	2020	2021	2022
EA6 Hanger Lane Gyratory	99.4	99.4	**45**	9	0	3	0	0	0
EA8 Horn Lane	99.5	99.5	1	2	0	2	0	0	0
El1 Western Avenue	99.2	99.2	**22**	0	0	0	0	0	0
E13 Acton Vale	45.1	45.1	-	-	0	0	0 (82)	0 (81)	0 (102)

Notes

Results are presented as the number of 1-hour periods where concentrations greater than 200 µg m^{-3} have been recorded.

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

If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

(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%)

PM_{10} concentrations are currently measured using TEOMs at all automatic monitoring locations in the London Borough of Ealing. The Horn Lane station is equipped with both TEOM and TEOM-FDMS analysers for PM_{10} monitoring and results from these 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 2022 was good (i.e. >85%) at only 1 location, EI8 Horn Lane TEOM. Data capture at the other 4 monitors had data capture rates ranging from 25.9% to 74.2%, and thus required annualisation. The annual mean PM_{10} objective of 40 µg m^{-3} was achieved at all sites during 2022, and it has been achieved at all automatic monitoring locations in the borough since 2016. The highest annual mean PM_{10} concentration in 2022 was recorded at EA8 Horn Lane (27.3 µg m^{-3}). The number of exceedances of the 24-hour mean objective (50 µg m^{-3}) was within the permitted 35 days per year. The 90.4th percentile at EA8 Horn Lane (52 µg m^{-3}) suggests the 24-hour mean objective is likely to have been exceeded here; however, this result should be treated with caution given the low data capture. Furthermore, the data from the co-located TEOM instrument indicate that the number of daily exceedances was within the 35 permitted days.

Figure 11 shows the trends in PM_{10} concentrations at automatic monitoring sites in the borough for the period of 2016 – 2022. The figure indicates a slight downward trend in annual values at Hanger Lane since 2015, whilst other monitoring locations do not show a strong discernible trend.

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

Site ID	Valid data capture for monitoring period %([a])	Valid data capture 2022 %([b])	2016	2017	2018	2019	2020	2021	2022
EA6 Hanger Lane Gyratory	74	74	24	26	28	25	23	20	18
EA8 Horn Lane	35	35	28	27	25	28	24	26	27
EI8 Horn Lane TEOM	98	98	26	26	26	25	21	23	27
EI1 Western Avenue	72	72	30	26	28	26	23	25	25
EI3 Acton Vale	26	26	-	-	19	18	16	16	17

Notes

The annual mean concentrations are presented as µg m^{-3}.

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

All means have been “annualised” in accordance with LLAQM Technical Guidance, if valid data capture is less than 75% and more than 25%.

(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%).

Table G. PM_{10} Automatic Monitoring Results: Comparison with 24-Hour Mean Objective, Number of PM_{10} 24-Hour Means > 50 µg m^{-3}

Site ID	Valid data capture for monitoring period %[(a)]	Valid data capture 2022 %[(b)]	2016	2017	2018	2019	2020	2021	2022
EA6 Hanger Lane Gyratory	74.2	74.2	12	10	12	13	7	4	3 (30)
EA8 Horn Lane	34.9	34.9	19	16	7	15	9	13	**13 (52)**
EI8 Horn Lane TEOM	97.5	97.5	17	10	7	16	5	9	18
EI1 Western Avenue	72.4	72.4	24	9	14	21	11	11	14 (41)
EI3 Acton Vale	25.9	25.9	-	-	2	9	3 (30)	1	4 (36)

Notes

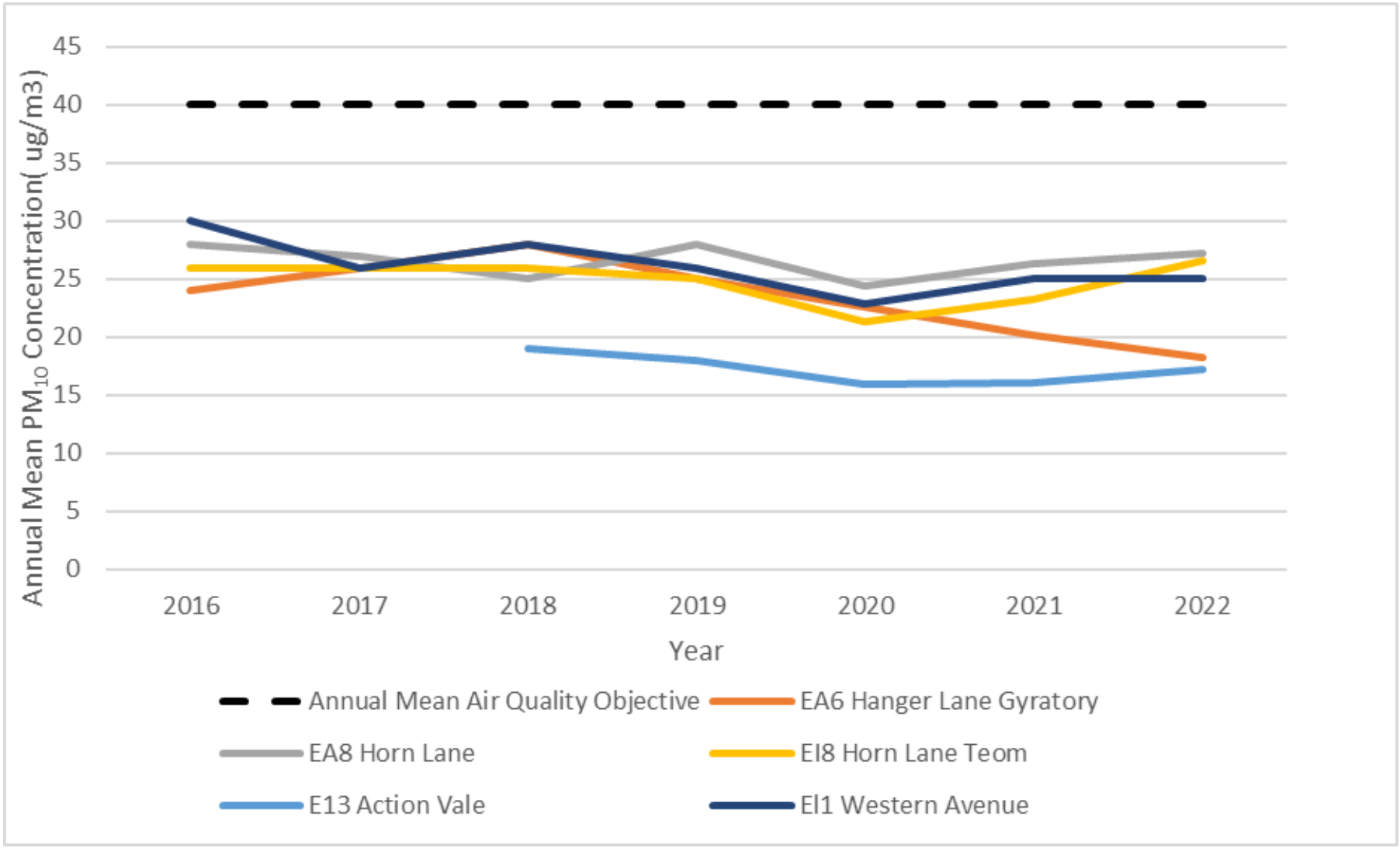
Exceedances of the PM_{10} 24-hour mean objective (50 µg m^{-3} over the permitted 35 days per year) are shown in **bold.**

Where the period of valid data is less than 85% of a full year, the 90.4th percentile is provided in brackets.

(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%).

Figure 11 Annual Mean PM_{10} Concentrations at Automatic Monitoring Sites



2. Action to Improve Air Quality

2.1 Air Quality Action Plan Progress

Table H provides a brief summary of London Borough of Ealing progress against the Air Quality Action Plan[3], showing progress made this year. New projects which commenced in 2022 are shown at the bottom of the table.

Table H. Delivery of Air Quality Action Plan Measures

Measure	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
1	Emissions from Development and Buildings	Further actions to mitigate PM_{10} and $PM_{2.5}$ emissions from industrial sources and resuspension in Horn Lane, Acton	**ONGOING** • Indicative monitoring continued in Acton Goods Yard in 2020/21 and is ongoing. Data is online at www.llecp.org.uk
2	Localised Solutions	Ealing Broadway Station -Forecourt improvements at Ealing Broadway Station	**ONGOING** • Works to improve pedestrian and cycle access to Ealing Broadway Station have commenced using Council funding with the aim to recover cost from TfL. Work has restarted and should complete in 2023/24.
3	Cleaner Transport	Cycling	**PROJECT ON HOLD DUE TO LACK OF FUNDING** • Work on Ealing - Greenford Quietway to restart in 2022/23. Feasibility on other routes including Southall to Heathrow (subject to available funding) to be undertaken in 2022/23 (subject to available funding). • Implemented experimental closures of Chiswick and Church Road, Northolt to all traffic except buses and cyclists (and emergency vehicles). These schemes will be reviewed at the end

[3] London Borough of Ealing (2017). Air Quality Action Plan 2017-2022. Available at: https://www.ealing.gov.uk/downloads/download/4240/air_quality_action_plan_aqap

Measure	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
			of the year prior to a decision on whether to make them permanent. The Fishers Lane closure to vehicles is now permanent after the successful experimental closure http://www.westtrans.org/WLA/wt2.nsf/Files/WTA201/$file/Ealing+Cycling+Plan.pdf
4	Cleaner Transport	West London Student Cycling Champion project	**PROJECT ON HOLD DUE TO LACK OF FUNDING** • A programme of events to promote cycling and active travel at NHS sites across West London Including Ealing Hospital. http://www.westtrans.org/wla/wt2.nsf
5	Cleaner Transport	Electric Bike Trial to encourage more sustainable journeys	**PROJECT ON HOLD DUE TO LACK OF FUNDING** • Two e-bikes remain on trial within the NHS, further review is being conducted on how to best deploy for 2022/23. **http://www.westtrans.org/wla/wt2.nsf**
6	Cleaner Transport	Improved access to public transport	**COMPLETE** • All new Crossrail stations open and accessible. For details of access improvements at these stations, see http://www.crossrail.co.uk/route/western-section/
7	Emissions from Developments and Buildings	Control of emissions from developments and buildings	**ONGOING** During 2022, planning conditions were imposed to: • Ensure that particulate emissions from construction and demolition are minimised. • Control emissions from NRMM. • Control emissions from CHP and biomass boilers and to ensure that smaller developments use ultra-low NOX gas boilers. Enforce Air Quality Neutral policies
8	Emissions from Developments and Buildings	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	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
9	Emissions from Developments and Buildings	Investigate the potential for larger development areas to proactively assess air quality impacts cumulatively	**ONGOING** • A draft Low Emission Strategy (LES) for the Southall Waterside development has been prepared and is awaiting sign-off. • Independent air quality monitoring station installed October 2021 and monitoring in progress. • Monitoring of the air quality project is expected to continue till the conclusion of the project. London Borough of Ealing - Air Quality monitoring service (airqualityengland.co.uk)
10	Emissions from Developments and Buildings	Promoting and delivering energy efficiency retrofitting projects in workplaces and homes to replace old boilers/top-up loft insulation in combination with other energy conservation measures.	**COMPLETE** • Public Sector Decarbonisation Scheme, Phase 1 projects completed in July 2022. A £2.955m programme has retrofit 15 corporate buildings and two schools. • Green Homes Grant: Local Authority Delivery Phase 1 and 2 completed in 2022, 95 Ealing homes retrofitted. **ONGOING** • The council is nearing completion of 44 whole house retrofits on its own council houses, with the aim of making them carbon neutral. • Public Sector Decarbonisation Scheme, Phase 3a projects are nearing completion, £7.6m has been invested in a further eight schools and four sheltered accommodation blocks to improve energy efficiency and decarbonise heating. Public Sector Decarbonisation Scheme, Phase 3b - £13m in funding has been awarded to retrofit seven schools and three leisure centres.
11	Public Health and Awareness Raising	Ensure that Directors of Public Health (DsPH) have been fully briefed on the scale of the problem in your local authority area; what is	**COMPLETE** • Public Health (led by the DPH) has led a Joint Strategic Needs Assessment in this area to inform local decision making

Measure	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
		being done, and what is needed. A briefing should be provided.	
12	Public Health and Awareness Raising	Public Health through the health protection forum that there is engagement with wider stakeholders in this agenda).	**ONGOING** • The Council are working with Ealing's Clinical Commission Group, through the JSNA and its recommendations. Health Protection Forum (HPF) meetings resumed June 2022. Air quality has been added to HPF forward plan, as a future focus topic.
13	Public Health and Awareness Raising	Encourage schools to join the TfL STARS accredited travel planning programme by providing information on the benefits to schools and supporting the implementation of such a programme	**ONGOING** STARS Accreditation to August 2022 Update: • Gold: **20** schools • Silver: **10** schools • Bronze: **11** schools • Engaged (registered on STARS only): **1** school We held STARS Surgeries and training workshop to support schools in progression towards accreditation. School Streets • 17 permanent schemes are in place. • 4 additional School Streets were being developed and delivered in Spring 2023. • The council has made a commitment to deliver School Streets to 50 schools by the end of March 2026. For information on the London-wide STARS scheme, see https://stars.tfl.gov.uk

Measure	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
14	Public Health and Awareness Raising	Air quality at schools	**COMPLETE** • The School Travel Team promoted Go Green for Clean Air Day, to all schools in the Borough, on 16th June 2022. • The team encouraged schools to raise awareness of COP27 from 6– 18 November 2022 by using the resources we had produced for COP26. • 5 weeks of Air Quality workshops were delivered at the 4 School Street schools. 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 See Climate change, COP26 and air quality page on Ealing Grid for Learning https://www.egfl.org.uk/services-children/school-travel-plans-stp/climate-change-cop26-and-air-quality
15	Emissions from Development and Buildings	Update Procurement policies to ensure sustainable logistical measures are implemented (and include requirements for preferentially scoring bidders based on their sustainability criteria)	**ONGOING** • The new Greener Ealing London waste service provider procured a new fleet that significantly improves performance related to impacts on local air quality. They have also made commitments in the climate strategy that all heavy vehicles will run on alternative fuels or electric by 2030 and all light vehicles to be electric by 2026. • The parks team made similar commitments, with 29% of their current vehicle fleet electric/hybrid and a commitment to increase to 50% by 2026. Further they have committed that 100% of their

Measure	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
			maintenance equipment will have zero carbon output by 2025, current baseline is 60%. • The contract for waste handling includes sustainable logistics. • A new West London Low Carbon Procurement toolkit has now been shared with colleagues. The following teams have received electric vehicles: • ICT and PS: 14 electric vans and 1 electric car, with 7 electric vans to be delivered in May 2023 • Hostels: 1 electric van • Pollution control: 1 electric car • Parks team are still in the process of procuring their fleet. Most significant measure identified as reducing trip distance (and hence emissions) http://www.westtrans.org/wla/wt2.nsf/pages/WT-211
16	Delivery Servicing and Freight	Re-organisation of freight to support consolidation (or micro-consolidation) of deliveries, by setting up or participating in new logistics facilities, and/or requiring that council suppliers participate in these	**COMPLETE** • Ealing Council Facilities acquired 6 electric vans to replace diesel vans in their fleet in 2021. **ONGOING** • Ealing Broadway Business Improvement District Air Quality Exemplar project undertaken with MAQF funding project has continued and is now fully funded by Ealing BID. This project has saved around 9,000 diesel vehicle trips each year. • Greener Ealing LATCo established (in 2019) will provide a borough-based waste collection service and this should reduce numbers of vehicle trips and contractors used for waste collection services. Investigations currently underway into possible use of EVs. See https://www.london.gov.uk/sites/default/files/mayors_air_quality_fund_report_2016.pdf
17	Emissions from Development and Buildings	Green Infrastructure	**ONGOING** • Planning policies encourage green roofs, green walls, Sustainable Urban Drainage Systems etc.

Measure	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
			• West Ealing Liveable Neighbourhood initial prototype phase implemented (includes parklets, decorative pedestrian crossing points and street art) to promote walking and cycling journeys.
18	Public Health and Awareness Raising	Discouraging unnecessary idling by taxis, coaches and other vehicles (e.g., through anti-idling campaigns or enforcement activity)	**COMPLETE** • 3 anti-idling workshops and events were held at 3 primary schools as a participating council of the anti-idling Mayor's Air Quality Fund. **ONGOING** • Ongoing community engagement with parents and residents re anti-idling measures. • Delivering activities and events as a participating council of the anti-idling Mayor's Air Quality Fund. In 2022, 3 anti-idling workshops and events were held at 3 primary schools.
19	Cleaner Transport	Increasing the proportion of electric, hydrogen and ultra-low emission vehicles in Car Clubs	**ONGOING** • The Council and partners Source London and Siemens/Ubitricity have installed around 600 on-street and car park EVCPs since 2019 including around 100 additional EVCPs on private land open to the public see: Map of charging points for electric car drivers in UK: Zap-Map (zap-map.com) https://www.ealing.gov.uk/info/201173/transport_and_parking/1316/electric_vehicles_and_charging_points/1
20	Cleaner Transport	Very Important Pedestrian Days (e.g., no vehicles on certain roads on a Sunday) and similar initiatives	**COMPLETE** • 2 permanent LTNs now in place. **ONGOING** • Playstreets initiative: there are 54 registered, resident-led Playstreets currently. Consultations on additional locations currently being undertaken. • 21 school streets implemented. Intention to reach 50 by 2026.

Measure	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
21	Cleaner Transport	Railway emissions	**ONGOING** • Successfully secured the trial replacement of the diesel train operating on the Greenford Line by a battery electric train scheduled to enter service in winter 2022. However, this was delayed after the train company had financial difficulties. New start date TBC. GWR fast-charging trial brings regular battery-only rail services a step closer Ealing's trains leading the charge towards net zero | Ealing Council
22	Public Health and Awareness Raising	Ensure that the Head of Transport has been fully briefed on the Public Health duties and the fact that all directors (not just Director of Public Health) are responsible for delivering them, as well as on air quality opportunities and risks related to transport in the borough. Provide a briefing which can be disseminated amongst the Transport team	**ONGOING** • Transport staff are closely involved in air quality initiatives and projects and have been involved in JSNA development. Recommendations of the JSNA are shared across Council services and the Council aims to incorporate them in all relevant strategies. • The Healthy Weight, Healthy Lives Strategy work has been led during this past year by the Healthy Weight, Healthy Lives group (incl. leads from the active travel / transport team). The strategy will be updated, timescale to be confirmed and will be informed by an upcoming CYP Healthy Weight JSNA (in development). • Let's Go Southall: initiative to encourage residents of Southall to be more physically active - delivered by providing the necessary facilities and services for a more healthy and active lifestyle. Healthy Weight Strategy group has now been superseded by the following groups: • CYP: Giving Children the best Start in Life • CYP: Supporting Children and Young people to achieve healthy lifestyles / weight. Once the JSNA is complete a new updated strategy will be produced. Separately the successful Let's Go Southall bid and work has included active travel as a key component in a bid to encourage more people in Southall to use active travel as an alternative method than using cars.

Measure	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
23	Monitoring and Other Core Statutory Duties	$PM_{2.5}$ Monitoring	**ONGOING** • The council is currently evaluating resources required to monitor for $PM_{2.5}$ at Horn Lane, including installation of a new $PM_{2.5}$ monitor at the site. Although there are no specific measures targeting the reduction of $PM_{2.5}$ currently, it is expected that the combination of actions and that are currently in force or coming into force will help to bring about a reduction of $PM_{2.5}$. However, discussions are being held with Public Health to devise policies that will specifically target the reduction of $PM_{2.5}$

3. Planning Update and Other New Sources of Emissions

Table I gives a summary of planning requirements relating to air quality in the London Borough of Ealing in 2022. 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.

Table I. Planning requirements met by planning applications in London Borough of Ealing in 2022

Condition	Number
Number of planning applications where an air quality impact assessment was reviewed for air quality impacts	236 (See Note 1)
Number of planning applications required to monitor for construction dust	73 (See Note 2)
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	15
Number of developments where an AQ Neutral building and/or transport assessments undertaken	45
Number of developments where the AQ Neutral building and/or transport assessments not meeting the benchmark and so required to include additional mitigation	4
Number of planning applications with S106 agreements including other requirements to improve air quality	55
Number of planning applications with CIL payments that include a contribution to improve air quality	0
NRMM: Central Activity Zone, Canary Wharf and Opportunity Areas Number of conditions related to NRMM included. Number of developments registered and compliant.	N/A

Condition	Number
Number of audits % of sites unregistered prior to audit Please include confirmation that you have checked that the development has been registered with the GLA through the relevant NRMM website and that all NRMM used on-site is compliant with Stage Stage IV of the Directive and/or exemptions to the policy.	
NRMM: Greater London (excluding Central Activity Zone, Canary Wharf and Opportunity Areas) Number of conditions related to NRMM included. Number of developments registered and compliant. Number of audits % of sites unregistered prior to audit 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.	55 conditions included. 26 sites were audited, 1 was self-compliant, 8 compliant, 3 were non-compliant, 3 did not required to be registered on NRMM website and finally 11 sites were completed. 6 sites were unregistered, accounting for 23% of all the audited sites.

Note 1. 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.

Note 2. Monitoring is taken to include visual monitoring.

3.1 New or significantly changed industrial or other sources

No new sources identified.

4. Additional Activities to Improve Air Quality

4.1 London Borough of Ealing Fleet

Please provide details of how many a) zero emission and b) zero emission capable vehicles there are within your borough's fleet, and what percentage of the fleet these represent.

Ealing council's vehicle fleet comprises of:

a) 25 zero emission fleet representing 27% of the total fleet.
b) 61 zero emission capable fleet representing 66% of the total fleet.

The rest of the fleet of 7 is not zero emission capable and represents 7%.

4.2 NRMM Enforcement Project

Ealing council continues to collaborate with Merton Council to enforce the Council's NRMM policies. The Air Quality team sets NRMM conditions on developments and requests developers to register their site details on NRMM website for officers to Merton Council to audit.

4.2 Air Quality Alerts

The London Borough of Ealing has subscribed to airTEXT and advertises its services on Ealing Air website and on social media to raise awareness for residents to subscribe.

Appendix A Details of Monitoring Site Quality QA/QC

A.1 Automatic Monitoring Sites

The four active automatic monitoring sites in the borough were operated as part of the 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 maintenance of particulate samplers.

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 Tubes

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 2022 and February 2022 (AR049) and 100% satisfactory results between May 2022 and June 2022 (AR050).

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 2022, the combined local bias adjustment factor derived from these studies was 0.75.

Figure 14 shows 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 12. Local Bias Adjustment Factor Calculation

Local Bias Adjustment Outputs - Information Only

Go back to STEP 3 - Bias Adjustment to define factor

	STEP 3a Local Bias Adjustment Input 1	STEP 3b Local Bias Adjustment Input 2	STEP 3c Local Bias Adjustment Input 3	STEP 3d Local Bias Adjustment Input 4	STEP 3e Local Bias Adjustment Input 5
Periods used to calculate bias	12	12	12		
Bias Adjustment Factor A	0.76 (0.7 - 0.82)	0.76 (0.7 - 0.84)	0.74 (0.68 - 0.8)		
Diffusion Tube Bias B	32% (22% - 42%)	32% (19% - 44%)	36% (25% - 47%)		
Diffusion Tube Mean (µg/m³)	68.4	46.5	39.8		
Mean CV (Precision)	5.4%	6.3%	5.5%		
Automatic Mean (µg/m³)	51.7	35.3	29.3		
Data Capture	99%	99%	99%		
Adjusted Tube Mean (µg/m³)	52 (48 - 56)	35 (33 - 39)	29 (27 - 32)		
Overall Diffusion Tube Precision	Good Overall Precision	Good Overall Precision	Good Overall Precision		
Overall Continuous Monitor Data Capture	Good Overall Data Capture	Good Overall Data Capture	Good Overall Data Capture		

Combined Local Bias Adjustment Factor	0.75

The national bias adjustment factor for co-location diffusion tube studies in 2022 analysed by Socotec (formerly Environmental Scientifics Group (ESG) Didcot) using a preparation method of 20% TEA/water was calculated to be 0.76. This has been taken from the national bias adjustment spreadsheet 03/22, as shown in Figure 15.

Figure 13. National Bias Adjustment Factor Calculation

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/23

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 2023

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:	Step 2:	Step 3:	Step 4:
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	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 a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data[2]	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@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	2022	KS	Marylebone Road Intercomparison	12	59	42	38.9%	G	**0.72**
SOCOTEC Didcot	20% TEA in water	2022	R	New Forest District Council	9	27	20	33.9%	G	**0.75**
SOCOTEC Didcot	20% TEA in water	2022	KS	Nfdc	12	37	25	46.5%	G	**0.68**
SOCOTEC Didcot	20% TEA in water	2022	R	South Oxfordshire Distric Council	12	25	18	33.8%	G	**0.75**
SOCOTEC Didcot	20% TEA in water	2022	R	South Oxfordshire District Council	12	36	32	10.0%	G	**0.91**
SOCOTEC Didcot	20% TEA in water	2022		**Overall Factor[3] (5 studies)**				**Use**		**0.76**

Discussion of Choice of Factor to Use

The national bias adjustment factor was applied to the 2022 monitoring data. A conservative approach was taken, with the national bias adjustment factor selected as it is slightly higher than the local factor.

Table J. presents the bias adjustment factors used for LAQM purposes in the borough since 2015.

Table J. Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	National	03/23	0.76
2021	Local	-	0.76
2020	Local	-	0.80
2019	Local	-	0.79
2018	Local	-	0.84
2017	Local	-	0.72
2016	Local	-	0.81
2015	Local	-	0.76

A.3 Adjustments to the Ratified Monitoring Data

Short-term to Long-term Data Adjustment

Where data capture is less than 75% and greater than 25% of a full calendar year (between 3 and 9 months), the mean should be “annualised” – i.e., adjusted using the methodology outlined in LLAQM.TG(19) before being compared to annual mean objectives.

There was one diffusion tube location which required annualisation, EA53. Of the continuous monitoring data, EI3 Acton Vale required annualisation for NO_2 and PM_{10}, while EA6 Hanger Lane Gyratory, EA8 Horn Lane and EI1 Western Avenue required annualisation of the PM_{10} data.

The continuous monitoring data chosen for annualisation of diffusion tube NO_2 data were Kensington and Chelsea North Kensington, Harrow Stanmore and Hillingdon Keats Way. The continuous monitoring data chosen for annualisation of continuous NO_2 data were Wandsworth Town Hall, Lambeth Streatham Green and Camden Bloomsbury. The continuous monitoring data chosen for annualisation of PM_{10} data were Lambeth Streatham Green and Camden Bloomsbury.

Table K. outlines the calculations for the annualisation factor applied to the NO_2 monitoring data, and Table L. outlines the calculations for the annualisation factor applied to the PM_{10} monitoring data.

Distance Adjustment

If an exceedance is measured at a monitoring site which is not representative of public exposure, use the procedure specified in LLAQM.TG(19) to estimate the concentration at the nearest receptor and describe the process followed here. Distance correction was not required at any location in 2022.

Table K. Short-Term to Long-Term Monitoring Data Adjustment – Diffusion Tube Data

Site ID	**Annualisation Factor** North Ken	**Annualisation Factor** Stanmore	**Annualisation Factor** Keats Way	**Annualisation Factor** Site 4 Name	**Average Annualisation Factor**	**Raw Data Annual Mean (µg m^{-3})**	**Annualised Annual Mean (µg m^{-3})**	**Comments**
EA53	0.7242	0.7103	0.7869		0.7405	66.1	48.9	

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

Site ID	**Annualisation Factor** Streatham Green	**Annualisation Factor** Bloomsbury	**Annualisation Factor** Wandsworth Town Hall	**Annualisation Factor** Site 4 Name	**Average Annualisation Factor**	**Raw Data Annual Mean (µg m^{-3})**	**Annualised Annual Mean (µg m^{-3})**	**Comments**
EI3 (NO_2)	0.9415	0.9247	0.9866		0.9509	21.7	20.6	
EA6 (PM_{10})	0.9889	0.9748			0.9818	18.5	18.1	
EA8 (PM_{10})	0.9273	0.7320			0.8297	32.9	27.3	
EI3 (PM_{10})	0.9218	0.7436			0.8327	20.6	17.2	
EI1 (PM_{10})	0.9854	0.9781			0.9818	25.5	25.0	

Appendix B Full Monthly Diffusion Tube Results for 2022

Table M. NO_2 Diffusion Tube Results

Site ID	Valid data capture for monitoring period %[a]	Valid data capture 2022 %[b]	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual mean – raw data	Annual mean – bias adjusted
EA1	100.0	100.0	55.7	48.4	50.9	38.3	39.7	37.4	40.1	43.9	37.3	39.5	46.8	50.2	44.0	33.5
EA2	92.5	92.5		41.6	51.1	36.9	32.6	30.7	35.9	36.2	38.4	19.7	40.5	47.8	37.4	28.4
EA3	92.6	92.6	28.7	19.3	20.1	16.1	13.4	13	13.9		14.5	45.8	20	24.7	20.9	15.9
EA4	100.0	100.0	49.6	34.5	42.4	36	26.2	26	24.3	28.3	28.4		34.3	36.7	33.3	25.3
EA5	73.0	73.0	41.1	32.6	35	32.2		28	26.1	29.3	36.7	49.2			34.5	26.2
EA6	100.0	100.0	54	45.2	62.4	44.9	38.4	38.7	43.8	45.7	43.3	61.6	42.7	44.5	47.1	35.8
EA7	92.5	92.5		28.3	33.6	26.1	21.9	20.2	21.8	24.9	27	29	30	29	26.5	20.2
EA8	92.3	92.3	47.2		50.6	40.5	36.8	35	35.6	49	43.2	38.9	43.1	47.4	42.5	32.3
EA9	100.0	100.0	44.2	30.3	33.1	30.4	21.2	23.8	24.9	30.5	27.7	32.4	31.1	39.5	30.8	23.4
EA10	91.9	91.9	48.5	35.9	36.7	29.8	26.9	25.9	32	38.4	40.5	43		35.8	35.8	27.2
EA11	92.3	92.3	39.8	25.9		27	19.3	17.4	21.6	24	23.4	24.6	24.3	31.5	25.3	19.3
EA12	100.0	100.0	33.7	27.7	39	29.2	23.6	23.8	21.8	32.5	28.9	34.5	33.5	34.6	30.2	23.0
EA13	100.0	100.0	54.5	49.7	56.7	43.6	40.6	45.4	43	46.6	41.5	53	48.9	48	47.6	36.2
EA14	100.0	100.0	57.3	48.2	40.9	37.6	38.8	30.3	40.9	35	44.6	50.1	41.5	47.6	42.7	32.5
EA15	100.0	100.0	48	33.8	38.6	34.2	22.8	23.2	27	32.1	30.3	36.1	31.3	39.9	33.1	25.2
EA16	100.0	100.0	47.1	38.6	34.7	33.1	31.5	29.7	33.8	31.2	31	34.1	35.1	41.1	35.1	26.7
EA17	100.0	100.0	44	32.4	35.3	26.2	22.9	24.9	25.2	26	29.9	36.3	36	25	30.3	23.1
EA18	100.0	100.0	43.3	33.7	37.1	29.4	26.5	25	24.7	29	31	35.8	31.8	34.4	31.8	24.2
EA19	100.0	100.0	48.6	36.8	36.6	30	26.3	27.8	26.3	27.2	30.9	32.7	36.4	37.9	33.1	25.2
EA20	92.3	92.3	44.8	40.1	38.5	30.3	34.1	30.2		33.7	35.2	41	37.2	37.2	36.6	27.8
EA21	92.3	92.3	37.9		39.7	19	19.4	23.5	21.7	28.9	29.6	25.8	24.8	29.2	27.2	20.7
EA22	92.6	92.6	45.5	27.9	31.5	26.2	24.7	23	23.6		25.5	31.3	32.9	31.3	29.4	22.3
EA23	92.0	92.0	68.9	44.9	41.9	38.5	33.3		32.7	40.2	48.8	51.8	48.7	44.5	44.9	34.1
EA24	100.0	100.0	47.8	27.8	53.8	33.3	27.2	24.5	27.1	34.7	39.5	43.6	41.2	35.2	36.3	27.6
EA25	92.3	92.3	53	38.6	44	41.2	38	33.6		38.8	41.1	49.2	41	42	41.9	31.8
EA26	100.0	100.0	75.7	59.9	58.8	54.4	50.6	52.1	54.3	50.7	58.1	59	62.9	51.7	57.4	**43.6**
EA27	100.0	100.0	46.2	31.3	35.4	25.2	17.4	18.7	19.5	20.2	23.8	37.5	29.7	33.9	28.2	21.5
EA28	100.0	100.0	66.3	50.1	54	42.3	44	40.8	42.3	41.9	54.9	61.8	42.5	49.6	49.2	37.4

Site ID	Valid data capture for monitoring period %[a]	Valid data capture 2022 %[b]	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual mean – raw data	Annual mean – bias adjusted
EA29	100.0	100.0	41.8	35.5	41	29.8	23.6	25.6	25.5	29.2	30.9	40.5	36.3	41.3	33.4	25.4
EA30	100.0	100.0	79.7	65.1	62.9	54.4	64.6	69.2	58.3	55.8	73	80.6	71.6	85.2	-	-
EA31	92.3	92.3	80.6	71.4	62.4	61.8	61.9	65.5	68.7	57.7	71.5	79.7	70.9	71.8	-	-
EA32	83.9	83.9	82.7	74.8	65	52.3	64.9	72.6	60.3	53.9	67.1	88.1	68.3	67.5	68.4	**52.0**
EA33	100.0	100.0	67.2	38.7	52.1	50.7	40.7	39.6	41.9	47.9		52.8	39.8	48.7	47.3	35.9
EA34	100.0	100.0	42.6	32.3	40	35.4	24.7		37.4	46.7	40.3	41.4		47.7	38.9	29.5
EA35	100.0	100.0	56.7	36.7	58.5	46.8	33.8	33.2	38	51.3	41.3	64.8	44.6	47.5	46.1	35.0
EA36	82.4	82.4	63.9	48.9	52.2	32.6	37.4	30.8	39.1	40.5	46.7	55.1	52.2	48.7	-	-
EA37	92.0	92.0	67.3	49.4	51.6	38.2	37.6	36.8	39.3	42	43.4	68.3	40.2	44.4	-	-
EA38	100.0	100.0	60.9	49.5	53	37.5	38.5	37.7	39.3	43.7	50.8	72.4	38.6	44.3	46.5	35.3
EA39	91.9	91.9	48.3	33.9	41.8	33.2	29.1	29.7	33.5	33	35.3	38.2	34.9	37.2	35.7	27.1
EA40	100.0	100.0	48.2	32.7	35.7	24.6			26.8	26	31.3	37.1	33.3	34.2	33.0	25.1
EA41	100.0	100.0	50.2	34.2	35.9	28.5	25.3		23.2	24.5	32	15.1	33.6	33.8	30.6	23.2
EA42	83.0	83.0	54.7	44	50.7	40	34.6	38	35.3	45.8	42.4	47	41.6	41.4	43.0	32.6
EA43	91.9	91.9	45	31.7	45.4	27.9	24.5	27.1	25.5	30.6	35	36.3		38.4	33.4	25.4
EA44	100.0	100.0	41	28.7	35.2	24.9	19.8	21.1	23.4	25.9	26.8	34.4	30.6	33.4	28.8	21.9
EA45	100.0	100.0	50.3	34.8	48.9	39.7	26.7	28	29.2	39.3	39.6	49	44.2	38.6	39.0	29.7
EA46	100.0	100.0	71.5	53.3	77	70.4	53.5	56.7		70.7	45	62.4	44.7		60.5	**46.0**
EA47	100.0	100.0	53.5	39.4	42.5	31.9	30.7	29.3	31.2	36	35.5	59		30.3	38.1	29.0
EA48	100.0	100.0	57.8	40.6	53.1	43.5	40.1	39.8	39.1	45.3	70.5	51	107	39.1	52.2	39.7
EA49	24.8	24.8	50.5	32.3	40.8	31	23.2	22.9	23.4	33.1	33.2	33.2	31.7	31.8	32.3	24.5
EA50	92.3	92.3	40.1	29.5	39.1	31.2	24.8	23.6	24.8	30.9	30.6	34	30.5	35.1	31.2	23.7
EA51	100.0	100.0	73	53.8	61.2	54.9	37.6	45.8	47.2	54.9	47.3	59.4	47.5	47.4	52.5	39.9
EA52	100.0	100.0	42.7	26.7	37.4	30.5	19.9	17.7	24.1	28.8	28.7	30.7	36.7	32.7	29.7	22.6
EA53	100.0	100.0	55.7		65.6							77			66.1	37.2
EA54	100.0	100.0	48.6		42.2	34.1	27.5	29.6	27	33.7	39.1	51.3	37.5	41.7	37.5	28.5
EA55	84.2	84.2	45.5	32.2	43.6	32.3	27.5	24.2	27.8	38	36.8	41.8	35.6	37.5	35.2	26.8
EA56	74.9	74.9	51.5		47.8	37.6	36.9	26.9	29.6		36.6		48.3	44.3	-	-
EA57	100.0	100.0	53.7	43.1	46.9	34.4	34.9	29.1	31.1	37.7	37.9	43.4	49.1		-	-
EA58	84.8	84.8	52.5	42.6	37.6	37.7	33.1	29.7	28	35	36.8	45	53.6	36.2	39.8	30.2
EA59	92.5	92.5	44.1	36.4	44.3	34.1	29.4	25.4	27.7	29.6	31.9	34.9	34.6	39.4	34.3	26.1
EA60	76.7	76.7	49.6	34.3	43.7	30	25.7	22.5	24.1	26.9	32	48.8	35.6	39.2	34.4	26.1

Site ID	Valid data capture for monitoring period %[a]	Valid data capture 2022 %[b]	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual mean – raw data	Annual mean – bias adjusted
EA61			47.1	34.7	40.4	31.3	27.2	26.2	26.6	33.4		46.5		41	35.4	26.9
EA62			35.2	26.3		21.2	17.2	17.8	18.2	22.6			34.1	35.2	25.3	19.2
EA63			51.1	36.1	40.5	26	23.4	20	25.1	25	28.8	40.1	33.2	36.1	32.1	24.4
EA64				52.2	54.7	50.4	45.1	47.6	44.5	47.1		58.7	48.1	49.5	49.8	37.8
EA65				27.3	32.8	19.5	16.8	15.9	17.7	21.1	21.8	33.7	27.1	29.3	23.9	18.2
EA66				31.6	39.2	29.4	20.8	25.1	21.8	29.6		41.3		45.5	31.6	24.0

Notes

Concentrations are presented as µg m^{-3}.

Exceedances 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**.

All means have been “annualised” in accordance with LLAQM Technical Guidance if valid data capture for the calendar year is less than 75% and greater than 25%.

(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%).