London Borough of Hounslow Air Quality Annual Status Report for 2022

Date of publication: 31st May 2023

This report provides a detailed overview of air quality in Hounslow 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
BEB	Buildings Emission Benchmark
CAB	Cleaner Air Borough
EV	Electric Vehicle
GLA	Greater London Authority
LAEI	London Atmospheric Emissions Inventory
LAQM	Local Air Quality Management
LLAQM	London Local Air Quality Management
NRMM	Non-Road Mobile Machinery
PM_{10}	Particulate matter less than 10 micron in diameter
$PM_{2.5}$	Particulate matter less than 2.5 micron in diameter
TEB	Transport Emissions Benchmark
TfL	Transport for London

Table A.   Summary of National Air Quality Standards and Objectives

Pollutant	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

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
HS4	Chiswick	521084	178499	Roadside	Hounslow	1	2	3	NO_2, PM_{10}, $PM_{2.5}$	*Chemiluminescent; TEOM; Spirant BAM*
HS5	Brentford	517425	178071	Roadside	Hounslow	1	4	3	NO_2, PM_{10}, $PM_{2.5}$	*Chemiluminescent; TEOM; Spirant BAM*
HS6	Heston	513655	176842	Roadside	Hounslow	1	3	1.5	NO_2, PM_{10}	*Chemiluminescent; TEOM*
HS7	Hatton Cross	509334	174997	Background	Hounslow	10	11.5	2	NO_2, PM_{10}	*Chemiluminescent; Met One BAM 1020*
HS9	Feltham	510691	173247	Roadside	Hounslow	1	1.5	1.5	NO_2, PM_{10}	*Chemiluminescent; TEOM*
HS8	Gunnersbury	519180	179369	Roadside	Hounslow	4	4	2	NO_2, PM_{10}	*Chemiluminescent; Met One BAM 1020*

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)
BREN A BREN B BREN C	Brentford, Great West Road	517425	178071	Roadside	Hounslow	1	4	3	NO2	Yes
CHIS A CHIS B CHIS C	Chiswick High Road	521084	178499	Roadside	Hounslow	1	2	3	NO2	Yes
FELT A FELT B FELT C	Feltham High St / Hanworth Rd Jct	510691	173247	Roadside	Hounslow	1	1.5	1.5	NO2	Yes
HAT A HAT B HAT C	Myrtle Avenue	509334	174997	Urban Background	Hounslow	10	12	2	NO2	Yes
HEST A HEST B HEST C	Heston Road	513655	176842	Roadside	Hounslow	1	3	1.5	NO2	Yes
CRAN A	Cranford Avenue Park	510373	177199	Urban Background	Hounslow	20	N/A	3	NO2	No
HS32	24 Adelaide Terrace	517551	178186	Roadside	Hounslow	1	10	3	NO2	No
HS33	30 Surrey Crescent	519452	178314	Roadside	Hounslow	3	7	2	NO2	No
HS34	Chiswick School	520876	177164	Suburban	Hounslow	3	15	2.5	NO2	No
HS35	Wood Street	521220	178069	Roadside	Hounslow	1	2	4	NO2	No
HS41	Hanworth Library	512103	172506	Roadside	Hounslow	3	5	2	NO2	No
HS42	High Street, Hounslow	514090	175812	Urban Background	Hounslow	2	14	3	NO2	No

HS43	Glenhurst Road	517436	178044	Roadside	Hounslow	1	0.5	2	NO2	No
HS46	Swyncombe Avenue	516887	178637	Roadside	Hounslow	1	1	2	NO2	No
HS47	Boston Manor Road	516712	178588	Roadside	Hounslow	1	1	2	NO2	No
HS51	Bedfont Sports Club	509249	174683	Suburban	Hounslow	3	28	2	NO2	No
HS52	Bedfont Library	508868	173720	Roadside	Hounslow	2	6	3	NO2	No
HS53	Church of the Good Shepherd	510986	176031	Suburban	Hounslow	4	25	2.5	NO2	No
HS54	Cranford Lane / Cranford High Street Jct.	510784	177460	Roadside	Hounslow	2	2	2	NO2	No
HS55	Cranford Library	510750	176684	Roadside	Hounslow	3	6	3	NO2	No
HS61	Twickenham Road	516208	175793	Roadside	Hounslow	0	18	3	NO2	No
HS62	Sutton Road	513619	176924	Roadside	Hounslow	1	1	4	NO2	No
HS63	Lampton Road	513528	175868	Roadside	Hounslow	1	1	2.5	NO2	No
HS64	Junction of Roseheath Road	512860	175013	Roadside	Hounslow	2	2	5	NO2	No
HS65	Eastbourne Road, Uxbridge Rd Jct	511840	172745	Roadside	Hounslow	2	3	2	NO2	Yes
HS66	Brainton Avenue	510957	173642	Roadside	Hounslow	1	5	2	NO2	No
HS67	Busch Corner	516590	176888	Roadside	Hounslow	0	1	2.5	NO2	No
HS68	Junction of Commerce Road	517278	177298	Roadside	Hounslow	0	2	2	NO2	No
HS69	Kew Bridge	519015	178018	Roadside	Hounslow	0	0	2	NO2	No
HS70	Eastbury Grove (Chiswick Lane)	521442	177980	Roadside	Hounslow	1	1	2.5	NO2	No
HS71	Gunnersbury Avenue	519178	179375	Roadside	Hounslow	2	9	2	NO2	No
HS72	Heston Crossroads	513064	177552	Roadside	Hounslow	1	2.5	3	NO2	No
HS73	Browells Lane, Feltham	510567	172857	Roadside	Hounslow	2	4	2	NO2	No
HS74	Swift Road, Hanworth	511989	171797	Roadside	Hounslow	2	13.5	2	NO2	No
HS78	Staines / Wellington Road	512763	175312	Roadside	Hounslow	1	3	4	NO2	No
HS79	Whitton Road	513839	175316	Roadside	Hounslow	2	1	3	NO2	No
HS80	Hounslow Bus Station	514433	175950	Roadside	Hounslow	0	3	3	NO2	No

HS81	Woodlands	515035	175907	Suburban	Hounslow	10	2	2.5	NO2	No
HS82	Church Street	516669	175998	Roadside	Hounslow	0	1	2	NO2	No
HS83	Osterley Park	514848	178068	Urban Background	Hounslow	2	N/A	1	NO2	No
HS84	Apex Corner (York Way)	512709	172155	Roadside	Hounslow	1	2	3	NO2	No
HS85	Hospital Road	513213	175655	Roadside	Hounslow	1	1	4	NO2	No
HS86	Jolly Waggoners	510947	176564	Roadside	Hounslow	2	1	4	NO2	No
HS87A	Henlys Roundabout	511542	176426	Roadside	Hounslow	2	1.5	4	NO2	No
HS88	Thames Path, Duke's Meadows	521483	176692	Urban Background	Hounslow	2	N/A	2	NO2	No
HS89	Mogden Sewage Works Gate	515424	174719	Roadside	Hounslow	3	3	2	NO2	No
HS90	The Butts	517585	177606	Suburban	Hounslow	2	3	2	NO2	No
HS91	Hogarth Ln / Dukes Av	521041	177973	Roadside	Hounslow	3	8	6	NO2	No
HS92	St Mary's School	521110	177970	Suburban	Hounslow	2	13	5	NO2	No
HS93	William Hogarth School	521110	177970	Suburban	Hounslow	2	13	5	NO2	No
HS94	Hogarth Roundabout	521490	177920	Roadside	Hounslow	2	1	2	NO2	No
HS95	Bennett Street	521253	177952	Roadside	Hounslow	2	1	2	NO3	No
HS96	Acton Lane / Chiswick High Rd	520421	178514	Roadside	Hounslow	2	1	2	NO4	No
HS97	Acton Lane	520371	178590	Roadside	Hounslow	2	1	2	NO5	No
HS98	Chiswick Park / Bollo Lane	520349	178661	Roadside	Hounslow	2	1	2	NO6	No
SC01	Burlington Lane	521173	177470	Roadside	Hounslow	3	1	2	NO2	No
SC02	Edensor Road	521168	177325	Roadside	Hounslow	2	1	2	NO2	No
SC03	Burlington Lane Chiswick School	520923	177355	Roadside	Hounslow	2	1	2	NO2	No
SC04	Staveley Road	520734	177269	Roadside	Hounslow	2	1	2	NO2	No
SC05	Burlington Lane Tennis Club	520639	177257	Roadside	Hounslow	2	1	2	NO2	No
SC06	Grove Park Bridge	520206	177372	Roadside	Hounslow	2	1	2	NO2	No
SC07	Sutton Court Road	520261	177552	Roadside	Hounslow	2	1	2	NO2	No

SC08	Grove Park Terrace	520046	177636	Roadside	Hounslow	2	1	2	NO2	No
SC09	Park Road	520771	177886	Roadside	Hounslow	2	1	2	NO2	No
SC10	Milnthorpe Road	520612	177889	Roadside	Hounslow	2	1	2	NO2	No
SC11	Ellesmere Road	520526	177933	Roadside	Hounslow	2	1	2	NO2	No
SC12	Eastbourne Road	520506	177907	Roadside	Hounslow	2	1	2	NO2	No
SC13	Sutton Court Road Elmwood Road Jct	570367	177850	Roadside	Hounslow	2	1	2	NO2	No
SC14	Harvard Hill	519960	177989	Roadside	Hounslow	2	1	2	NO2	No

1.2   Comparison of Monitoring Results with AQOs

The results presented are after adjustments for "annualisation" and for distance to a location of relevant public exposure (if required), the details of which are described in Appendix A.

Table D.   Annual Mean NO₂ 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
Brentford	Automatic	96.06	96.06	**56.9**	**54**	**48**	**43.9**	33	35.8	34
Chiswick	Automatic	94.99	94.99	**49.8**	**53**	**47**	**41.7**	32	32.9	31
Feltham	Automatic	92.01	92.01	38.4	34	27	27.7	26	27.8	25
Gunnersbury	Automatic	85.22	85.22	**59.1**	**53**	**45**	**45**	37	35.9	29
Hatton Cross	Automatic	99.68	99.68	31.6	33	28	27.3	17	18.2	20
Heston	Automatic	98.23	98.23	**42.2**	**44**	**40**	37.7	31	28.8	28
BREN	Diffusion tube	100.00	100.00	<u>64.8</u>	**58.3**	**48.3**	**44.1**	33.6	37	32.7
CHIS	Diffusion tube	100.00	100.00	**49**	**52.4**	**43.9**	**41.8**	31.9	32.2	28.9
FELT	Diffusion tube	92.14	92.14	**46**	38.6	25.8	27.8	24.6	25.4	23.4
MYR	Diffusion tube	100.00	100.00	37.7	33.9	29.9	27.2	17.5	21.4	22.4
HEST	Diffusion tube	100.00	100.00	**56.9**	**50.1**	**43.6**	38.2	29.7	30	28.4
CRAN	Diffusion tube	58.30	58.30	28.4	25	24.1	26.6	16	16.6	18.9
HS32	Diffusion tube	82.93	82.93	**59.5**	**50.2**	**43.2**	**42.5**	35.5	33	32.0
HS33	Diffusion tube	100.00	100.00	**57.8**	**54.8**	**42.5**	38.9	30.2	31.1	28.5
HS34	Diffusion tube	90.24	90.24	34.1	28.7	25.9	25.9	20	21.3	18.3
HS35	Diffusion tube	100.00	100.00	37.3	32.2	27.3	26.4	19.9	19.3	18.1
HS41	Diffusion tube	66.68	66.68	**55.7**	**51.4**	**41.8**	**40.2**	33.9	29.8	35.5
HS42	Diffusion tube	91.06	91.06	36.6	33.1	28.4	29.9	22.8	25.5	26.9

Site ID	Site type	Valid data capture for monitoring period %[a]	Valid data capture 2022 %[b]	2016	2017	2018	2019	2020	2021	2022
HS43	Diffusion tube	100.00	100.00	**43.2**	35.4	33.3	30.6	22.8	25.5	23.5
HS46	Diffusion tube	80.49	80.49	-	-	-	-	-	**-**	20.2
HS47	Diffusion tube	100.00	100.00	-	-	-	-	-	33.1	33.3
HS51	Diffusion tube	80.49	80.49	31.9	28.2	25.6	24.1	16.3	17.1	19.7
HS52	Diffusion tube	100.00	100.00	29.7	25.1	23.3	23	16.9	19.2	18.0
HS53	Diffusion tube	100.00	100.00	34	33.4	25.6	28	18.7	20.5	20.5
HS54	Diffusion tube	100.00	100.00	**46**	**40.8**	35	38.4	28.5	29.5	27.5
HS55	Diffusion tube	100.00	100.00	**50.8**	**43.7**	33.8	33.9	23.7	27.3	26.3
HS61	Diffusion tube	82.93	82.93	**40.9**	34.8	32.1	31.4	21.4	23.4	22.1
HS62	Diffusion tube	92.95	92.95	**43.7**	37.5	33.6	33.6	23	24.9	22.9
HS63	Diffusion tube	100.00	100.00	**48.4**	37.3	34.1	30.9	24.6	27.1	27.8
HS64	Diffusion tube	100.00	100.00	35.4	33.1	28.7	27.1	20.1	20.6	20.8
HS65	Diffusion tube	100.00	100.00	35.4	28.3	25.1	25.1	18.7	19.2	19.3
HS66	Diffusion tube	77.78	77.78	**46.7**	**44**	37.9	34.3	26	27.4	22.6
HS67	Diffusion tube	90.51	90.51	<u>68</u>	**59.5**	**48.5**	**50**	**40.5**	**44.1**	**44.6**
HS68	Diffusion tube	90.51	90.51	**52.3**	**43.7**	36.6	36.6	30.8	36.3	31.9
HS69	Diffusion tube	77.78	77.78	**55.5**	**47.9**	39	36	26.5	28.8	23.5
HS70	Diffusion tube	100.00	100.00	<u>65.1</u>	**59.7**	**47.2**	**44.1**	30.5	33.9	31.1
HS71	Diffusion tube	100.00	100.00	**54.2**	**48.3**	37.9	36.6	29.1	28.7	27.1
HS72	Diffusion tube	100.00	100.00	**51.8**	**48.6**	36.2	35	26.1	25.5	24.9
HS73	Diffusion tube	100.00	100.00	33.3	29.7	25.3	29.1	21.4	22.6	21.6
HS74	Diffusion tube	90.51	90.51	**41.9**	38.4	31	29.2	21.7	23.2	19.9

Site ID	Site type	Valid data capture for monitoring period %[a]	Valid data capture 2022 %[b]	2016	2017	2018	2019	2020	2021	2022
HS78	Diffusion tube	100.00	100.00	**57.8**	**47.4**	**42.7**	**40.7**	32.7	36.6	32.0
HS79	Diffusion tube	90.51	90.51	**42.4**	33.1	30.1	30.5	22	23.2	22.8
HS80	Diffusion tube	90.51	90.51	**<u>79.2</u>**	**59.6**	**58.8**	**46.4**	36.7	**45.7**	39.1
HS81	Diffusion tube	100.00	100.00	26.9	23	22	20.2	15.4	15.7	15.0
HS82	Diffusion tube	89.97	89.97	31.3	26.2	22.2	20.2	15.6	16.7	14.1
HS83	Diffusion tube	72.90	72.90	27	19.9	19.9	18.4	14	12.7	13.3
HS84	Diffusion tube	92.95	92.95	**45.4**	39.7	31.6	33.4	24.6	27.3	24.6
HS85	Diffusion tube	100.00	100.00	**50.5**	**47.6**	38	37.5	30.4	31.5	28.3
HS86	Diffusion tube	100.00	100.00	**54.9**	**53.4**	**41.4**	**43.5**	30.1	31.7	29.7
HS87A	Diffusion tube	85.09	85.09	**<u>66.2</u>**	**<u>65.7</u>**	**44.8**	**47.3**	31.5	33.5	31.1
HS88	Diffusion tube	100.00	100.00	26.9	23.3	20.7	22	16.1	15.6	14.9
HS89	Diffusion tube	100.00	100.00	**42.1**	32.1	28.9	27.4	22.5	21.9	19.7
HS90	Diffusion tube	100.00	100.00	33.8	26.5	25.3	24.7	20.4	20.6	19.3
HS91	Diffusion tube	80.49	80.49	-	**<u>62</u>**	**49.1**	**43.7**	30.5	32.7	30.7
HS92	Diffusion tube	80.22	80.22	-	-	-	34.8	26.1	26.3	23.1
HS93	Diffusion tube	89.97	89.97	-	-	**56.3**	36.2	25.5	25.2	21.8
HS94	Diffusion tube	92.95	92.95	-	-	-	-	-	36.2	35.2
HS95	Diffusion tube	87.50	58.3	-	-	-	-	-	-	29.1
HS96	Diffusion tube	100.00	31.98	-	-	-	-	-	-	37.3
HS97	Diffusion tube	100.00	31.98	-	-	-	-	-	-	33.1
HS98	Diffusion tube	100.00	31.98	-	-	-	-	-	-	32.0
SC01	Diffusion tube	100.00	100.00	-	-	-	-	-	30	28.1

Site ID	Site type	Valid data capture for monitoring period %[a]	Valid data capture 2022 %[b]	2016	2017	2018	2019	2020	2021	2022
SC02	Diffusion tube	82.93	82.93	-	-	-	-	-	19.2	21.5
SC03	Diffusion tube	90.79	90.79	-	-	-	-	-	15.7	15.7
SC04	Diffusion tube	90.24	90.24	-	-	-	-	-	19.1	19.1
SC05	Diffusion tube	90.24	90.24	-	-	-	-	-	20.4	20.6
SC06	Diffusion tube	92.41	92.41	-	-	-	-	-	22.5	22.6
SC07	Diffusion tube	92.14	92.14	-	-	-	-	-	23.7	25.1
SC08	Diffusion tube	92.95	92.95	-	-	-	-	-	16	16.3
SC09	Diffusion tube	90.51	90.51	-	-	-	-	-	21.6	18.3
SC10	Diffusion tube	90.51	90.51	-	-	-	-	-	16.8	18.1
SC11	Diffusion tube	100.00	100.00	-	-	-	-	-	29.7	**45.0**
SC12	Diffusion tube	85.37	85.37	-	-	-	-	-	18.7	19.3
SC13	Diffusion tube	92.14	92.14	-	-	-	-	-	23.9	23.2
SC14	Diffusion tube	100.00	100.00	-	-	-	-	-	19.3	21.2

Notes:

The annual mean concentrations are presented as $\mu g\ m^{-3}$.

Exceedances of the NO_2 annual mean AQO of 40 $\mu g\ m^{-3}$ are shown in **bold**.

NO_2 annual means in excess of 60 $\mu g\ m^{-3}$, 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%).

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
Brentford	96.06	96.06	7	12	0	0	0	0	0
Chiswick	94.99	94.99	6	12	0	0	0	0	0
Feltham	92.01	92.01	0	0	0	0	0	0	0
Gunnersbury	85.22	85.22	**39**	**46**	0	0	0	0	0
Hatton Cross	99.68	99.68	0	0	0	0	0	0	0
Heston	98.23	98.23	1	6	0	0	0	0	0

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%)

Graph 1. Seven Year Trend in Annual Mean NO₂ Concentration, 2016-2022

Seven Year Trend in Annual Mean NO$_2$ Concentration, 2016-2022
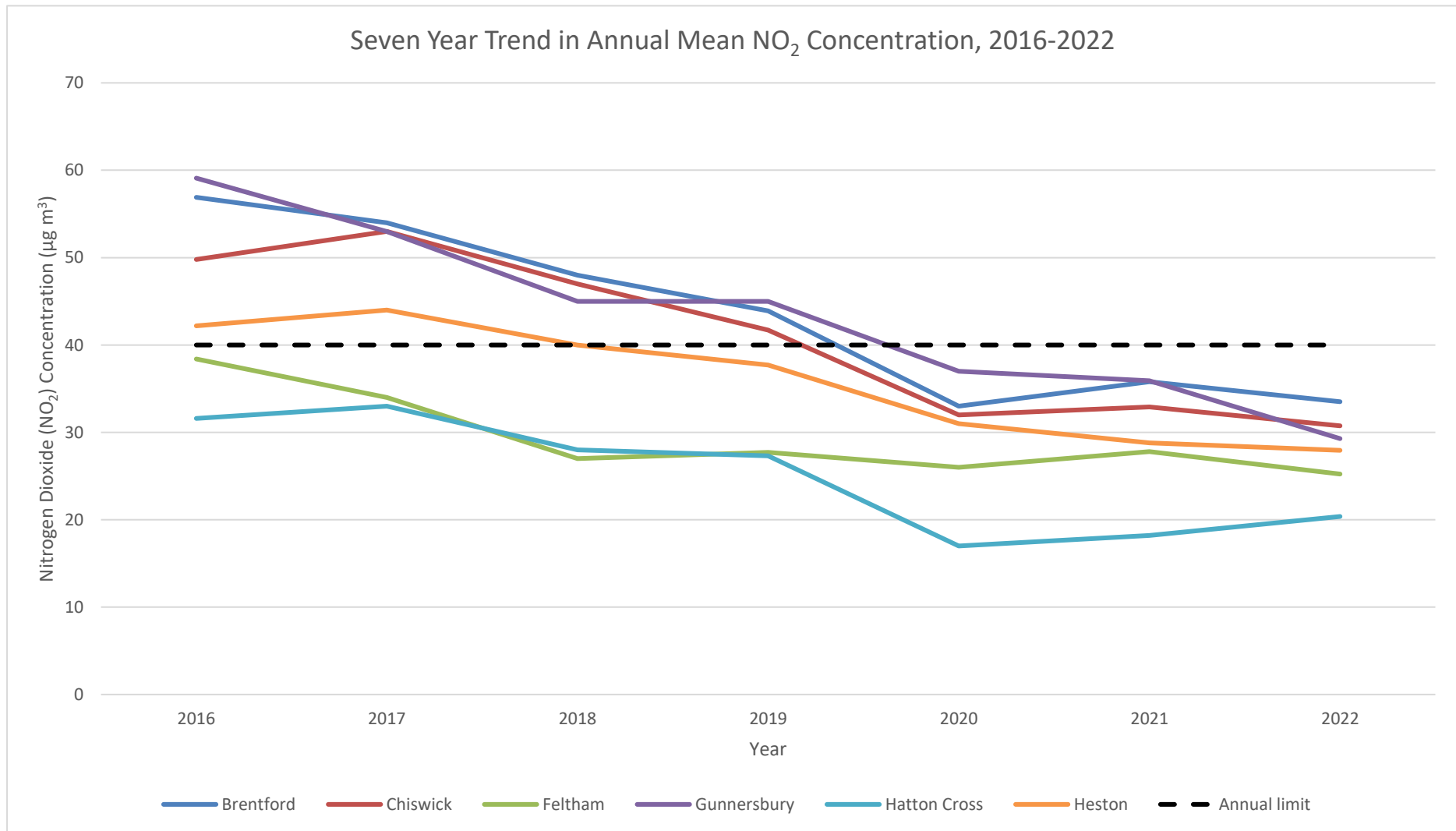
Nitrogen Dioxide:

Annual mean NO_2 levels decreased at five of Hounslow's six automatic monitoring stations from the levels recorded in 2021. This continued a borough-wide trend of declining NO_2 concentrations over the past five years. For the third consecutive year, all automatic monitoring sites registered an annual mean value of less than the UK limit of 40 micrograms (µg).

Diffusion tubes:

Three diffusion tube sites recorded an annual mean concentration higher than the 40 µg limit, with the highest value, 45.4 µg m-3, slightly lower than the highest annual concentration recorded in 2021. This is an increase from just two measured exceedances in 2021. Of 64 diffusion tube sites monitored in both 2021 and 2022, 43 (68%) recorded a decrease in 2022 compared to 2021 levels. The average change was a reduction of 1.2%, with the largest decrease (14%) at Heston automatic monitoring station, and the largest increase (15.4%) at site SC11 Ellesmere Road.

Four new permanent diffusion tube monitoring stations were established in 2022, and data from these sites has been annualised in in accordance with LLAQM Technical Guidance. These new tube locations were identified in response to discussions with officers and Councillors in the borough who were concerned about pollution levels in the Chiswick area.

Exceedances:

For the fifth consecutive year, no automatic monitoring sites in Hounslow recorded any exceedances of the 1-hour mean limit of 200 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 2022 %([b])	2016	2017	2018	2019	2020	2021	2022
Brentford	97.49	97.49	30	28	26	22	25	21	23
Chiswick	91.10	91.10	22	20	20	20	21	16	19
Feltham	96.34	96.34	19	19	20	20	21	16	18
Gunnersbury	94.19	94.19	27	27	22	20	22	21	22
Hatton Cross	90.86	90.86	19	18	21	20	18	19	23
Heston	86.13	86.13	25	23	22	24	23	17	21

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
Brentford	97.49	97.49	28	24	4	8	9	3	5
Chiswick	91.10	91.10	9	6	1	3	3	0	3
Feltham	96.34	96.34	7	4	4	7	2	0	3
Gunnersbury	94.19	94.19	15	15	1	5	2	2	5
Hatton Cross	90.86	90.86	6	3	2	7	4	2	2
Heston	86.13	86.13	17 (42)	9	2	5	4	0	5

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%).

Graph 2. Seven Year Trend in Annual Mean PM$_{10}$ Concentration, 2016-2022

Seven Year Trend in Annual Mean PM10 Concentration, 2016-2022

Legend: Brentford, Chiswick, Feltham, Gunnersbury, Hatton Cross, Heston, Annual Limit
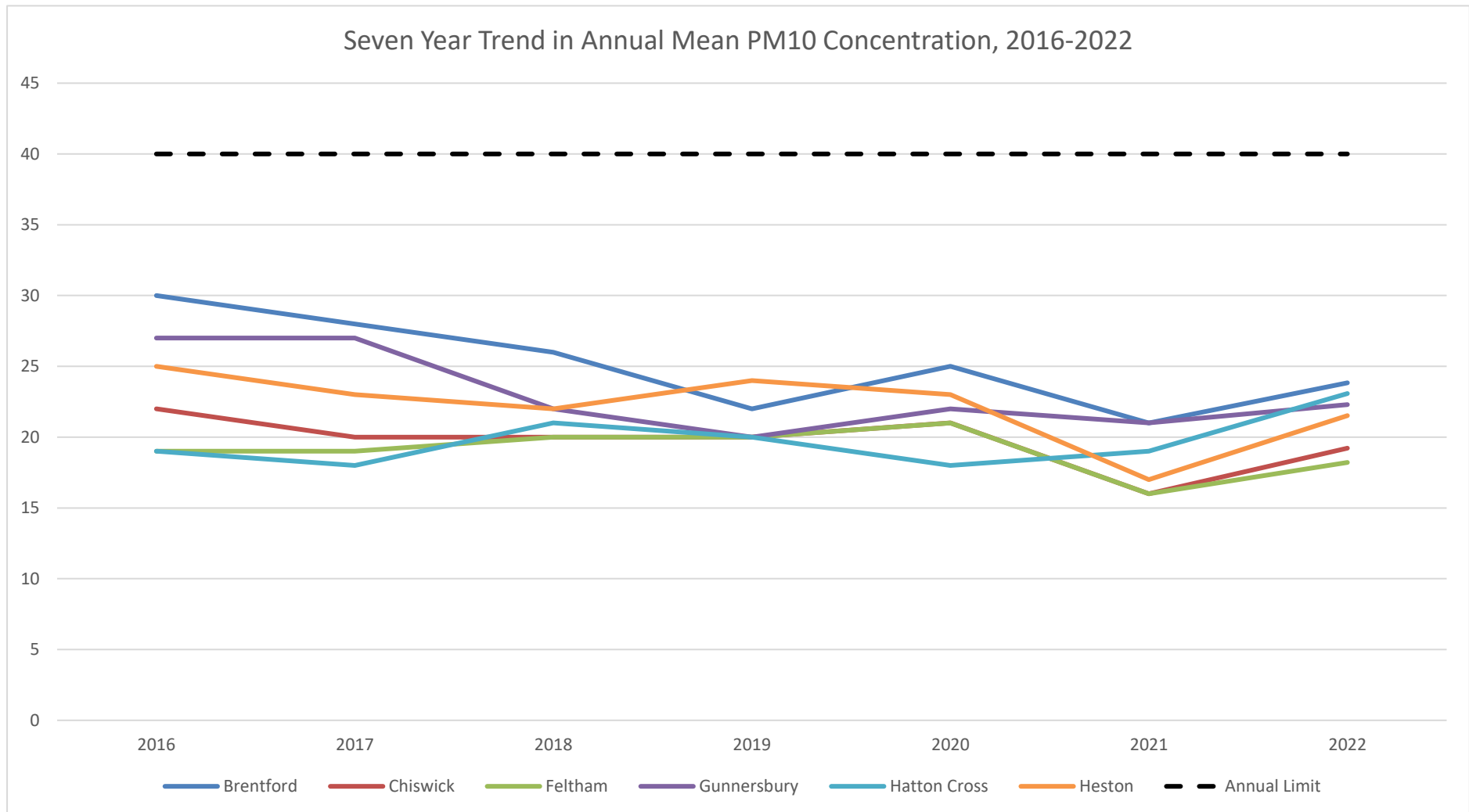
Particulate Matter:

All six of Hounslow's automatic monitoring stations recorded an increased in particulate matter (PM_{10}) from 2021 to 2022. The average increase was 15%.

Exceedances:

There were 23 exceedances of the 24-hour mean PM_{10} limit of 50 μg m^{-3}. This is an increase of 16 over 2021, just one exceedance lower than in 2020. While below the maximum permitted number of exceedance days at any site, this is still an unwelcome change. Hatton Cross was the only site which did not record any additional exceedances over the year, remaining at two.

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

Site ID	Valid data capture for monitoring period %[a]	Valid data capture 2022 %[b]	2016	2017	2018	2019	2020	2021	2022
Brentford	84.81	84.81	-	15	15	13	12	10	10
Chiswick	84.19	84.19	-	14	14	13	10	10	12

Notes

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

Exceedances of the PM$_{2.5}$ annual mean AQO of 20 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%).

Particulate Matter (PM$_{2.5}$):

PM$_{2.5}$ has been monitored at two roadside sites in Hounslow since 2017. Annual mean concentrations at these locations have reduced in the intervening years, from 14-15 µg m^{-3} in 2017 to 10-12 µg m^{-3} in 2022. This is well below the existing UK annual limit value of 25 µg m^{-3}.

Despite this trend towards a reduction in PM$_{2.5}$ levels, particulate matter levels at Chiswick increased slightly in 2022, while levels in Brentford remained static.

Graph 3. Seven Year Trend in Annual Mean PM$_{2.5}$ Concentration, 2016-2022

Seven Year Trend in Annual Mean PM2.5 Concentration, 2016-2022
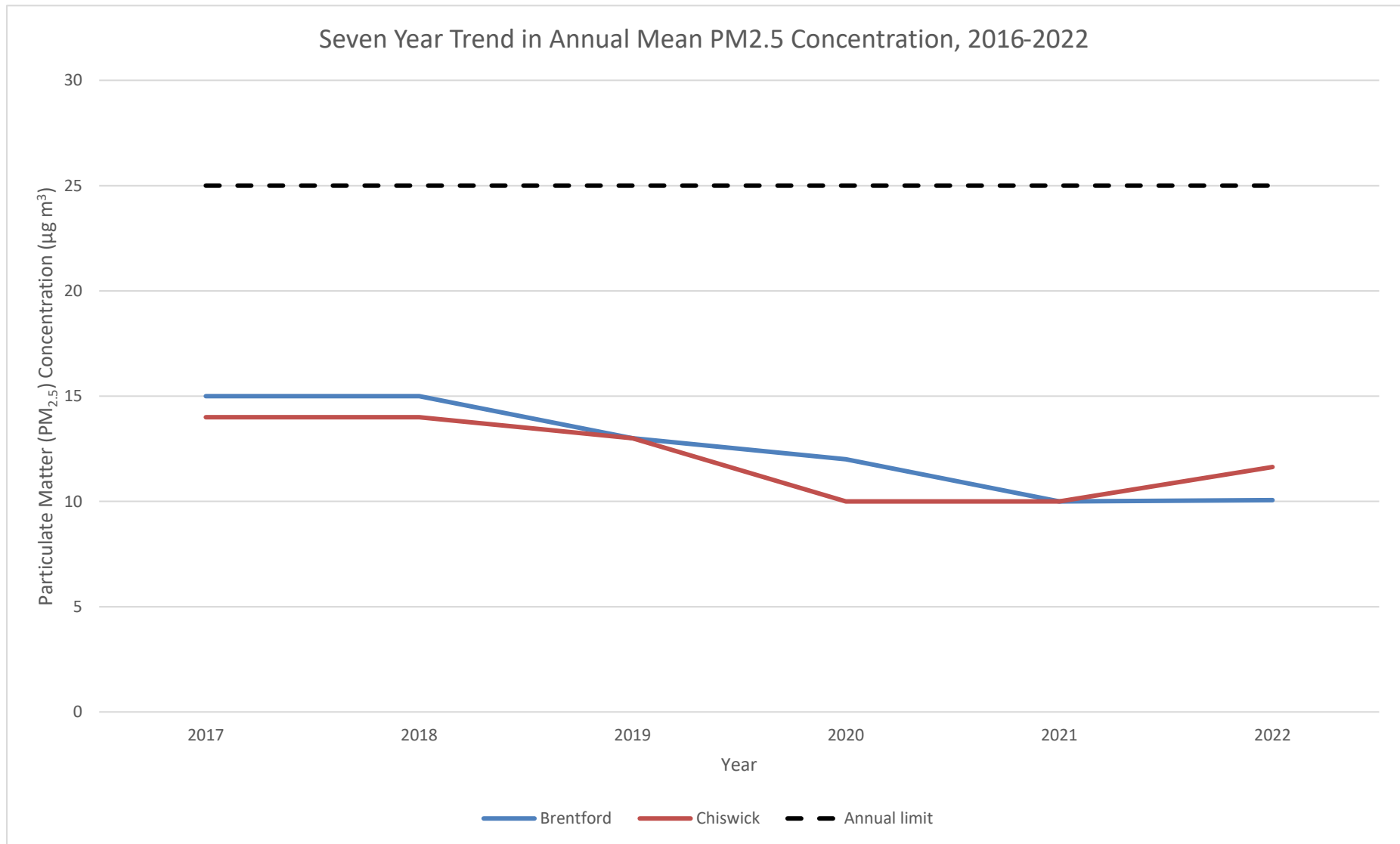
2. Action to Improve Air Quality

2.1 Air Quality Action Plan Progress

Table I provides a brief summary of Hounslow's progress against the Air Quality Action Plan, showing progress made this year.

New projects which commenced in 2022 are shown at the bottom of the table.

The London Borough of Hounslow is due to publish an updated Air Quality Action Plan in autumn 2023 for the period 2023-2028.

Table I.   Delivery of Air Quality Action Plan Measures

Measure	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
1	Emissions from developments and buildings	The council will ensure developers submit Construction Environment Management Plans (CEMPs) and that they incorporate adequate, effective and enforceable measures (with triggers) to protect inhabitants, their amenity and sensitivity of the surrounding area. The council will ensure that all major developments submit a CEMP.	All major planning applications in Hounlsow are required to submit a Construction Environmental Management Plan (CEMP) which details how developments will mitigate air pollution including dust. Officers continue to work to ensure that these CEMPs are as as effective as possible at delivering clean air in Hounslow.
1.1	Emissions from developments and buildings	The council will develop and implement enhanced planning conditions for new developments in respect to Air Quality Neutrality - ensuring discharge of any such conditions is carried out subject to submission of relevant post completion test reports based on evidence.	Hounslow Council, with partners in the West London Air Quality Cluster Group and London Councils, have responded to the GLA's consultations on AQ Neutral and AQ Positive and will be incorporating this into borough planning policy going forward. We have proposed the publication of Technical Guidance on air quality for developers in Hounslow to ensure that all new applications meet these requirements.

Measure	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
4	Emissions from developments and buildings	The council will ensure that all relevant developments will meet air quality neutral standards, to be measured by recording all relevant planning applications and whether the AQ neutral standard has been met.	
2	Emissions from developments and buildings	The council will ensure appropriate enforcement of Non-Road Mobile Machinery (NRMM) air quality policies.	Hounslow is part of the Cleaner Construction for London NRMM monitoring scheme run by Merton.
8	Public health and awareness raising	The council will ensure that the Director of Public Health (DPH) is fully briefed on current Air Quality issues.	The Environmental Strategy team work closely with Public Health colleagues throughout the year on a number of projects, and the Director of Public Health is briefed on the contents of the ASR annually. The Directors of Public Health, Transport and Environment will sign off on the upcoming 2023 AQAP.
12	Public health and awareness raising	The council will ensure that the Director of Public Health to sign off Statutory Annual Status Reports and all new Air Quality Action Plans	
13	Public health and awareness raising	The council will ensure that the Head of Transport has been fully briefed on the Public Health duties and the fact that all directors are responsible for delivering them, as well as on air quality opportunities and risks related to transport in the borough.	
17	Public health and awareness raising	The council will work with schools to implement proposals contained in GLA/TfL air quality audit reports for schools in poor air quality areas. Key recommendations implemented at audited schools by April 2020	Hounslow are continuing to work closely with schools in an effort to deliver air quality audits to as many schools in the borough as possible, using funding through the *Clean Air for Schools* programme which enables investment in schemes designed to mitigate

Measure	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
			pollution at schools, protecting the lungs of some of the borough's youngest and most vulnerable.
21	Delivery servicing and freight	The Council will consider best practice from schemes to incentivise low emission freight delivery options implemented elsewhere. This will be progressed via a liveable neighbourhoods bid to TfL in 2019/20.	In partnership with Peddle My Wheels, Hounslow Council is running a rental scheme to provide businesses with access to an e-cargo bike to help with low emission and local deliveries. Consultation is also ongoing to understand other business functions which an e-cargo bike could assist with. A separate offer is also available to residents and schools to give them the opportunity to try out an e-cargo bike for the school run, shopping, etc.
22.1	Borough fleet actions	The council's Vehicle Fleet Mgm't team will complete a feasibility study on measuring real-world emissions that sets a baseline against which to base future emission reductions. Feasibility complete end 2019. Implementation from 2020 onwards	Hounslow continues to seek to procure and run new, cleaner zero-emission and alternative vehicles as part of its fleet, to ensure ULEZ compliance. A trial of HVO fuel has been successfully delivered. The council's partners are also taking significant steps to reduce pollution from their vehicles, including Hounslow Highways who are leaders in the use of electric vehicles and plant in the borough. A study is ongoing into the development of a brand new depot for Hounslow's fleet to facilitate the faster uptake of zero emission vehicles and this will be progressed through the upcoming 2023-2028 AQAP.
23	Borough fleet actions	The council will look to increase the number of hydrogen, electric, hybrid, bio-methane and cleaner vehicles in the boroughs' fleet. The council will explore	

Measure	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
		opportunities to introduce EVs and make future vehicle fleet as clean as possible in future, however noting that the in-house fleet is now quite small. Action to procure 4x electric vehicles (EV) for use by Pest Control & Animal Wardens. Future report to AQAP Steering Group Q1 20/21.	
34	Cleaner transport	The Council will continue to support installation of residential electric charge points to cater for EV charging solution for those without off-street parking. The council aims to double the number of public EV charging points by end 2020 (from 27 to 54) and double the number of lamp column charging (from 47 to 100) by end 2020.	Hounslow Council have published our first EV Charging Strategy which details the intention to install over 2000 new charge points by March 2026. 220 new residential charge points have been installed since 2021 to date. There are also 79 public charge points across the borough.
35	Cleaner transport	The council will help facilitate the installation of 10 rapid chargers in the borough to help enable the take up of electric taxis etc.	There are 12 rapid charge points in Hounslow. The council are proposing to increase this to 50 by March 2026.
37	Cleaner transport	As part of the new LIP, the Council will continue to improve provision of its infrastructure to support walking & cycling. Emerging proposals would be consulted upon in Oct. 2018, including: (1) Provision of legible wayfinding at all town centres by 2020; (2) Improved accessibility for pedestrians (junction entry treatment, dropped curbs, tactile paving etc.), particularly for those with mobility impairments, through our 'better streets' programme; (3) Pedestrian countdown at all town centre located controlled crossings by 2020 (subject to relevant controller	Cycleway 9 has been largely completed along Chiswick High Road and at Kew Bridge, delivering safe segregated cycling in one of Hounslow's most popular shopping areas. Work continues to extend C9 West towards Brentford. The next phase of work is from Kew Bridge to Waterman's Park. The traffic scheme on Stavely Road in the South Chiswick area, designed to enable walking and cycling, particularly around Chiswick School while incorporating a school street has been approved for a permanent

Measure	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
		upgrades being progressed by TfL); (4) Improvements to cycling facilities, Priority projects include, (i) Partnership working with TfL to deliver a substantially segregated facility between Chiswick, Brentford and Hounslow Town Centre (CS9) in place by 2022; (ii) Substantially segregated cycle facility between Hounslow and Feltham town centre via Staines, expected to be in place by 2022/23; (iii) Completion of west area greenways network, including appropriate wayfinding to promote the network, by 2019/20; (iv) Completion of a quietway between Brentford & Twickenham, via Church St, by 2020/21; (v) Further specifications for priority cycle routes linking borough town centres with neighbouring metropolitan town centres and Heathrow, by 2020/21; (vi) Continue roll out of 20MPH limit on residential roads and other busy roads with high footfall, by 2020 (see action 28 also); AQAP would be reviewed & updated to reflect approved LIP.	traffic management order which amalgamates the existing Staveley Road and Hartington Road access restrictions.

3. Planning Update and Other New Sources of Emissions

Table J.   Planning requirements met by planning applications in Hounslow in 2022

Condition	Number
Number of planning applications where an air quality impact assessment was reviewed for air quality impacts	58
Number of planning applications required to monitor for construction dust	12
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	Unknown
Number of developments required to install Ultra-Low NO_x boilers	Unknown
Number of developments where an AQ Neutral building and/or transport assessments undertaken	15
Number of developments where the 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	Unknown
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. 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.	N/A
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.	Total 20 audits undertaken by Cleaner Construction for London 0 achieved self-compliance 13 achieved compliance 4 sites recorded non-compliant 2 had no NRMM 1 site was complete

All major planning applications with issues of air quality or noise, including environmental statements and CEMPs, are reviewed on Hounslow's behalf by an external consultant, Tetra Tech Ltd.

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 Hounslow Fleet

The London Borough of Hounslow fleet included one owned and one hired zero-emission vehicle, representing 0.6% of the total fleet of 340 vehicles.

4.2 NRMM Enforcement Project

Hounslow continues to support the NRMM Enforcement Project. Details in Table K.

4.2 Air Quality Alerts

Hounslow is a member of the CERC airTEXT service (https://www.airtext.info/).

Appendix A   Details of Monitoring Site Quality QA/QC

A.1   Automatic Monitoring Sites

- Routine calibrations carried out monthly by LSO from Hounslow Council
- Biannual audits completed by Ricardo
- Ad hoc servicing provided by ESU We Care 4 Air

PM_{10} Monitoring Adjustment

N/A

A.2   Diffusion Tubes

- Gradko International supplied and analysed the diffusion tubes used by the London Borough of Hounslow in 2022
- The preparation method used was 50% TEA in acetone
- Gradko is a UKAS accredited laboratory (2187) with ISO 17025
- Laboratory precision results:
  - Precision: Good (https://laqm.defra.gov.uk/air-quality/air-quality-assessment/precision-and-accuracy/)
  - AIR-PT: 100% (https://laqm.defra.gov.uk/air-quality/air-quality-assessment/qa-qc-framework/)
- National bias adjustment factor from database v03/23: 0.82
- Local bias adjustment factor from five co-location studies: 0.85
- As in previous years, the bias adjustment factor being used in the analysis of 2022 diffusion tube data is the local BAF of 0.85

Information on QA/QC for diffusion tubes can be found on the LAQM website at https://laqm.defra.gov.uk/annual-reporting/.

Factor from Local Co-location Studies

	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	11	11	8	12	12
Bias Adjustment Factor A	0.87 (0.83 - 0.92)	0.9 (0.79 - 1.04)	0.87 (0.78 - 0.98)	0.77 (0.72 - 0.83)	0.82 (0.78 - 0.87)
Diffusion Tube Bias B	14% (9% - 20%)	11% (-4% - 27%)	15% (2% - 29%)	30% (21% - 40%)	21% (15% - 28%)
Diffusion Tube Mean ($\mu g/m^3$)	38.8	34.5	29.4	27.0	33.9
Mean CV (Precision)	4.6%	5.1%	7.2%	6.9%	4.9%
Automatic Mean ($\mu g/m^3$)	33.9	31.1	25.5	20.7	28.0
Data Capture	98%	97%	100%	100%	98%
Adjusted Tube Mean ($\mu g/m^3$)	34 (32 - 36)	31 (27 - 36)	26 (23 - 29)	21 (19 - 22)	28 (26 - 30)

	STEP 3a	STEP 3b	STEP 3c	STEP 3d	STEP 3e
Overall Diffusion Tube Precision	Good Overall Precision	Good Overall 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	Good Overall Data Capture	Good Overall Data Capture

Discussion of Choice of Factor to Use

Per section 7.193 of LAQM TG.16:

"If there is more than one local collocation study, then the A factors should not be averaged. Instead, a reasonable approximation can be derived by averaging the B values. For example, if there were 2 studies of 22% and 28%, then the average would be 25%. This is then expressed as a factor, e.g. 25% is 0.25. Next add 1 to this value, e.g. 0.25 + 1.00 = 1.25. Finally, take the inverse to give the bias adjustment factor, e.g. 1/1.25 = 0.80."

The local bias adjustment factor was calculated at five co-location studies at automatic monitoring stations across Hounslow. The BAF was calculated using the LAQM Diffusion Tube Data Processing Tool. The average bias adjustment factor of these five studies (from B factor) was 0.85. Details of each co-location study are listed above. The local bias adjustment factor of 0.85 was applied to all single diffusion tube sites, as is consistent with analysis in previous years. The national BAF for 50% TEA in acetone tubes analysed by Gradko in 2022 is 0.82 (Database v03/23).

Table K.   Bias Adjustment Factor

Year	Local or National	Version of National Spreadsheet (BAF)	Adjustment Factor
2022	*Local*	*03/23 (0.82)*	*0.85*
2021	Local	03/22 (0.84)	0.87
2020	Local	03/21 (0.81)	0.83
2019	Local	03/20 (0.93)	0.89
2018	Local	Unknown	0.87
2017	Local	Unknown	0.89
2016	Local	Unknown	0.87
2015	Local	Unknown	0.91

A.3　Adjustments to the Ratified Monitoring Data

<u>Short-term to Long-term Data Adjustment</u>

Data from 19 diffusion tube sites in Hounslow have been annualised. Annualisation has been completed using the LAQM Diffusion Tube Data Processing Tool in line with the methodology outlined in LLAQM.TG(19).

Site ID	Site Type	Valid data capture 2022 (%)	Annualisation Factor	Annualised, bias adjusted mean
CRAN A	Background	58.3	0.9511	18.9
HS41	Roadside	66.6	0.9559	35.5
HS95	Roadside	58.3	1.1197	29.1
HS96	Roadside	33.3	0.9726	37.3
HS97	Roadside	33.3	0.9726	33.1
HS98	Roadside	33.3	0.9726	32.0

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

Diffusion Tube ID	Annualisation Factor Feltham	Annualisation Factor Hatton Cross	Average Annualisation Factor	Raw Data Annual Mean ($\mu g\ m^{-3}$)	Annualised Annual Mean ($\mu g\ m^{-3}$)
CRAN A	0.9642	0.9381	0.9511	19.8	18.9
HS41	0.9597	0.9520	0.9559	37.1	35.5
HS95	1.0766	1.1628	1.1197	26.0	29.1
HS96	0.9983	0.9470	0.9726	38.3	37.3
HS97	0.9983	0.9470	0.9726	34.0	33.1
HS98	0.9983	0.9470	0.9726	32.9	32.0

Table M. NO_2 Fall Off with Distance

Site Name/ID	Distance (m)		NO_2 Annual Mean Concentration ($\mu g/m^3$)		
	Monitoring Site to Kerb	Receptor to Kerb	Background	Monitored at Site	Predicted at Receptor
HS67	1.0	1.0	17.0	44.6	**44.6**
HS80	3.0	1.0	17.0	39.1	**45.4**
SC11	1.0	1.0	17.0	45.0	**45.0**

Appendix B   Full Monthly Diffusion Tube Results for 2022

Table N.   NO₂ 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
BREN A	100	100	**50.6**	36.3	**42.4**	36.7	36.5	34.7	36.9	**41.8**	38.8	36.7	**42.3**	38.8	39.4	33.1
BREN B	100	100	**41.5**	33.9	**40.3**	39.9	36.2	38.0	37.8	40.0	36.9	35.3	**41.3**	38.7	38.3	32.2
BREN C	100	100	**50.0**	30.8	**41.3**	**41.3**	37.4	36.3	36.4	39.9	**40.0**	33.2	**45.2**	37.7	39.1	32.9
CHIS A	100	100	**46.6**	31.0	**42.3**	30.6	15.7	28.9	29.1	35.8	38.1	37.4	**41.7**	**41.7**	34.9	29.3
CHIS B	100	100	**48.4**	29.5	**41.1**	32.3	15.7	29.1	30.5	34.9	38.2	38.9	38.5	37.7	34.6	29.0
CHIS C	100	100	38.1	29.6	**44.3**	30.1	17.5	29.4	32.1	36.2	34.0	**40.3**	**43.0**	38.4	34.4	28.9
FELT A	66.7	66.7	36.1	19.5			22.1		24.8		32.6	28.4	34.0	33.9	28.9	24.3
FELT B	83.3	83.3	**43.3**	24.9		26.2	22.8	20.6	23.9		30.5	26.7	27.0	32.4	27.8	23.4
FELT C	83.3	83.3	**43.6**	21.1			21.9	21.2	23.1	25.7	32.6	31.0	33.8	35.6	29.0	24.3
HAT A	100	100	36.1	20.8	36.6	25.6	20.0	18.2	23.8	21.6	32.8	23.3	34.3	32.1	27.1	22.8
HAT B	100	100	33.0	20.7	31.4	27.1	20.6	20.9	22.1	23.7	32.0	19.8	34.1	30.3	26.3	22.1
HAT C	100	100	**40.2**	24.1	29.4	25.2	22.1	18.7	21.7	23.1	36.6	23.0	31.4	34.0	27.5	23.1
HEST A	91.7	91.7	**47.0**	22.8	**42.6**	29.5	27.3	27.6	32.5	31.1	34.1	36.8	36.7		33.4	28.1
HEST B	100	100	**47.5**	29.9	**45.2**	30.5	29.1	25.8	33.1	32.6	32.4	35.5	39.6	34.7	34.6	29.1
HEST C	100	100	**43.1**	29.9	**42.3**	28.8	27.5	26.2	30.0	33.1	33.6	36.3	**41.7**	32.0	33.6	28.4
CRAN A	58.3	58.3	26.9	20.4	26.3	16.9		15.1		10.2			25.7		19.8	16.0
HS32	83.3	83.3	**48.7**		**42.2**	37.3	37.8	36.7	21.1	38.0	35.7		**40.4**	**44.5**	37.8	32.0
HS33	100	100	**46.2**	30.1	29.9	33.5	32.3	32.9	29.6	32.2	39.2	27.6	37.5	36.4	33.6	28.5
HS34	91.7	91.7	34.6	19.4	27.8	17.6	17.0	15.5		10.1	21.5	23.8	30.4	23.8	21.6	18.3
HS35	100	100	32.8	21.1	27.0	19.6	15.0	13.8	16.8	19.0	21.5	21.3	26.9	26.8	21.4	18.1
HS41	66.7	66.7	**48.4**	39.3	**41.0**			32.6		33.7		32.2	39.3	34.0	37.1	30.0
HS42	91.7	91.7	**41.9**	23.8	34.3	31.6	26.8	33.5	32.5	29.5	32.6	30.2	33.2		31.8	26.9

HS43	100	100	39.7	23.8	32.8	26.0	19.5	19.9	35.1	24.3	28.8	24.7	34.7	28.2	27.8	23.5
HS46	83.3	83.3	35.2	21.5	32.0	22.4		14.7	17.8	19.6	20.5		30.4	28.6	23.8	20.2
HS47	100	100	**56.4**	33.4	**48.9**	36.5	30.8	30.8	**40.9**	36.4	**45.6**	34.2	**46.5**	38.5	39.4	33.3
HS51	83.3	83.3	38.0	18.3	26.4	21.0	16.3		18.8	19.7	28.0		26.2	23.6	23.3	19.7
HS52	100	100	32.0	18.0	26.7	20.7	17.7	15.9	19.3	17.7	24.6	16.8	24.5	25.3	21.3	18.0
HS53	100	100	39.8	23.7	27.3	22.3	19.2	17.2	19.1	20.3	26.6	20.6	31.9	29.5	24.2	20.5
HS54	100	100	**43.6**	27.1	36.3	29.9	28.4	29.7	28.1	31.0	30.2	33.2	38.6	37.0	32.5	27.5
HS55	100	100	**40.1**	27.3	**40.7**	33.5	25.0	23.1	28.7	27.2	32.0	26.3	40.0	35.8	31.1	26.3
HS61	83.3	83.3	38.6	26.8	29.0	23.6		19.7	19.4	20.4		24.2	28.8	33.8	26.1	22.1
HS62	91.7	91.7	**43.0**		33.5	24.9	21.5	19.4	21.5	25.8	25.7	27.8	33.5	27.1	27.1	22.9
HS63	100	100	**43.4**	27.1	39.4	30.2	26.6	26.0	26.8	32.5	32.9	**43.1**	39.8	29.9	32.8	27.8
HS64	100	100	**40.1**	20.5	33.6	22.6	18.2	16.6	21.6	22.3	25.6	19.6	32.2	29.0	24.6	20.8
HS65	100	100	32.8	19.2	28.9	19.1	17.6	17.3	17.1	19.1	24.0	25.0	27.5	29.5	22.8	19.3
HS66	75	75		26.6	32.9	26.9	20.7	22.3	23.3	26.5	36.1	28.0			26.7	22.6
HS67	91.7	91.7	<u>**71.4**</u>	**50.1**	**57.0**	**48.8**		**48.0**	**47.8**	**50.2**	**50.7**	**51.7**	**50.5**	**55.0**	52.7	**44.6**
HS68	91.7	91.7	**53.2**	**43.8**	38.0	27.7		30.8	29.9	33.9	**42.2**	36.3	**45.7**	**41.0**	37.7	31.9
HS69	75	75		30.2	32.6	33.5	23.9	21.9	24.3	29.1	33.1	24.8			27.8	23.5
HS70	100	100	**44.5**	31.3	**48.4**	31.8	33.8	31.3	32.6	37.7	34.4	39.7	**40.4**	38.7	36.8	31.1
HS71	100	100	**47.1**	29.9	33.8	29.6	27.8	27.8	25.8	29.5	35.1	30.0	39.0	35.0	32.1	27.1
HS72	100	100	**44.0**	34.0	27.4	23.8	25.1	22.8	22.0	24.8	30.4	29.9	38.7	37.4	29.4	24.9
HS73	100	100	37.5	21.4	28.8	21.0	22.4	20.6	19.4	22.0	28.5	26.3	28.5	33.4	25.6	21.6
HS74	91.7	91.7	13.1	23.6	33.9	17.8	18.2		18.8	21.4	23.6	27.8	30.6	32.5	23.5	19.9
HS78	100	100	**53.7**	34.6	**42.0**	38.0	29.8	30.2	32.1	36.1	39.0	38.2	**46.2**	**40.3**	37.8	32.0
HS79	91.7	91.7	**43.3**	25.2	29.9	23.4		17.4	17.5	20.8	26.4	32.8	30.6	31.8	26.9	22.8
HS80	91.7	91.7	<u>**71.8**</u>	46.1	**54.1**	44.2		38.4	33.0	39.6	**46.7**	41.8	**57.2**	45.3	46.3	39.1
HS81	100	100	31.3	17.2	24.0	15.8	12.5	11.0	11.7	14.5	17.7	15.4	23.9	24.1	17.8	15.0
HS82	91.7	91.7	30.4	2.1	22.3	16.5	13.8	11.5	13.0	13.0	18.8		23.2	21.1	16.7	14.1
HS83	75	75	24.1	8.4		15.3	11.3			13.5	16.6	15.5	20.2	18.2	15.8	13.3
HS84	91.7	91.7	**46.9**		33.1	22.7	23.4	23.2	24.1	27.2	30.0	32.0	29.0	32.0	29.1	24.6
HS85	100	100	**48.4**	34.7	38.1	26.9	28.9	26.2	27.0	30.1	35.0	33.7	**41.3**	38.5	33.5	28.3

HS86	100	100	**52.9**	30.2	35.2	36.0	29.8	34.3	32.3	30.7	39.2	29.4	38.7	36.1	35.1	29.7
HS87A	83.3	83.3			40.0	34.3	32.0	31.6	30.0	38.4	38.2	38.6	**50.0**	**41.7**	36.8	31.1
HS88	100	100	30.2	14.7	25.6	15.9	12.1	11.3	12.6	7.2	18.8	17.8	28.5	22.5	17.6	14.9
HS89	100	100	34.9	17.8	30.5	20.5	18.5	17.9	19.1	20.5	20.2	22.4	32.6	29.8	23.3	19.7
HS90	100	100	32.1	19.4	32.2	21.5	17.1	14.7	17.7	19.8	22.8	24.3	31.3	26.4	22.8	19.3
HS91	83.3	83.3	**47.4**	31.1	**43.9**	29.8	32.7		33.0	33.6	38.1		34.7	40.0	36.3	30.7
HS92	83.3	83.3	39.4	24.0	35.9	21.7	22.6	21.9		25.4	24.7		27.0	32.1	27.3	23.1
HS93	91.7	91.7	34.9	24.9	31.2	20.4	21.9	21.3	22.2	25.5	26.9		29.0	29.6	25.8	21.8
HS94	91.7	91.7	**52.3**		**46.2**	40.0	**42.3**	**42.8**	39.8	21.0	**49.3**	36.6	**48.3**	**42.0**	41.6	35.2
HS95	58.3	58.3					21.4	21.9	20.8	**43.1**	26.1	23.2		30.0	26.0	24.6
HS96	100	33.3									38.1	33.9	**42.3**	**41.1**	38.3	31.5
HS97	100	33.3									30.7	34.8	36.9	34.2	34.0	28.0
HS98	100	33.3									28.1	33.5	36.3	34.2	32.9	27.1
SC01	100	100	**53.7**	29.4	37.4	31.7	24.7	26.0	29.3	33.1	33.6	31.6	37.4	36.5	33.2	28.1
SC02	83.3	83.3	40.0	25.0	33.2	22.4	21.2	17.4			23.1	20.5	31.9	25.8	25.4	21.5
SC03	91.7	91.7	28.9	17.4	23.5		12.8	11.0	14.2	14.5	19.5	18.7	23.2	24.2	18.5	15.7
SC04	91.7	91.7	36.1	20.4	29.5	17.7	17.9	15.5		17.8	22.8	20.9	28.6	25.8	22.6	19.1
SC05	91.7	91.7	**41.8**	21.5	32.4	22.9	17.2	14.9		20.2	23.8	20.4	28.9	29.2	24.4	20.6
SC06	91.7	91.7	39.6	21.6	36.5	23.7	20.6	19.2	21.2	24.1		25.2	35.5	32.5	26.7	22.6
SC07	91.7	91.7	**44.7**	28.9		26.5	23.9	24.1	22.9	27.5	34.6	29.5	37.9	32.2	29.6	25.1
SC08	91.7	91.7	33.3		25.6	15.9	12.6	11.3	14.2	16.0	20.4	16.2	28.6	25.6	19.3	16.3
SC09	91.7	91.7	31.6	17.2	30.5	20.7		13.0	17.4	19.1	20.9	17.9	28.7	25.6	21.6	18.3
SC10	91.7	91.7	33.4	18.1	27.9	18.2		13.8	17.1	19.2	23.8	16.0	29.7	24.5	21.4	18.1
SC11	100	100	<u>**63.0**</u>	41.6	**58.2**	**44.6**	45.6	**48.2**	**59.9**	**55.8**	**54.9**	**54.1**	**55.5**	**58.7**	53.2	**45.0**
SC12	83.3	83.3	35.9	20.9	28.7		17.4	16.7	19.7	22.0	26.0	17.3		27.6	22.8	19.3
SC13	91.7	91.7	**44.1**	23.4		31.4	21.7	20.0	21.6	24.7	26.0	28.1	35.3	30.6	27.5	23.2
SC14	100	100	36.4	20.2	36.6	29.0	18.1	15.8	23.6	22.6	25.4	21.4	31.2	24.9	25.0	21.2

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%).