London Borough of Hounslow Air Quality Annual Status Report for 2023

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This report provides a detailed overview of air quality in Hounslow during 2023. 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
AQN	Air Quality Neutral
AQO	Air Quality Objective
AQP	Air Quality Positive
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 and International Standards, Objectives and Guidelines

Pollutant	Standard / Objective / Guideline	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
Nitrogen dioxide (NO_2)	WHO AQG[2]: 10 µg m^{-3}	Annual mean	
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})	WHO AQG[2]: 45 µg m^{-3} not to be exceeded more than 3-4 times a year	24-hour mean	
Particles (PM_{10})	40 µg m^{-3}	Annual mean	31 Dec 2004
Particles (PM_{10})	WHO AQG[2]: 15 µg m^{-3}	Annual mean	
Particles ($PM_{2.5}$)	20 µg m^{-3}	Annual mean	2020
Particles ($PM_{2.5}$)	London Mayoral Objective[3]: 10 µg m^{-3}	Annual mean	2030
Particles ($PM_{2.5}$)	WHO AQG[2]: 5 µg m^{-3}	Annual mean	
Particles ($PM_{2.5}$)	Target of 15% reduction in concentration at urban background locations	3-year mean	Between 2010 and 2021
Particles ($PM_{2.5}$)	WHO AQG[2]: 15 µg m^{-3}	24-hour mean	
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
Sulphur dioxide (SO_2)	WHO AQG[2]: 40 µg m^{-3} not to be exceeded more than 3-4 times a year	24-hour mean	

Notes:

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

(2) 2021 World Health Organisation Air Quality Guidelines

(3) London Mayoral Objective

1. Air Quality Monitoring

1.1 Locations

Table B. Details of Automatic Monitoring Sites for 2023

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
HS4	Chiswick	Roadside	521084	178499	NO_2, PM_{10}, $PM_{2.5}$	Yes Hounslow	*Chemiluminescent; TEOM; Spirant BAM*	1	4	3
HS5	Brentford	Roadside	517425	178071	NO_2, PM_{10}, $PM_{2.5}$	Yes Hounslow	*Chemiluminescent; TEOM; Spirant BAM*	1	2	3
HS6	Heston	Roadside	513655	176842	NO_2, PM_{10}	Yes Hounslow	*Chemiluminescent; TEOM*	1	1.5	1.5
HS7	Hatton Cross	Urban Background	509334	174997	NO_2, PM_{10}	Yes Hounslow	*Chemiluminescent; Met One BAM 1020*	10	11.5	2
HS9	Feltham	Roadside	510691	173247	NO_2, PM_{10}	Yes Hounslow	*Chemiluminescent; TEOM*	1	3	1.5
HS8	Gunnersbury	Roadside	519180	179369	NO_2, PM_{10}	Yes Hounslow	*Chemiluminescent; Met One BAM 1020*	2	9	2

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable

Table C. Details of Non-Automatic Monitoring Sites for 2023

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
BREN A, BREN B, BREN C	Brentford, Great West Road	Roadside	517425	178071	NO2	Yes Hounslow	1.0	4.0	Yes	3.0
CHIS A, CHIS B, CHIS C	Chiswick High Road	Roadside	521084	178499	NO2	Yes Hounslow	1.0	2.0	Yes	3.0
FELT A, FELT B, FELT C	Feltham High St / Hanworth Rd Jct	Roadside	510691	173247	NO2	Yes Hounslow	1.0	1.5	Yes	1.5
HAT A, HAT B, HAT C	Myrtle Avenue	Urban Background	509334	174997	NO2	Yes Hounslow	10.0	11.5	Yes	2.0
HEST A, HEST B, HEST C	Heston Road	Roadside	513655	176842	NO2	Yes Hounslow	1.0	3.0	Yes	1.5
HS32	24 Adelaide Terrace	Roadside	517551	178186	NO2	Yes Hounslow	1.0	10.0	No	3.0
HS33	30 Surrey Crescent	Roadside	519452	178314	NO2	Yes Hounslow	3.0	7.0	No	2.0
HS34	Chiswick School	Suburban	520876	177164	NO2	Yes Hounslow	3.0	15.0	No	2.5
HS35	Wood Street	Roadside	521220	178069	NO2	Yes Hounslow	1.0	2.0	No	4.0
HS41	Hanworth Library	Roadside	512103	172506	NO2	Yes Hounslow	2.5	5.0	No	2.0
HS42	High Street, Hounslow	Urban Centre	514090	175812	NO2	Yes Hounslow	2.0	14.0	No	3.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
HS43	Glenhurst Road	Roadside	517436	178044	NO2	Yes Hounslow	1.0	0.5	No	2.0
HS46	Swyncombe Avenue	Roadside	516887	178637	NO2	Yes Hounslow	1.0	1.0	No	2.0
HS47	Boston Manor Road	Roadside	516712	178588	NO2	Yes Hounslow	1.0	1.0	No	2.0
HS51	Bedfont Sports Club	Urban Background	509249	174683	NO2	Yes Hounslow	3.0	28.0	No	2.0
HS52	Bedfont Library	Roadside	508868	173720	NO2	Yes Hounslow	2.0	6.0	No	3.0
HS53	Church of the Good Shepherd	Suburban	510986	176031	NO2	Yes Hounslow	4.0	25.0	No	2.5
HS54	Cranford Lane / Cranford High Street Jct.	Roadside	510784	177460	NO2	Yes Hounslow	2.0	2.0	No	2.0
HS55	Cranford Library	Roadside	510750	176684	NO2	Yes Hounslow	3.0	6.0	No	3.0
HS61	Twickenham Road	Roadside	516208	175793	NO2	Yes Hounslow	0.0	18.0	No	3.0
HS62	Sutton Road	Roadside	513619	176924	NO2	Yes Hounslow	1.0	1.0	No	4.0
HS63	Lampton Road	Roadside	513528	175868	NO2	Yes Hounslow	1.0	1.0	No	2.5
HS64	Junction of Roseheath Road	Roadside	512860	175013	NO2	Yes Hounslow	2.0	2.0	No	5.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
HS65	Eastbourne Road, Uxbridge Rd Jct	Roadside	511840	172745	NO2	Yes Hounslow	2.0	3.0	No	2.0
HS66	Brainton Avenue	Roadside	510957	173642	NO2	Yes Hounslow	1.0	5.0	No	2.0
HS67	Busch Corner	Roadside	516590	176888	NO2	Yes Hounslow	0.0	1.0	No	2.5
HS68	Junction of Commerce Road	Roadside	517278	177298	NO2	Yes Hounslow	0.0	2.0	No	2.0
HS69	Kew Bridge	Roadside	519015	178018	NO2	Yes Hounslow	0.0	0.0	No	2.0
HS70	Eastbury Grove (Chiswick Lane)	Roadside	521442	177980	NO2	Yes Hounslow	1.0	1.0	No	2.5
HS71	Gunnersbury Avenue	Roadside	519178	179375	NO2	Yes Hounslow	2.0	9.0	No	2.0
HS72	Heston Crossroads	Roadside	513064	177552	NO2	Yes Hounslow	1.0	2.5	No	3.0
HS73	Browells Lane, Feltham	Roadside	510567	172857	NO2	Yes Hounslow	2.0	4.0	No	2.0
HS74	Swift Road, Hanworth	Roadside	511989	171797	NO2	Yes Hounslow	2.0	13.5	No	2.0
HS78	Staines / Wellington Road	Roadside	512763	175312	NO2	Yes - Hounslow	1.0	3.0	No	4.0
HS79	Whitton Road	Roadside	513839	175316	NO2	Yes Hounslow	2.0	1.0	No	3.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
HS80	Hounslow Bus Station	Roadside	514433	175950	NO2	Yes Hounslow	0.0	3.0	No	3.0
HS81	Woodlands	Suburban	515035	175907	NO2	Yes Hounslow	10.0	2.0	No	2.5
HS82	Church Street	Roadside	516669	175998	NO2	Yes Hounslow	0.0	1.0	No	2.0
HS83	Osterley Park	Urban Background	514848	178068	NO2	Yes Hounslow	2.0	N/A	No	1.0
HS84	Apex Corner (York Way)	Roadside	512709	172155	NO2	Yes Hounslow	1.0	2.0	No	3.0
HS85	Hospital Road	Roadside	513213	175655	NO2	Yes Hounslow	1.0	1.0	No	4.0
HS86	Jolly Waggoners	Roadside	510947	176564	NO2	Yes Hounslow	2.0	1.0	No	4.0
HS87A	Henlys Roundabout	Roadside	511542	176426	NO2	Yes Hounslow	2.0	1.5	No	4.0
HS88	Thames Path, Duke's Meadows	Urban Background	521483	176692	NO2	Yes Hounslow	2.0	N/A	No	2.0
HS89	Mogden Sewage Works Gate	Roadside	515424	174719	NO2	Yes Hounslow	3.0	3.0	No	2.0
HS90	The Butts	Suburban	517585	177606	NO2	Yes Hounslow	2.0	3.0	No	2.0
HS91	Hogarth Ln / Dukes Av	Roadside	521041	177973	NO2	Yes Hounslow	3.0	8.0	No	6.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube Co-located with a Continuous Analyser?	Tube Height (m)
HS92	St Mary's School	Roadside	521110	177970	NO2	Yes Hounslow	2.0	13.0	No	5.0
HS93	William Hogarth School	Roadside	521110	177970	NO2	Yes Hounslow	2.0	13.0	No	5.0
HS94	Hogarth Roundabout	Roadside	521490	177920	NO2	Yes Hounslow	2.0	1.0	No	2.0
HS95	Bennett Street	Roadside	521253	177952	NO2	Yes Hounslow	0.0	2.0	No	2.0
HS96	Acton Lane / Chiswick High Rd	Roadside	520420	178515	NO2	Yes Hounslow	2.0	1.0	No	2.0
HS97	Acton Lane	Roadside	520371	178591	NO2	Yes Hounslow	2.0	1.0	No	2.0
HS98	Chiswick Park / Bollo Lane	Roadside	520348	178662	NO2	Yes Hounslow	2.0	1.0	No	2.0
HS99	Burlington Lane / Paxton Road	Roadside	521243	177689	NO2	Yes Hounslow	2.0	1.0	No	2.0
GD01	Green Dragon School 1	Roadside	518390	177801	NO2	Yes Hounslow	1.0	1.0	No	2.0
GD02	Green Dragon School 2	Roadside	518369	177869	NO2	Yes Hounslow	1.0	1.0	No	2.0
GD03	Green Dragon School 3	Roadside	518309	177985	NO2	Yes Hounslow	1.0	1.0	No	2.0
SC01	Burlington Lane	Roadside	521173	177470	NO2	Yes Hounslow	3.0	1.0	No	2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
SC02	Edensor Road	Roadside	521168	177325	NO2	Yes Hounslow	2.0	1.0	No	2.0
SC03	Burlington Lane Chiswick School	Roadside	520923	177355	NO2	Yes Hounslow	2.0	1.0	No	2.0
SC04	Staveley Road	Roadside	520734	177269	NO2	Yes Hounslow	2.0	1.0	No	2.0
SC05	Burlington Lane Tennis Club	Roadside	520639	177257	NO2	Yes Hounslow	2.0	1.0	No	2.0
SC06	Grove Park Bridge	Roadside	520206	177372	NO2	Yes Hounslow	2.0	1.0	No	2.0
SC07	Sutton Court Road	Roadside	520261	177552	NO2	Yes Hounslow	2.0	1.0	No	2.0
SC08	Grove Park Terrace	Roadside	520046	177636	NO2	Yes Hounslow	2.0	1.0	No	2.0
SC09	Park Road	Roadside	520771	177886	NO2	Yes Hounslow	2.0	1.0	No	2.0
SC10	Milnthorpe Road	Roadside	520612	177889	NO2	Yes Hounslow	2.0	1.0	No	2.0
SC11	Ellesmere Road	Roadside	520526	177933	NO2	Yes Hounslow	2.0	1.0	No	2.0
SC12	Eastbourne Road	Roadside	520506	177907	NO2	Yes Hounslow	2.0	1.0	No	2.0
SC13	Sutton Court Road Elmwood Road Jct	Roadside	570367	177850	NO2	Yes Hounslow	2.0	1.0	No	2.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
SC14	Harvard Hill	Roadside	519960	177989	NO2	Yes Hounslow	2.0	1.0	No	2.0

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable.

1.2 Comparison of Monitoring Results with AQOs

Concentration values are those at the location of the monitoring site (bias adjusted and annualised, as required), not those following any fall-off with distance correction.

Table D. Annual Mean NO_2 Monitoring Results: Automatic Monitoring (µg/m^3)

Site ID	Site type	Valid data capture for monitoring period %[(a)]	Valid data capture 2023 %[(b)]	2017	2018	2019	2020	2021	2022	2023
Brentford	Automatic	97.50	97.50	**54**	**48**	**43.9**	33	35.8	34	33
Chiswick	Automatic	98.86	98.86	**53**	**47**	**41.7**	32	32.9	31	29
Feltham	Automatic	92.37	92.37	34	27	27.7	26	27.8	25	23
Gunnersbury	Automatic	99.13	99.13	**53**	**45**	**45**	37	35.9	29	31
Hatton Cross	Automatic	99.42	99.42	33	28	27.3	17	18.2	20	19
Heston	Automatic	99.55	99.55	**44**	**40**	37.7	31	28.8	28	23

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%.

Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(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%).

Nitrogen Dioxide:

Annual mean NO_2 levels decreased at five of Hounslow's six automatic monitoring stations from the levels recorded in 2022. This is the same as the previous year although the site which recorded an increase was different (2022: Hatton Cross, 2023: Gunnersbury). For the fourth consecutive year, all automatic monitoring sites registered an annual mean value of less than the UK limit of 40 micrograms (µg). The highest value recorded for the year was 33 µg at Brentford (HS5), a reduction of 1 µg from 2022.

Diffusion tubes (Table E):

For the first time, no diffusion tube location in Hounslow recorded a bias-adjusted annual mean concentration higher than the 40 µg limit. This is a reduction from three sites in 2022. The highest annual mean concentration recorded in 2023 was 38.3 µg at Busch Corner (site ID HS67).

Of 62 diffusion tube sites monitored in both 2022 and 2023, 59 (94%) recorded a decrease in 2023 compared to 2022 levels. The average change across the 62 sites was a reduction of 12%. Three sites saw a reduction of over 27% while three sites saw an increase year-on-year. The site with the largest decrease (30%, to 23.7 µg) was at the Heston automatic monitoring station (site ID HEST) for the second consecutive year. The largest increase (12%, to 24.1 µg) was at Edensor Road (site ID SC02).

Five new permanent diffusion tube monitoring stations were established in 2023.

Exceedances (Table F):

For the sixth consecutive year, no automatic monitoring sites in Hounslow recorded any exceedances of the 1-hour mean NO_2 limit of 200 µg m-3.

Figure A. Seven Year Trend in Annual Mean NO_2 Concentration, 2017-2023

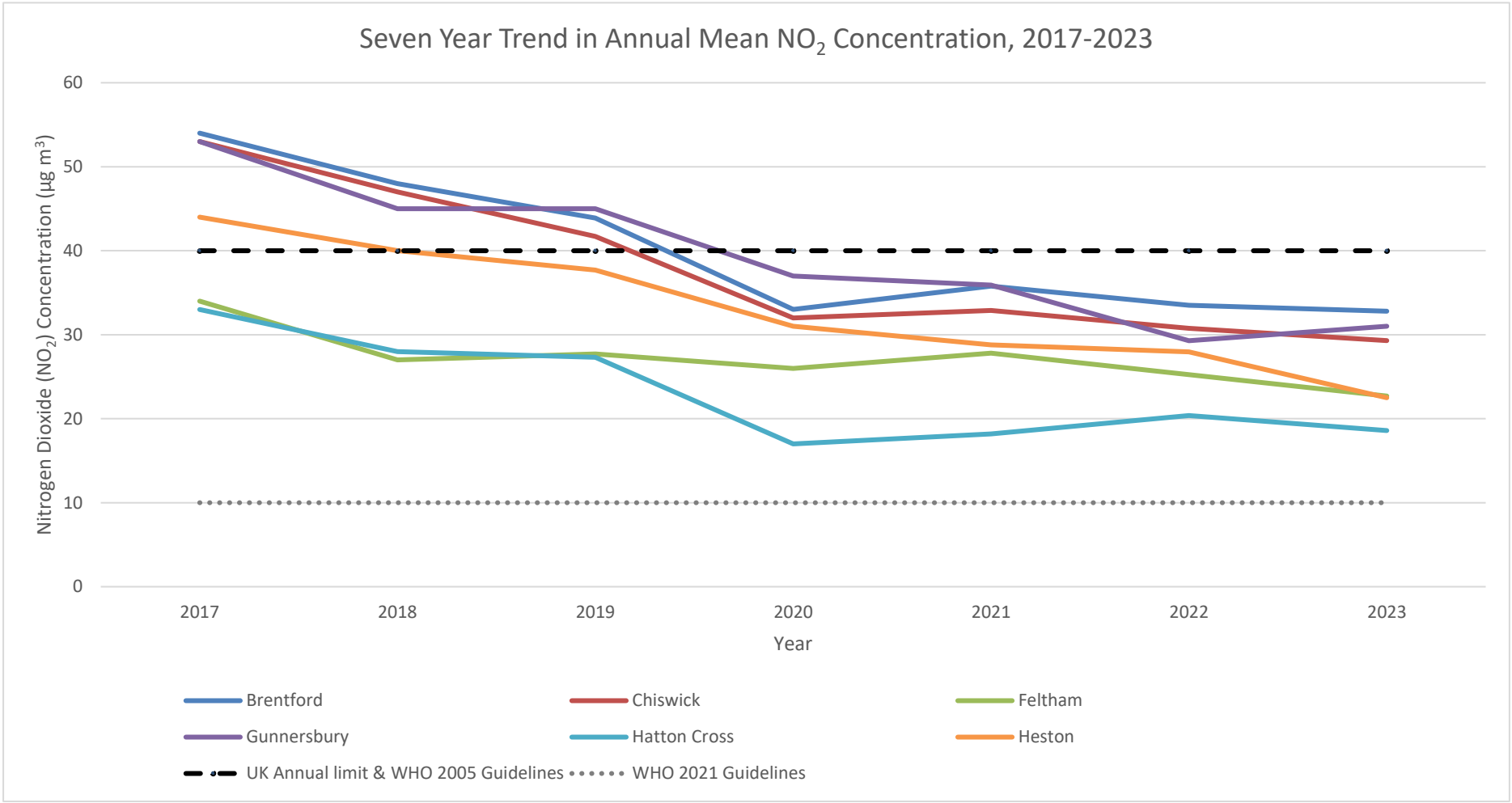


Table E. Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2017	2018	2019	2020	2021	2022	2023
BREN A, B, C	517425	178071	Roadside	100	100.0	**58.3**	**48.3**	**44.1**	33.6	38.3	38.9	31.5
CHIS A, B, C	521084	178499	Roadside	100	100.0	**52.4**	**43.9**	**41.8**	31.9	32.2	34.6	29.3
FELT A, B, C	510691	173247	Roadside	74.3	74.3	38.6	25.8	27.8	24.6	25.4	28.6	20.7
HAT A, B, C	509334	174997	Urban Background	100	100.0	33.9	29.9	27.2	17.5	21.4	27.0	21.5
HEST A, B, C	513655	176842	Roadside	100	100.0	**50.1**	**43.6**	38.2	29.7	30.0	33.9	23.7
HS32	517551	178186	Roadside	100	100.0	**50.2**	**43.2**	**43.7**	35.5	33.0	32.5	29.4
HS33	519452	178314	Roadside	100	100.0	**54.8**	**42.5**	38.9	30.2	31.1	28.9	26.6
HS34	520876	177164	Suburban	100	100.0	28.7	25.8	25.9	20.0	21.3	18.7	17.8
HS35	521220	178069	Roadside	90.2	90.2	32.2	27.3	26.4	19.9	19.3	18.5	16.6
HS41	512103	172506	Roadside	100	100.0	**51.5**	**41.7**	**40.2**	33.9	29.8	31.9	23.9
HS42	514090	175812	Urban Centre	63.7	63.7	33.1	28.3	27.3	22.8	25.5	27.0	23.3
HS43	517436	178044	Roadside	100	100.0	35.4	33.2	30.6	22.8	25.5	23.9	21.3
HS46	516887	178637	Roadside	70.9	70.9	-	-	-	-	-	20.6	19.6

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2017	2018	2019	2020	2021	2022	2023
HS47	516712	178588	Roadside	74	74.0	-	-	-	-	33.1	33.9	24.7
HS51	509249	174683	Urban Background	100	100.0	28.2	25.5	24.1	16.3	17.1	20.1	16.7
HS52	508868	173720	Roadside	100	100.0	25.1	23.3	23.0	16.9	19.2	18.3	15.5
HS53	510986	176031	Suburban	92.5	92.5	33.4	25.6	28.0	18.7	20.5	21.1	18.7
HS54	510784	177460	Roadside	100	100.0	**40.9**	35.0	38.4	28.5	29.5	27.8	25.1
HS55	510750	176684	Roadside	38.5	38.5	**43.7**	33.7	33.9	23.7	27.3	26.9	23.0
HS61	516208	175793	Roadside	100	100.0	**40.0**	32.1	31.4	21.4	23.4	22.5	19.5
HS62	513619	176924	Roadside	100	100.0	37.5	33.5	33.6	23.0	24.9	23.5	20.6
HS63	513528	175868	Roadside	100	100.0	37.3	34.1	30.9	24.6	27.1	28.2	22.6
HS64	512860	175013	Roadside	92.2	92.2	33.1	28.7	27.1	20.1	20.6	21.4	17.5
HS65	511840	172745	Roadside	100	100.0	28.3	25.0	25.1	18.7	19.2	19.6	16.5
HS66	510957	173642	Roadside	76.3	76.3	**44.0**	37.9	34.3	26.0	27.4	23.0	21.8
HS67	516590	176888	Roadside	92.2	92.2	**59.5**	**48.4**	**50.0**	**40.5**	**44.1**	**44.9**	38.3
HS68	517278	177298	Roadside	100	100.0	**43.7**	36.5	36.6	30.8	36.3	32.6	28.5

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2017	2018	2019	2020	2021	2022	2023
HS69	519015	178018	Roadside	90.8	90.8	**48.0**	39.0	36.0	26.5	28.8	23.9	24.2
HS70	521442	177980	Roadside	100	100.0	**59.8**	**47.2**	**44.1**	30.5	36.5	31.5	29.6
HS71	519178	179375	Roadside	90.8	90.8	**48.3**	37.8	36.6	29.1	28.7	27.7	25.2
HS72	513064	177552	Roadside	100	100.0	**48.7**	36.1	35.0	26.1	25.5	25.5	22.3
HS73	510567	172857	Roadside	100	100.0	29.7	25.3	29.1	21.4	22.6	22.0	18.4
HS74	511989	171797	Roadside	100	100.0	38.4	30.9	29.2	21.7	23.2	20.2	17.1
HS78	512763	175312	Roadside	90.2	90.2	**47.5**	**42.7**	**40.7**	32.7	38.2	32.6	28.0
HS79	513839	175316	Roadside	67.6	67.6	33.2	30.1	30.5	22.0	23.2	23.1	21.3
HS80	514433	175950	Roadside	100	100.0	**71.1**	**58.7**	**46.4**	36.7	**45.7**	**40.0**	28.9
HS81	515035	175907	Suburban	90.2	90.2	23.0	22.0	20.2	15.4	15.7	15.5	12.8
HS82	516669	175998	Roadside	82.1	82.1	26.2	22.2	20.2	15.6	16.7	14.4	11.6
HS83	514848	178068	Urban Background	65.1	65.1	24.8	19.9	18.4	14.0	12.7	13.5	11.7
HS84	512709	172155	Roadside	100	100.0	39.8	31.6	33.4	24.6	27.3	25.0	21.6
HS85	513213	175655	Roadside	100	100.0	**47.7**	37.9	37.5	30.4	31.5	29.0	25.4

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2017	2018	2019	2020	2021	2022	2023
HS86	510947	176564	Roadside	57	57.0	**53.5**	**41.3**	**43.5**	30.1	31.7	30.1	25.3
HS87A	511542	176426	Roadside	100	100.0	**62.7**	**44.7**	**47.3**	31.5	33.5	31.9	29.4
HS88	521483	176692	Urban Background	100	100.0	23.4	20.7	22.0	16.1	15.6	15.4	14.2
HS89	515424	174719	Roadside	91.6	91.6	32.1	28.8	27.4	22.5	21.9	20.2	17.2
HS90	517585	177606	Suburban	81.8	81.8	26.5	25.3	24.7	20.4	20.6	19.8	17.9
HS91	521041	177973	Roadside	40.5	40.5	**62.1**	**45.0**	**43.7**	30.5	32.7	31.0	25.5
HS92	521110	177970	Roadside	74.6	74.6	-	**56.3**	34.8	26.1	26.3	23.4	21.8
HS93	521110	177970	Roadside	84.4	84.4	-	**56.3**	36.2	25.5	25.2	22.2	21.8
HS94	521490	177920	Roadside	100	100.0	-	-	-	-	**41.4**	35.6	29.9
HS95	521253	177952	Roadside	92.5	92.5	-	-	-	-	-	-	22.8
HS96	520420	178515	Roadside	74	74.0	-	-	-	-	-	-	28.1
HS97	520371	178591	Roadside	92.2	92.2	-	-	-	-	-	-	22.6
HS98	520348	178662	Roadside	72.9	72.9	-	-	-	-	-	-	22.1
HS99	521243	177689	Roadside	86.3	86.3	-	-	-	-	-	-	22.6

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2017	2018	2019	2020	2021	2022	2023
GD01	518390	177801	Roadside	82.1	82.1	-	-	-	-	-	-	19.2
GD02	518369	177869	Roadside	66.8	66.8	-	-	-	-	-	-	16.1
GD03	518309	177985	Roadside	82.1	82.1	-	-	-	-	-	-	15.6
SC01	521173	177470	Roadside	92.2	92.2	-	-	-	-	30.0	28.1	26.0
SC02	521168	177325	Roadside	74.3	74.3	-	-	-	-	19.2	21.5	24.1
SC03	520923	177355	Roadside	57	57.0	-	-	-	-	15.7	15.7	14.8
SC04	520734	177269	Roadside	92.2	92.2	-	-	-	-	19.1	19.1	17.6
SC05	520639	177257	Roadside	92.2	92.2	-	-	-	-	20.4	20.6	19.8
SC06	520206	177372	Roadside	92.2	92.2	-	-	-	-	22.5	22.6	21.3
SC07	520261	177552	Roadside	92.2	92.2	-	-	-	-	23.7	25.1	24.3
SC08	520046	177636	Roadside	73.2	73.2	-	-	-	-	16.0	16.3	16.2
SC09	520771	177886	Roadside	92.2	92.2	-	-	-	-	21.6	18.3	15.1
SC10	520612	177889	Roadside	84.6	84.6	-	-	-	-	16.8	18.1	19.6
SC11	520526	177933	Roadside	92.2	92.2	-	-	-	-	29.7	**45.0**	36.5
SC12	520506	177907	Roadside	74.3	74.3	-	-	-	-	18.7	19.3	17.5

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2023 (%) (2)	2017	2018	2019	2020	2021	2022	2023
SC13	570367	177850	Roadside	84.6	84.6	-	-	-	-	23.9	23.2	22.4
SC14	519960	177989	Roadside	74.9	74.9	-	-	-	-	19.3	21.2	20.3

☒ Annualisation has been conducted where data capture is <75% and >25% in line with LLAQM.TG19.

☒ Diffusion tube data has been bias adjusted.

☒ Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance correction.

Notes:

The annual mean concentrations are presented as µg/m^3.

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean 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%.

Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Table F. 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 2023 %(b)	2017	2018	2019	2020	2021	2022	2023
Brentford	97.50	97.50	12	0	0	0	0	0	0
Chiswick	98.86	98.86	12	0	0	0	0	0	0
Feltham	92.37	92.37	0	0	0	0	0	0	0
Gunnersbury	99.13	99.13	46	0	0	0	0	0	0
Hatton Cross	99.42	99.42	0	0	0	0	0	0	0
Heston	99.55	99.55	6	0	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%)

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

Site ID	Valid data capture for monitoring period %([a])	Valid data capture 2023 %([b])	2017	2018	2019	2020	2021	2022	2023
Brentford	93.70	93.70	28	26	22	25	21	23	25
Chiswick	96.03	96.03	20	20	20	21	16	19	20
Feltham	92.37	92.37	19	20	20	21	16	18	18
Gunnersbury	99.13	99.13	27	22	20	22	21	22	29
Hatton Cross	99.42	99.42	18	21	20	18	19	23	20
Heston	99.55	99.55	23	22	24	23	17	21	20

Notes

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

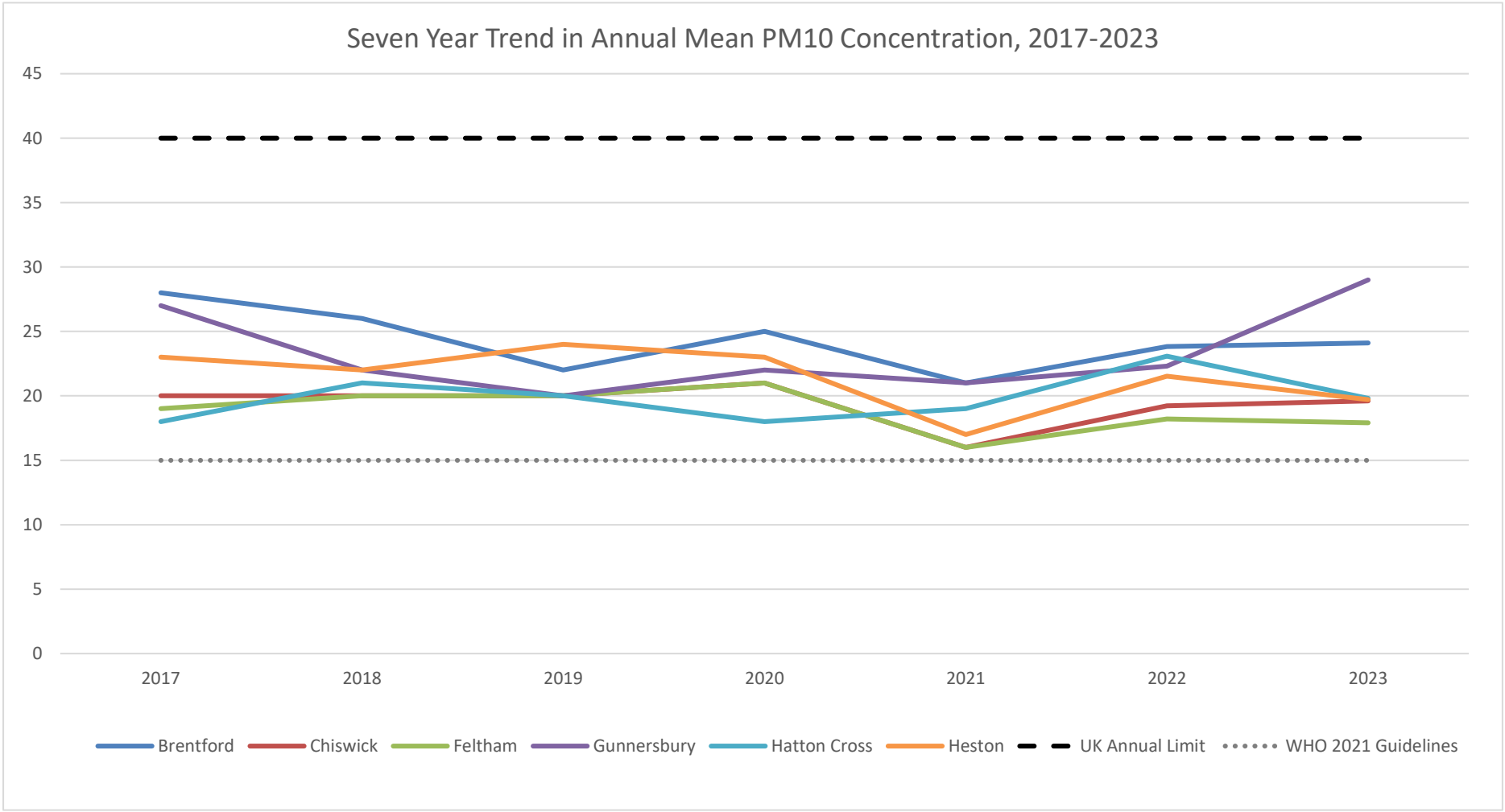
Exceedances of the PM_{10} annual mean AQO of 40 µg m^{-3} are shown in **bold**.

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%).

Figure B. Seven Year Trend in Annual Mean PM_{10} Concentration, 2017-2023



Particulate Matter:

Three of Hounslow's automatic monitoring stations recorded an increase in particulate matter (PM_{10}) from 2022 to 2023, two sites recorded a reduction and one remained static. This represents a slight change from 2022 when all six locations saw an increase, but all six sites remain above the levels recorded in 2021.

Exceedances (Table H):

There were a total of 36 exceedances of the 24-hour mean PM_{10} limit of 50 µg m^{-3} in 2023, an increase of 13 over 2022 (23) and 29 over 2021 (7). While three sites, Feltham, Hatton Cross and Heston, saw reduced numbers of exceedances, Brentford and Gunnersbury in particular saw dramatic increases in the number of exceedances.

Table H. 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 2023 %[b]	2017	2018	2019	2020	2021	2022	2023
Brentford	93.70	93.70	24	4	8	9	3	5	10
Chiswick	96.03	96.03	6	1	3	3	0	3	5
Feltham	92.37	92.37	4	4	7	2	0	3	2
Gunnersbury	99.13	99.13	15	1	5	2	2	5	16
Hatton Cross	99.42	99.42	3	2	7	4	2	2	1
Heston	99.55	99.55	9	2	5	4	0	5	2

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%).

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

Site ID	Valid data capture for monitoring period %[(a)]	Valid data capture 2023 %[(b)]	2017	2018	2019	2020	2021	2022	2023
Brentford	94.49	94.49	15	15	13	12	10	10	9
Chiswick	75.53	75.53	14	14	13	10	10	12	9

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.

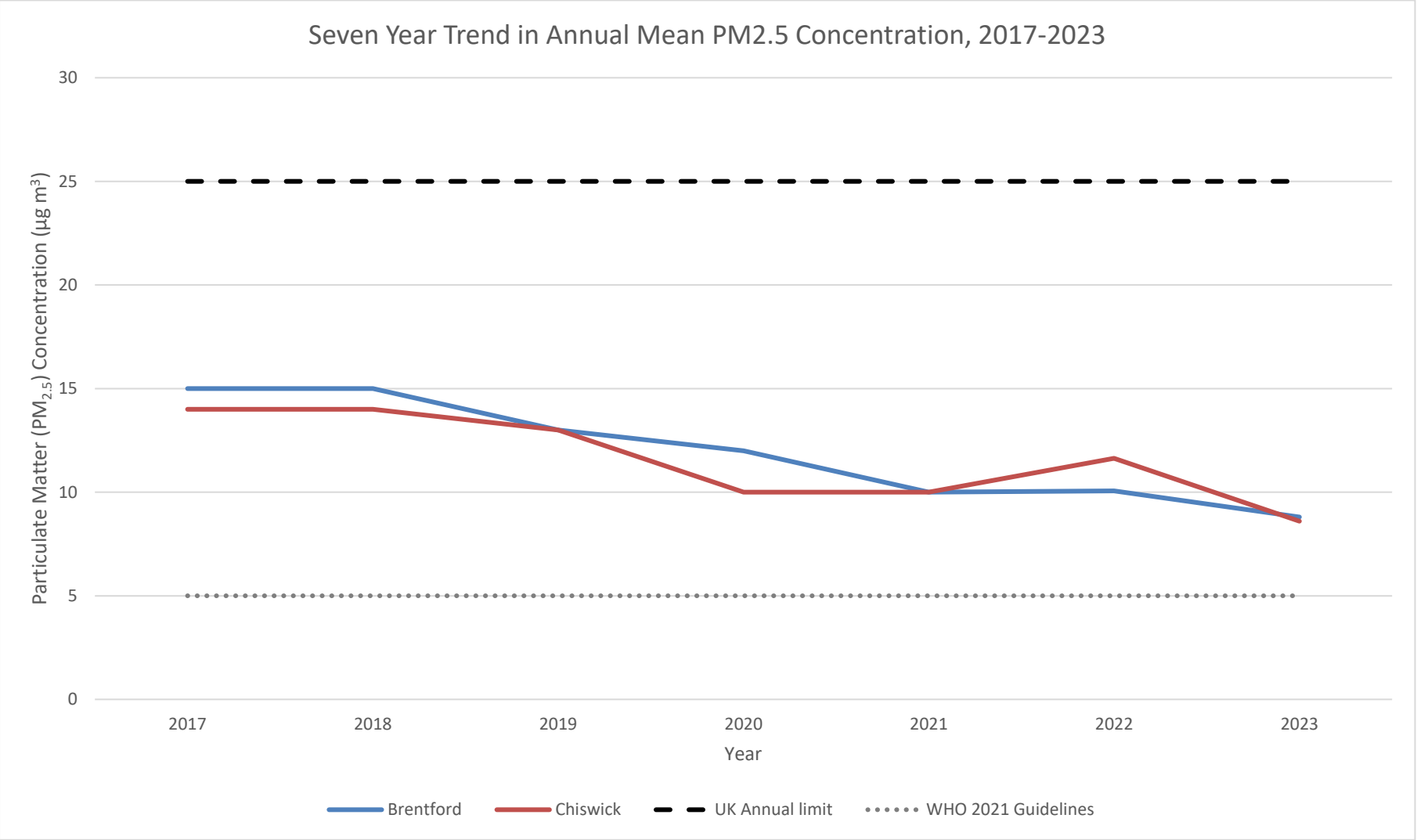
(b) Data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).

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 9 µg m^{-3} in 2022. This is well below the existing UK annual limit value of 25 µg m^{-3}. The WHO's guideline figure for $PM_{2.5}$ is 5 µg.

In 2023 Hounslow procured new analysers to expand $PM_{2.5}$ monitoring to all six automatic monitoring stations, and these will be installed in 2024.

Figure C. Seven Year Trend in Annual Mean $PM_{2.5}$ Concentration, 2017-2023



2. Action to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 12 months. The AQAP should specify how air quality targets will be achieved and maintained and provide dates by which measures will be carried out.

A summary of AQMAs declared by London Borough of Hounslow can be found in

Table J. The table presents a description of the AQMA that is currently designated within Hounslow. Appendix C provides maps of AQMA and also the air quality monitoring locations in relation to the AQMA. The air quality objectives pertinent to the current AQMA designation are as follows:

- NO_2 annual mean (40 µg m^{-3})

Table J. Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
Hounslow AQMA (London Borough of Hounslow)	Declared 07/03/2006	NO_2 Annual Mean (40 µg m^{-3})	An area encompassing the borough of Hounslow	Yes (mixture of road types)	*68.0 Chiswick High Road (2006)*	38.3	1 years	AQAP 2018-2023; superseded by AQAP 2023-2028	AQAP 2023-2028

☒ **Hounslow confirm the information on UK-Air regarding their AQMA(s) is up to date.**

☒ **Hounslow confirm that all current AQAPs have been submitted to GLA.**

2.2 Air Quality Action Plan Progress

Provide general detail on AQAP (e.g. date adopted, planned revision, planned revocation).

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

New projects which commenced in 2023 are shown at the bottom of the table.

Table K. Delivery of Air Quality Action Plan Measures

Measure	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
		Air Quality Action Plan 2023-2028	*Hounslow drafted a new Air Quality Action Plan in 2023 which was published at the start of 2024. Progress against a number of actions in the 2018-2023 plan ran alongside a broader review of all the actions in the new 2023-2028 plan.*
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.	Ongoing. All major planning applications in Hounslow 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 effective as possible at delivering clean air in Hounslow.
2	Emissions from developments and buildings	The council will ensure appropriate enforcement of Non-Road Mobile Machinery (NRMM) air quality policies.	Ongoing. Hounslow remains part of the Cleaner Construction for London NRMM monitoring scheme run by Merton.
8, 12, 13	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

Measure	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
		The council will ensure that the Director of Public Health to sign off Statutory Annual Status Reports and all new Air Quality Action Plans. 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.	Environment have signed off on the renewed 2023 AQAP.
15	Public health and awareness raising	The Council will raise awareness about air quality by promoting AirText through articles on Air Quality in local magazine, 'Hounslow Matters' once a year, using social media and by distributing leaflets, with an aim to increase subscription of AirText in Hounslow by 10% on 2017 level (178).	Hounslow remains a subscriber to the airTEXT service and promotes this internally and externally through social media and council comms channels. In 2023 Hounslow had 508 airTEXT subscribers, an increase of 10% from the previous year.
16	Public health and awareness raising	The council will 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. With the aim of having 50% Schools accredited by end of 2018/19, 55% by end 2019/20 60% by end 2020/21, 65% by end 2021/22.	45 schools in Hounslow were accredited by TfL's Travel for Life in 2023.
17.1	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	The council continues its own programme of air quality audits at Hounslow Schools, building upon the success of the Mayor's project. 17 schools have been audited to date.
22	Borough fleet actions	The council will maintain, through excellent practices on our fleet, our Gold FORs standard.	This has been achieved and maintained throughout the life of the AQAP.

Measure	LLAQM Action Matrix Theme	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints
27	Localised solutions	The council will discourage unnecessary idling by taxis, coaches and other vehicles through the implementation of an anti-idling Traffic Management Order in 2019 and undertake targeted enforcement activity at host spot areas such as taxi ranks, coach parking and outside schools. Enforcement activity will take place bimonthly and reported to AQAP Steering Group in Q1 21/22	Hounslow Council we be co-leading the latest iteration of the MAQF Anti-Idling project from 2024 onwards, following a successful bid in 2023. We are not currently enforcing against idling but have signage and leaflets designed to inform and discourage against idling in the borough.
30, 36	Localised solutions	The council will continue to support street parties and play streets. Where there is significant community backing for closing larger strategic roads for such events this will be considered on a case by case basis involving local ward members. The Council, in line with GLA strategies, will continue to explore ways to reduce dominance of vehicular traffic on residential streets through road closures & banned entries, where such measures are supported by residents; Town Centre development will continue to provide low or no level of car parking, and in many cases this will take place where existing parking stock will not be renewed; The council will work in partnership with TfL to improve bus journey times through active or passive bus priority measures, work will be monitored as part of new LIP. Report to Air Quality Action Plan Steering Group Q2 2021/22	Hounslow continues to deliver School Streets across the borough, supported by the Clean Air for All programme which is also delivering clean air audits and investing in reducing exposure to air pollution There are 36 operational School Streets schemes with a further 10 in development.
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.	408 residential charge points have been installed to date. There are also 79 public charge points across the borough. Hounslow's EV Charging Strategy (2022) commits to ensuring residents who have access to off-street parking are a five-minute walk away from a public charge point.

3. Planning Update and Other New Sources of Emissions

Table L. Planning requirements met by planning applications in Hounslow in 2023

Condition	Number
Number of planning applications where an air quality impact assessment was reviewed for air quality impacts	33
Number of planning applications required to monitor for construction dust	4
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	
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 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 16 audits undertaken by Cleaner Construction for London 2 achieved self-compliance 9 achieved compliance 3 sites recorded non-compliant 0 had no NRMM 2 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 L. The recommended NRMM condition wording from Cleaner Construction for London is as follows:

All Non-Road Mobile Machinery (NRMM) of net power of 37kW and up to and including 560kW used during the course of the demolition, site preparation and construction phases shall comply with the emission standards as published on the NRMM Website (https://nrmm.london/).

Unless it complies with the standards set out on the website, no NRMM shall be on site, at any time, whether in use or not, without the prior written consent of the local planning authority.

The developer shall keep an up to date list of all NRMM used during the demolition, site preparation and construction phases of the development on the online register at https://nrmm.london/.

Major applications in Hounslow are required to submit either a Construction or Demolition Management Plan or Environmental Management Plan which contains details of on-site NRMM. An LBH NRMM condition isn't used.

4.3 Air Quality Alerts

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

Hounslow cascades the Mayor's air quality alert messages.

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-AEA
- Servicing and ad hoc repair visits 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 2023
- 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 v03/24: 0.83
- Local bias adjustment factor from five co-location studies: 0.81
- As in previous years, the bias adjustment factor being used in the analysis of 2022 diffusion tube data is the local BAF of 0.81

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	12	12	11	12	8
Bias Adjustment Factor A	0.85 (0.76 - 0.95)	0.78 (0.7 - 0.88)	0.72 (0.66 - 0.8)	0.81 (0.74 - 0.88)	0.89 (0.76 - 1.06)
Diffusion Tube Bias B	18% (5% - 31%)	28% (14% - 43%)	38% (24% - 52%)	24% (14% - 34%)	13% (-5% - 31%)
Diffusion Tube Mean (µg/m^3)	39.4	29.9	27.4	36.6	26.7
Mean CV (Precision)	4.0%	5.1%	8.4%	2.5%	6.1%
Automatic Mean (µg/m^3)	33.3	23.3	19.8	29.5	23.7
Data Capture	97%	100%	100%	99%	93%
Adjusted Tube Mean (µg/m^3)	33 (30 - 37)	23 (21 - 26)	20 (18 - 22)	30 (27 - 32)	24 (20 - 28)

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 0.81. Details of each co-location study are listed above. The local bias adjustment factor of 0.81 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 2023 is 0.83 (Database v03/24).

Table M. Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	Local	03/24 (0.83	0.81
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

Short-term to Long-term Data Adjustment

Data from 18 diffusion tube sites in Hounslow have been annualised (one triplicate site). Annualisation has been completed using the LAQM Diffusion Tube Data Processing Tool in line with the methodology outlined in LLAQM.TG(19).

Distance Adjustment

Data from one diffusion tube site in Hounslow has been adjusted for distance. Distance Adjustment has been completed using the LAQM Diffusion Tube Data Processing Tool in line with the methodology specified in LLAQM.TG(19)

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

Site ID	Annualisation Factor Brentford	Annualisation Factor Gunnersbury	Annualisation Factor Hatton Cross	Annualisation Factor Heston	Average Annualisation Factor	Raw Data Annual Mean (µg m^{-3})	Annualised Annual Mean (µg m^{-3})	Comments
HS42	0.9897	1.0083	0.9861	0.9888	0.9932	29.1	28.9	
HS55	0.9909	0.9814	0.9603	0.9641	0.9742	29.4	28.6	
HS79	0.9400	0.9558	0.9310	0.9621	0.9472	28.0	26.5	
HS83	0.9608	0.9502	0.9432	0.9473	0.9504	15.3	14.6	
HS86	1.0034	1.0152	0.9694	0.9457	0.9834	32.0	31.4	
HS91	0.8691	0.8869	0.8144	0.8131	0.8459	37.4	31.7	
GD02	0.9507	0.9796	0.9251	0.9152	0.9427	21.2	20.0	
SC03	0.8851	0.8888	0.9066	0.9112	0.8979	20.5	18.4	

Table O. NO_2 Fall off With Distance Calculations

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted (µg m^{-3})	Background Concentration (µg m^{-3})	Concentration Predicted at Receptor (µg m^{-3})	Comments
SC11	1.0	3.0	36.5	27.3	34.4	

Appendix B Full Monthly Diffusion Tube Results for 2023

Table P. NO_2 2023 Diffusion Tube Results ($\mu g/m^3$)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.81)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
BREN A	517425	178071	**53.0**	**49.4**	**41.3**	**41.2**	**41.8**	33.2	33.3	37.6	**45.7**	38.7	37.7	28.9	-	-		Triplicate Site with BREN A, BREN B and BREN C - Annual data provided for BREN C only.
BREN B	517425	178071	**49.4**	**48.3**	39.1	**40.4**	**40.3**	33.7	33.6	35.5	**47.2**	38.4	**40.6**	28.3	-	-		
BREN C	517425	178071	**46.6**	**46.3**	**40.5**	**41.7**	39.7	30.0	31.8	39.9	**42.2**	37.1	39.8	26.4	39.1	31.5		
CHIS A	521084	178499	**41.3**	**41.6**	34.8	35.5	30.2	**40.5**	27.2	32.7	**41.2**	**42.5**	38.3		-	-		Triplicate Site with CHIS A, CHIS B and CHIS C - Annual data provided for CHIS C only.
CHIS B	521084	178499	**44.9**	**41.1**	33.7	33.5	29.9	39.6	28.8	30.9	**41.4**	**43.7**	39.4	32.5	-	-		
CHIS C	521084	178499	**44.9**	**42.1**	34.7	37.4	30.3	40.0	27.7	31.3	**40.2**	**43.7**	37.5	30.8	36.4	29.3		
FELT A	510691	173247	33.5	33.7	26.1	27.7	22.0	23.7		24.7	25.5			17.9	-	-		Triplicate Site with FELT A, FELT B and FELT C - Annual data provided for FELT C only.
FELT B	510691	173247	34.3		24.9	27.4	24.5	21.1		24.9	23.9			19.7	-	-		
FELT C	510691	173247	**40.2**	35.3	26.2	23.2	24.3	21.8		22.0	25.0				25.8	20.7		
HAT A	509334	174997	38.1	32.7	22.9	35.7	23.4	32.2	15.7		18.9	23.8	28.8	24.0	-	-		Triplicate Site with HAT A, HAT B and HAT C - Annual data provided for HAT C only.
HAT B	509334	174997	**47.3**	34.7	24.1	35.1	23.9	32.0	17.9	23.8	23.9	20.5	33.0	22.0	-	-		
HAT C	509334	174997	**44.7**	31.0	20.1	34.9	23.4	27.2	20.4		21.8	23.5	28.6	18.2	26.7	21.5		
HEST A	513655	176842	**44.0**	39.4	29.1	27.6	30.6	22.0	22.3	27.5	28.7	34.6	30.1	26.8	-	-		Triplicate Site with HEST A, HEST B and HEST C - Annual data provided for HEST C only.
HEST B	513655	176842	**45.3**	35.5	30.9	24.9	27.8	23.0	19.6	27.0	31.3	29.2	30.9	25.5	-	-		
HEST C	513655	176842	**42.9**	**41.8**	28.1	25.8	31.2	22.7	21.5	26.2		31.8	33.4	25.7	29.4	23.7		
HS32	517551	178186	**45.7**	**41.7**	38.8	**40.8**	32.0	32.2	29.7	30.0	**44.5**	**42.1**	35.1	30.7	36.5	29.4		
HS33	519452	178314	**45.3**	**42.0**	32.1	30.1	31.5	28.5	28.7	31.1	35.1	34.6	35.1	27.3	33.1	26.6		
HS34	520876	177164	33.4	28.8	22.5	21.1	18.2	18.7	13.2	18.9	23.6	25.4	27.4	17.4	22.1	17.8		
HS35	521220	178069	35.4	27.4	21.5	19.7	16.2	15.9	13.1	17.0	19.9	25.8		20.6	20.6	16.6		
HS41	512103	172506	**40.5**	31.7	32.1	34.9	33.2	30.0	19.5	27.8	31.3	29.7	29.1	18.4	29.6	23.9		
HS42	514090	175812	37.2	34.3	23.8	31.9	25.6		30.2			30.7		22.9	29.1	23.3		
HS43	517436	178044	**45.0**	37.4	25.1	27.2	27.9	15.6	18.6	23.8	25.0	28.8	28.8	21.1	26.5	21.3		
HS46	516887	178637	36.4	34.3		21.8	16.4		16.1		21.7	24.2	26.0	24.8	24.3	19.6		
HS47	516712	178588	32.4		32.7	31.0		31.5	24.3		34.9	34.3	32.7	21.4	30.7	24.7		
HS51	509249	174683	32.5	27.8	21.4	20.7	20.7	18.2	12.1	20.5	17.9	19.0	24.8	15.5	20.8	16.7		
HS52	508868	173720	28.8	28.6	20.1	18.1	19.6	17.6	11.3	17.6	15.8	18.8	24.2	12.5	19.3	15.5		
HS53	510986	176031	32.5	34.6	21.6	21.1	18.3	20.2	16.4	19.8		24.4	28.1	21.7	23.2	18.7		
HS54	510784	177460	**42.7**	39.7	32.5	31.4	26.5	26.7	25.8	25.7	33.9	36.0	31.8	26.1	31.2	25.1		
HS55	510750	176684	39.0	36.5				23.0	22.1					29.7	29.4	23.0		
HS61	516208	175793	**40.6**	34.1	24.4	21.7	20.1	18.8	20.0	21.0	21.0	25.6	29.3	19.1	24.2	19.5		

HS62	513619	176924	**43.5**	34.1	25.1	24.4	21.3	20.9	14.8	21.1	25.3	29.9	30.3	22.5	25.6	20.6		
HS63	513528	175868	**42.2**	37.0	31.5	29.5	26.9	26.8	22.4	25.6	32.0	8.6	28.8	29.9	28.1	22.6		
HS64	512860	175013	37.2		20.7	23.7	19.4	20.6	12.8	19.6	21.0	24.5	25.0	19.0	21.8	17.5		
HS65	511840	172745	36.4	28.1	21.0	18.8	15.2	16.3	13.6	17.3	21.4	23.1	25.2	14.1	20.5	16.5		
HS66	510957	173642				29.9	26.1	23.7	19.5	27.6	28.3	29.5	34.3	23.4	27.1	21.8		
HS67	516590	176888	**66.8**		**48.2**	**51.6**	**45.3**	**45.8**	**47.7**	**46.6**	**47.5**	**43.6**	**47.7**	38.3	47.6	38.3		
HS68	517278	177298	**50.6**	**46.7**	35.0	30.5	25.9	28.6	33.4	33.8	34.7	37.3	40.0	32.8	35.4	28.5		
HS69	519015	178018	**49.5**	**42.8**	29.5	27.5	29.8		20.6	24.6	26.8	30.1	33.0	21.8	30.0	24.2		
HS70	521442	177980	**46.6**	**41.6**	35.8	35.9	32.3	33.5	29.1	34.4	**45.1**	**43.6**	33.5	34.8	36.8	29.6		
HS71	519178	179375	39.2	**41.0**	32.5	29.3	24.0		24.2	25.4	33.5	36.9	33.9	26.8	31.3	25.2		
HS72	513064	177552	**43.1**	**45.1**	28.7	25.2	20.0	20.6	23.4	23.6	28.2	28.0	28.1	24.7	27.7	22.3		
HS73	510567	172857	33.5	31.1	23.2	19.8	20.6	17.7	18.4	22.5	22.8	26.7	24.9	16.5	22.9	18.4		
HS74	511989	171797	30.5	31.0	20.8	23.6	17.0	19.0	15.5	18.6	20.9	22.1	22.0	17.6	21.2	17.1		
HS78	512763	175312	**47.3**	**43.2**	32.6	38.6	35.8	37.9	26.6	31.1	36.3	30.4		26.9	34.8	28.0		
HS79	513839	175316	40.0	34.2	24.2		38.9			19.6		23.5	29.0	19.7	28.0	21.3		
HS80	514433	175950	**55.8**	**52.0**	34.6	37.5	12.2	**43.4**	29.3	37.5	35.6	36.8	**42.9**	16.6	35.9	28.9		
HS81	515035	175907	30.1	25.4	15.4	15.0	12.1	11.0	9.0	12.4	14.7	18.1		16.5	15.8	12.8		
HS82	516669	175998	32.4	24.8	15.5	1.9	10.7	12.6	10.5	13.8	13.4			13.7	14.4	11.6		
HS83	514848	178068	27.1	22.3	12.5	11.6	19.9		9.6		13.9		10.4		15.3	11.7		
HS84	512709	172155	**40.1**	35.4	26.6	27.1	25.3	21.8	19.9	23.7	27.1	29.9	29.2	20.9	26.9	21.6		
HS85	513213	175655	39.8	**44.5**	28.9	30.9	26.6	26.9	28.3	28.3	34.9	32.0	34.6	27.9	31.6	25.4		
HS86	510947	176564	**49.6**	**44.7**	31.3	31.1	13.7	30.9	28.7						32.0	25.3		
HS87A	511542	176426	**56.0**	**50.7**	32.5	35.8	22.1	33.3	32.8	34.1	34.3	38.7	38.3	36.5	36.5	29.4		
HS88	521483	176692	33.1	29.6	16.4	16.5	17.9	14.0	9.6	11.6	14.6	18.8	21.1	14.2	17.7	14.2		
HS89	515424	174719	34.4	30.4	21.5	18.7		21.1	11.9	18.8	22.0	22.4	21.3	16.9	21.4	17.2		
HS90	517585	177606	32.1	32.4	23.2	22.3		15.2	15.8	20.0	20.9	24.6		20.4	22.3	17.9		
HS91	521041	177973	40.0	**44.8**		35.0		31.9					37.2		37.4	25.5		
HS92	521110	177970	36.2	29.7	26.9	21.5	20.7	21.9			29.9	30.6	29.5		27.1	21.8		
HS93	521110	177970	33.4	34.1	26.4	23.8	21.0	22.3		18.9	32.1	33.2	30.3		27.1	21.8		
HS94	521490	177920	36.4	**52.1**	26.9	38.8	37.7	39.8	38.0	39.4	**43.8**	22.0	**41.1**	31.5	37.2	29.9		
HS95	521253	177952	38.9	35.2	36.6	26.2	22.2	26.7	21.3	23.1		32.7	28.2	22.4	28.3	22.8		
HS96	520420	178515	**45.4**		34.5	36.8		37.6	26.1	33.8	**40.1**	37.5		25.0	34.9	28.1		
HS97	520371	178591	35.1		29.8	30.6	26.2	26.7	18.0	23.8	32.7	32.8	30.5	25.1	28.1	22.6		
HS98	520348	178662	34.9	35.7	23.3	27.8	25.4		20.2		29.8		29.5	23.0	27.4	22.1		
HS99	521243	177689			30.3	28.0	24.6	26.4	24.4	25.3	33.6	33.4	30.1	24.4	28.1	22.6		
GD01	518390	177801	31.0	31.7	24.2	25.3	22.5	23.8	18.4		16.5		25.7	20.4	23.8	19.2		
GD02	518369	177869	34.8	31.8	20.6	19.1	15.7	14.6					20.4	17.8	21.2	16.1		
GD03	518309	177985	34.1	29.1	18.4	17.8	15.3	13.5	13.6		16.5		21.6	18.5	19.4	15.6		

SC01	521173	177470	**45.6**	**41.9**	36.9		32.0	34.2	20.5	26.2	33.2	31.5	32.6	24.0	32.3	26.0		
SC02	521168	177325	37.0				24.6	28.2	24.3	30.2	34.9	35.6	33.0	22.8	29.9	24.1		
SC03	520923	177355	28.5	24.4	17.2						17.5	24.5	20.4	13.8	20.5	14.8		
SC04	520734	177269	36.3	31.8	22.3		15.9	17.0	14.4	18.0	20.1	26.7	24.2	19.0	21.9	17.6		
SC05	520639	177257	33.7	33.7	22.1		20.6	20.7	14.0	21.4	23.2	30.4	31.2	22.2	24.6	19.8		
SC06	520206	177372	37.8	30.2	25.9		24.3	23.8	17.0	20.8	27.3	35.8	29.1	22.5	26.4	21.3		
SC07	520261	177552	39.9	**41.3**	26.7		26.2	30.5	26.6	29.1	31.9	18.9	36.7	27.6	30.2	24.3		
SC08	520046	177636	33.7	29.7	18.8		15.0		8.7		16.4	21.2	23.7	17.0	20.1	16.2		
SC09	520771	177886	32.4	26.3	20.6		18.3	17.7	8.9	15.7	15.6	18.2	21.5	13.8	18.7	15.1		
SC10	520612	177889	36.4	28.8	20.6		18.5	16.7	11.1	15.3		**59.4**	24.8	18.5	24.3	19.6		
SC11	520526	177933	**53.6**	**51.2**	**48.5**		38.2	**44.8**	**42.9**	**42.9**	**49.7**	34.0	52.4	**41.0**	**45.3**	36.5	34.4	
SC12	520506	177907	36.8	29.3	21.2		21.0	20.4	14.0	18.8	19.3			19.3	21.7	17.5		
SC13	570367	177850	39.6	37.5	30.2		24.2	23.3	17.8	23.2		22.7	35.3	27.9	27.9	22.4		
SC14	519960	177989	38.6	28.1	25.0		25.7	23.5	11.1			30.8	28.0	19.1	25.3	20.3		

☒ All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table P.

☒ Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.

☒ Local bias adjustment factor used.

☐ National bias adjustment factor used.

☒ Where applicable, data has been distance corrected for relevant exposure in the final column.

☒ Hounslow confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

Appendix C Map(s) of Monitoring Locations and AQMAs

Figure D. Map of Automatic Monitoring Sites and AQMA Boundary