The London Borough of Wandsworth Air Quality Annual Status Report for 2023

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This report provides a detailed overview of air quality in the London Borough of Wandsworth 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

Monitoring needs to be carried out over an extended period to show real-world trends. It is affected by temperature, weather, geography/local conditions, and wind direction. It is not necessarily accurate to compare one year's data with the next without considering all the variable factors. However, this does provide an 'indication' of local changes. In September 2023 an updated Air Quality Action Plan (AQAP) was approved by the Wandsworth environment cabinet. The new AQAP adopted the interim World Health Organisation (WHO) targets: Nitrogen dioxide (NO_2) at an annual mean of 30µg m^{-3} and Particulate Matter $(PM)_{2.5}$ at an annual mean of 10 µg m^{-3}. The latest monitoring results for 2023 in the London Borough of Wandsworth at 9 sites exceeded the interim WHO targets for nitrogen dioxide (NO_2) and all sites exceeded the WHO guideline targets, which have been set at 10 µg m^{-3}. In terms of PM_{10}, all sites except one have exceeded the WHO guideline targets which have been set at an annual mean of 15µg m^{-3}.

Air quality is measured by three principal techniques in the London Borough of Wandsworth:

1. Continuous monitoring

   There are seven continuous monitoring stations located in Wandsworth, all seven of these monitoring stations analyse NO_2 and five analyse PM_{10} (see table B for details). They produce accurate, real-time data that feed into the London Air Quality Network (LAQN) and can be viewed on the LondonAir website (www.londonair.org.uk). These stations comprise of equipment which has been superseded by latest improved technology, therefore there have been challenges with maintenance and sourcing technical components and calibration gases. Wandsworth Borough Council has made a significant investment in its continuous monitoring and, at the time of writing this report, are undergoing the installation process to refresh the network. It is expected that the new monitoring stations will be in place by 2024/25. Each monitoring location will continuously monitor nitrogen dioxide and particulate matter ($PM_{2.5}$).

2. Non-continuous monitoring using nitrogen dioxide (NO_2) diffusion tubes

   In 2023 there were a total of 58 static monitoring locations across the borough. Diffusion tubes provide a comprehensive coverage of all hotspots including the borough's five air quality focus areas, the town centres and main roads. All sites are kept under constant review with changes taking effect annually in January. Diffusion tubes offer a relatively inexpensive and certified means of gauging NO_2 concentrations at multiple locations across the borough and are useful for trend analysis over a number of years.

   In 2018, diffusion tubes along York Road and the Nine Elms areas were added. Diffusion tube locations were reviewed at the end of 2019, and 10 new locations were included. In 2020, 10 diffusion tubes were added and in 2021 a further 6 diffusion tubes were added. In 2022 an additional 3 diffusion tubes were added with a further 6 locations added to the network in 2023.

3. Low-cost sensors using Breathe London Nodes

   Most recently, commencing in late 2021, a network of Breathe London Nodes were installed across the borough to measure NO_2 and fine particulate matter ($PM_{2.5}$). The Breathe London network is run by the Environmental Research Group (ERG) at Imperial College London – the same provider who maintain the London Air Quality Network. The nodes provide a low-cost solution for real-time monitoring however they are indicative, monitoring ambient $PM_{2.5}$ and for NO_2 across the borough.

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)
WA2	**Wandsworth Town Hall**	Urban background	525779	174662	NO_2, O_3	Y	Chemiluminescent	22	22	4.85
WA7	**Putney High Street**	Kerbside	524035	175334	NO_2, PM_{10}	Y	Chemiluminescent; TEOM	1	0.5	1.75
WA8	**Putney High Street facade**	Roadside	524032	175335	NO_2	Y	Chemiluminescent	1	1	4.85
WA9	**Felsham Road, Putney**	Urban background	524044	175495	NO_2, PM_{10}	Y	Chemiluminescent; TEOM	4.8m from Felsham Road	1	2.75
WAA	**Thessaly Road, Battersea**	Roadside	529137	177249	NO_2, PM_{10}	Y	Chemiluminescent; TEOM	7.5m from Battersea Park Road	1	1.75
WAB	**Tooting High Street**	Roadside	527567	171628	NO_2, PM_{10}	Y	Chemiluminescent; TEOM	2	2	1.75
WAC	**Lavender Hill, Clapham Junction**	Roadside	527430	175454	NO_2, PM_{10}	Y	Chemiluminescent; TEOM	8m from Lavender Hill	1	1.75

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)
W23	**37 West Hill**	Roadside	525111	174619	NO_2	Yes	2.2	3	No	2.52
W24	**Putney Sign (MacDonald's)**	Roadside	524045	175366	NO_2	Yes	2.4	2.4	No	2.30
W21	**Felsham Rd (tube 1)**	Urban Background	524044	175495	NO_2	Yes	4.8	1	Yes	3.35
W22	**Felsham Rd (tube 2)**	Urban Background	524044	175495	NO_2	Yes	4.8	1	Yes	3.35
W6	**21 Daylesford Avenue**	Urban Background	522270	175307	NO_2	Yes	11	2.4	No	2.85
W25	**Roehampton Church School (on corner of Roehampton Lane)**	Roadside	522542	173282	NO_2	Yes	2.5	0.6	No	2.25
W26	**Replingham Road (corner of Heythrope street)**	Kerbside	524847	173282	NO_2	Yes	2.5	0.6	No	2.37
W27	**68-70 Sutherland Grove (opposite St. Cecilia's School)**	Urban Background	524847	173282	NO_2	Yes	2.0	0.7	No	2.83

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)
W28	**61 Summerley Street**	Urban Background	526011	172869	NO_2	Yes	2.1	0.6	No	2.36
W29	**Junction Skelbrook Street /Garratt Lane**	Roadside	526099	172833	NO_2	Yes	0.7	3.3	No	2.27
W4	**108 Mitcham Road**	Kerbside	527688	171204	NO_2	Yes	3.0	0.6	No	2.65
W8	**50 Bickely Street**	Urban Background	527524	171239	NO_2	Yes	3.0	1.9	No	2.8
W30	**11b Elmbourne Road**	Urban Background	528900	172431	NO_2	Yes	4.5	0.5	No	2.56
W31	**Junction Hildreth Street /Bedford Hill**	Kerbside	528607	173333	NO_2	Yes	1.4	3.6	No	2.21
W32	**2-3 Balham High Road**	Kerbside	528436	173133	NO_2	Yes	4.4	0.7	No	2.30
W34	**46 Shelgate Road**	Urban Background	527569	174986	NO_2	Yes	2.1	0.4	No	2.38
W35	**47 Northcote Road**	Kerbside	527487	174981	NO_2	Yes	4.2	0.5	No	2.37
W36	**208 St Anne's Hill (opposite St Anne's School)**	Urban Background	525875	174616	NO_2	Yes	2.7	0.9	No	2.38
W37	**302A Merton Rd (Riversdale**	Roadside	525278	173483	NO_2	Yes	17.3	3.4	No	2.33

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)
	School Gate)									
W38	**High View School, Plough Terrace, No Stopping Sign o/s school**	Kerbside	526863	175239	NO_2	Yes	0.5	0.5	No	2.42
NE2	**Chesterton School**	Roadside	528043	176618	NO_2	Yes	2.9	2.9	No	2.20
NE3	**Queenstown Road**	Kerbside	528771	176819	NO_2	Yes	1.1	1.1	No	2.30
NE4	**16 Lockington Road**	Urban Background	528871	176943	NO_2	Yes	1.2	0.7	No	2.37
NE5	**Kirtling Street**	Kerbside	529265	177353	NO_2	Yes	0.5	0.5	No	2.35
NE6	**Nine Elms Lane**	Kerbside	529413	177486	NO_2	Yes	0.5	0.5	No	2.40
NE7	**1 Nine Elms, Parry Street**	Roadside	530129	177727	NO_2	Yes	0.5	0.5	No	2.35
NE8	**Battersea Park (new location)**	Urban Background	528023	177176	NO_2	Yes	420	420.0	No	2.37
YR1	**Trafalgar House**	Kerbside	526201	175340	NO_2	Yes	0.8	0.8	No	2.30
YR2	**Royal Academy of Dance**	Kerbside	526581	175731	NO_2	Yes	14	0.7	No	2.26

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)
YR3	**Cotton Row**	Urban Background	526480	175930	NO_2	Yes	160	160	No	2.34
YR4	**YR4 Falcon Road**	Kerbside	527086	176119	NO_2	Yes	0.8	0.8	No	2.25
YR5	**256 Battersea Park Road**	Kerbside	527109	176022	NO_2	Yes	0.6	0.6	No	2.32
YR6	**31-32 Battersea Square**	Kerbside	526817	176686	NO_2	Yes	0.4	0.4	No	2.35
W39	**Carlton Dr/Putney Hill**	Kerbside	523898	174717	NO_2	Yes	18	0.5	No	2.20
W40	**Roehampton High St/Roehampton Ln**	Kerbside	522343	173805	NO_2	Yes	13	0.5	No	2.2
W41	**Northcote Rd/Broomwood Rd**	Kerbside	527675	174339	NO_2	Yes	2.0	0.7	No	2.2
W42	**Bellevue Rd/Trinity Road**	Roadside	527426	173249	NO_2	Yes	10	1.1	No	2.2
W43	**Trinity Road (FCCFG)**	Roadside	526783	174250	NO_2	Yes	18	2.0	No	2.2
W44	**Thessaly Rd (Marsh House)**	Roadside	529425	176920	NO_2	Yes	26	1.5	No	2.2
W45	**A24 Wimbledon Sewing**	Roadside	528096	172439	NO_2	Yes	21	2.5	No	2.2

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)
	Machines Lamppost									
W46	**Trinity Road/Outside 128**	Kerbside	527639	172882	NO_2	Yes	11	0.8	No	2.2
W47	**Westhill School Lamppost West Hill Barber Shop**	Kerbside	525243	174643	NO_2	Yes	5.0	0.7	No	2.2
W48	**Rutherford House School Outside School**	Kerbside	528263	172735	NO_2	Yes	22	0.5	No	2.2
W49	**Garratt Ln/ Earlsfield Rd**	Kerbside	525987	173077	NO_2	Yes	7.0	0.5	No	2.3
W50	**Penwith Rd/Garratt Ln**	Roadside	525945	173083	NO_2	Yes	13	1.1	No	2.2
W51	**Aldrington Road/North Drive**	Kerbside	529390	171787	NO2	Yes	10	0.8	No	2.2
SA1	**Louiseville Road**	Kerbside	528160	172414	NO_2	Yes	9.5	0.4	No	2.3
WH 1	**Roehampton Lane/ Upper Richmond road**	Kerbside	522078	175466	NO_2	Yes	13	1.0	No	2.2
WH 2	**Priory Lane/ Upper**	Roadside	521752	175435	NO_2	Yes	13	2.5	No	2.1

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)
	Richmond Road									
WH 3	**Clarence Ln/Roehampton Ln**	Kerbside	522087	174262	NO_2	Yes	12	0.6	No	2.1
BW 1	**Burntwood Ln (Tranmere/ Aboyne)**	Kerbside	526503	172556	NO_2	Yes	6.0	0.7	No	2.4
BW 2	**Burntwood Ln (Bridgfort / France Court)**	Kerbside	526335	172395	NO_2	Yes	5.2	1.0	No	2.4
New Locations added since January 2023										
W52	**Medfield Street**	Kerbside	522481	173792	NO_2	Yes	9.5	0.4	No	2.2
W53	**Smeaton Rd/Merton Road**	Kerbside	525213	173701	NO_2	Yes	9.7	0.9	No	2.2
W54	**Roehampton Ln/Medfield St**	Kerbside	522382	173779	NO_2	Yes	2.2	1.0	No	2.4
W55	**Burntwood ln (Beechcroft Road)**	Kerbside	527218	173043	NO_2	Yes	7.0	3.6	No	2.2
W56	**Boundaries Road**	Kerbside	528382	173270	NO_2	Yes	4.1	0.4	No	2.2

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)
LR1	**Lower Richmond Road**	Kerbside	523563	175845	NO_2	Yes	6.0	1.9	No	2.6

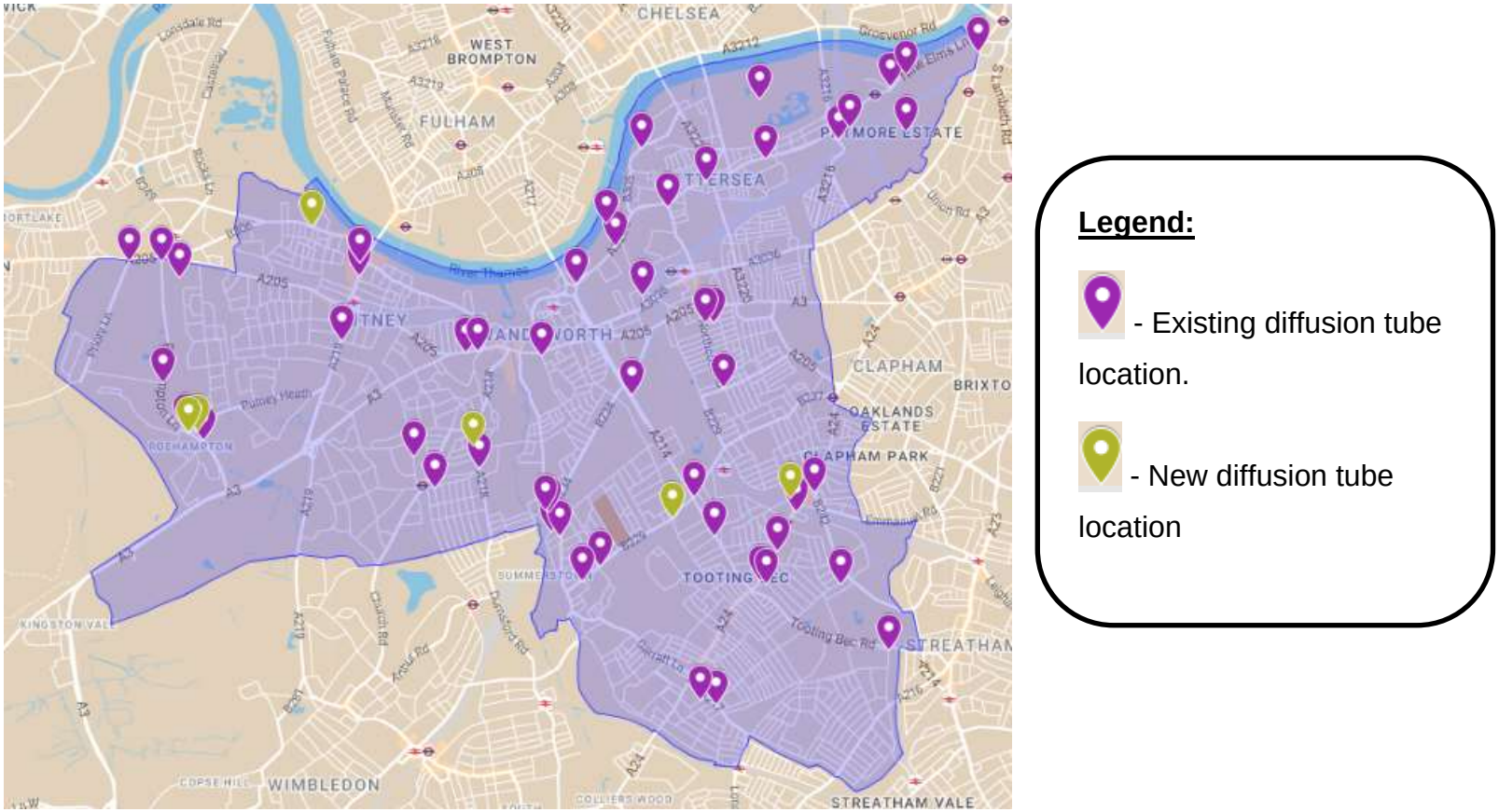
Notes:

(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.

Figure A depicts locations of the diffusion tubes in 2023, including the six new locations. Figure M (Appendix C) has a map of the automatic monitoring stations.

Figure A: Map of Non-Automatic Monitoring Sites (Diffusion Tubes)



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 Name	Site type	Valid data capture for monitoring period %[(a)]	Valid data capture 2023 %[(b)]	2017	2018	2019	2020	2021	2022	2023
WA2 (Wandsworth Town Hall)	Automatic	100	90	**40**	38	**41**	30	29	28	25
WA7 (Putney High Street)	Automatic	23	23	**76**	**68**	**69**	**58**	**62**	Insufficient valid data	Insufficient valid data
WA8 (Putney High Street first floor)	Automatic	0	0	**60**	**62**	**66**	**53**	**57**	**51[c]**	Insufficient valid data
WA9 (Felsham Road)	Automatic	0	0	31	35	35	26	27	Insufficient valid data	Insufficient valid data

Site ID/Site Name	Site type	Valid data capture for monitoring period %[a]	Valid data capture 2023 %[b]	2017	2018	2019	2020	2021	2022	2023
WAA (Thessaly Road, Battersea)	Automatic	100	81	33	33c	32	27	28	27	24
WAB (Tooting High Street)	Automatic	100	70	**55**	**53**	**50**	35c	34c	34c	33c
WAC (Lavender Hill, Clapham Junction)	Automatic	0	0	**43**	**42**	37c	31	35	Insufficient valid data	Insufficient valid data

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 **orange and 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 **red, bold and underlined**.

Measurements for diffusion tubes have been corrected for bias.

All measurements 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%. This applied to WAB (Tooting High Street).

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%).

(c) Data has been “annualised” in accordance with LLAQM Technical Guidance.

All 2023 data from the automatic monitoring stations have been fully ratified. Data capture rate above 75% was achieved at only two of the seven automatic monitoring stations: WA2 (Wandsworth Town) and WAA (Thessaly Road). WAB (Tooting High Street) achieved 70% data capture, therefore the data was annualised. WA7 (Putney High Street), WA8 (Putney High Street first floor); WA9 (Felsham Road), and WAC (Lavender Hill, Clapham Junction) did not have enough valid data following ratification, therefore the data had to be withdrawn.

The automatic monitoring data are subject to correction by the Environmental Research Group (ERG) at Imperial College London as part of the London Air Quality Network (LAQN). Automatic monitoring took place over the full 12-month period in 2023, however, during the annual data ratification process a portion of the data was considered void, reducing the valid data capture. Multiple factors including low converter efficiencies and valve leaks found at audits, over-heating issues, sampling problems and record-keeping contributed to insufficient data for WA7 (Putney High Street), WA8 (Putney High Street first floor) and WAC (Lavender Hill, Clapham Junction). The analyser’s response to span gas through the year at WA9 (Felsham Road) resulted in the ambient measurements being unable to be scaled with confidence. Due to the age and failure of the automated infrastructure funding by the

Council was agreed to update the outdated infrastructure and monitoring equipment, and, at the time of writing, new equipment is being installed. There has also been a delay due to the need to replace all cabinets in the borough and install new plinths.

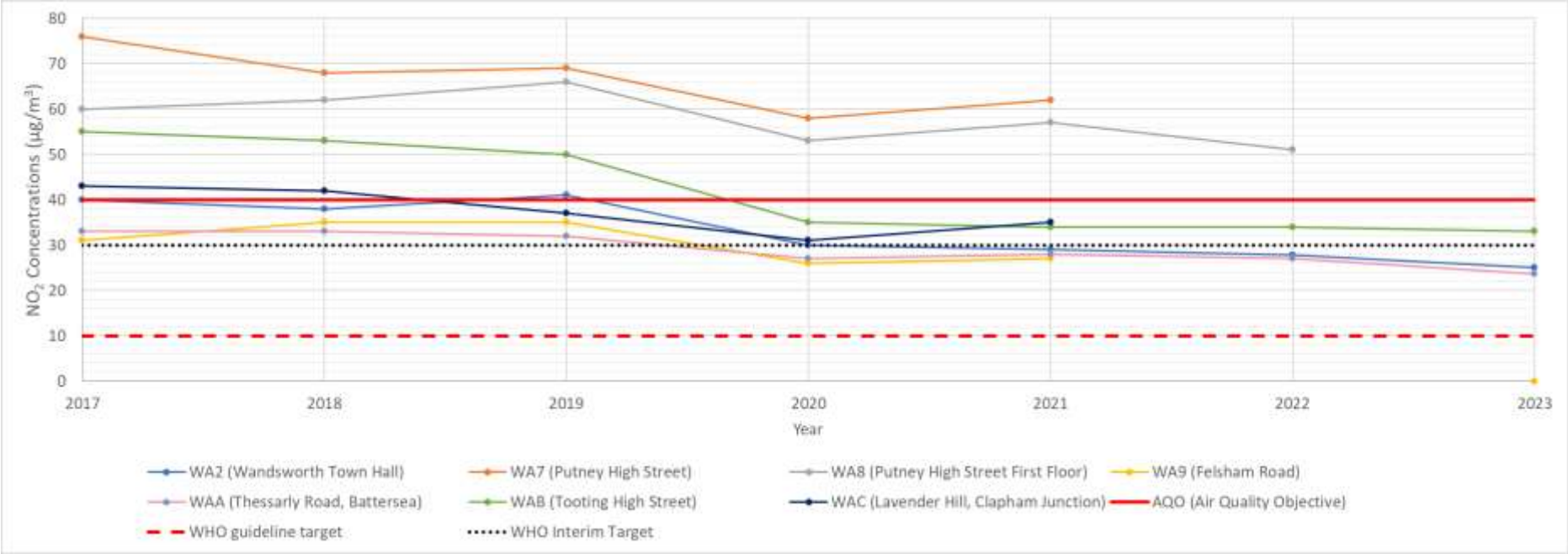
Annual mean NO_2 concentrations measured at all the automatic monitoring stations have constantly decreased since 2017, and more generally over the 7-year period (2017-2023) for which data have been reported. Data comparison for 2022 and 2023 show a decrease in levels of NO_2 concentrations recorded at three of the automatic monitoring stations: WA2 (Wandsworth Town Hall), WAA (Thessaly Road, Battersea) and WAB (Tooting High Street) for which data was available. WA2 (Wandsworth Town Hall) and WAA (Thessaly Road, Battersea) have shown a reduction of 4 µg m^{-3}, whilst WAB (Tooting High Street) has shown a decrease of 1 µg m^{-3}.

Data was not available for the monitoring stations in Putney (WA7, WA8 and WA9) and Clapham Junction (WAC), however based on diffusion tube data in the areas, and in line with the available data from the automatic monitoring network. it is likely that these monitoring stations would have recorded a decrease in nitrogen dioxide levels.

Figure B depicts the trend of nitrogen dioxide recorded at the monitoring stations against the National Air Quality Objective, the interim WHO target levels which have been adopted in Wandsworth Council's AQAP, and the WHO guideline target. The figure shows that, whilst levels of nitrogen dioxide at monitoring stations were below the national objective, one station was exceeding the interim WHO target levels and they were all exceeding the WHO guideline target,

It is difficult to say whether the monitoring station at WA7 (Putney High Street) and WA8 (Putney High Street first floor) would have achieved the national air quality objective, but the nearest diffusion tube for the first time has recorded an annual mean value below 40 µg m^{-3} (Table E).

Figure B: Automatic monitoring stations annual mean nitrogen dioxide (NO_2) trend chart 2017- 2023.



Notes

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

WHO interim target adopted by Wandsworth in September 2023 and incorporated in the AQAP: Ambient (outdoor) air pollution (who.int)

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

Diffusion Tube ID/Site Name	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
W23 (West Hill)	525111	174619	Roadside	100	100	**57**	**55**	**49**	39	**45**	38	33
W24 (Putney Sign Mac Donald's)	524045	175366	Roadside	90.4	90.4	**63**	**55**	**59**	**49**	**47**	**43**	38
W21 (Felsham road, tube 1)	524044	175495	Urban Background	100	100	26	33	30	23	24	21	19
W22 (Felsham road, tube 2)	524044	175495	Urban Background	100	100	29	30	31	23	24	23	19
W6 (Daylesford Avenue)	522270	175307	Urban Background	90.4	90.4	23	23	23	16	16	15	13
W25 (Roehampton Church School)	522542	173282	Roadside	84.6	84.6	32	29	27	20	21	19	18
W26 (Replingham Road)	524847	173282	Kerbside	100	100	31	30	31c	21	19	17	16

Diffusion Tube ID/Site Name	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
W27 (Sutherland Grove)	524847	173282	Urban Background	90.4	90.4	24	25	23	16	19	15	14
W28 (Summerley street)	526011	172869	Urban Background	84.6	84.6	27	28	27	20	21	17	15
W29 (Skelbrook St./Garratt L)	526099	172833	Roadside	84.6	84.6	31	32	31	21	22	19	17
W4 (Mitcham road)	527688	171204	Kerbside	100	100	**66**	**64**	**62**	**51**	**50**	**46**	**42**
W8 (Bickely Street)	527524	171239	Urban Background	100	100	31	31	28	22	24	21	20
W30 (Elmbourne Road)	528900	172431	Urban Background	92.3	92.3	33	31	29	21	23	19	17
W31 (Junction Hildreth St./Bedford Hill)	528607	173333	Kerbside	100	100	39	39	36	26	29	25	23

Diffusion Tube ID/Site Name	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
W32 (Balham High Road)	528436	173133	Kerbside	100	100	**46**	**44**	39	31	31	28	24
W34 (Shelgate Road)	527569	174986	Urban Background	100	100	31	30	31	21	22	19	17
W35 (Northcote Road)	527487	174981	Kerbside	100	100	34	35	32	24	25	21	19
W36 (St Anne's Hill)	525875	174616	Urban Background	92.3	92.3	39	33	31	23	23	20	19
W37 (Merton Rd)	525278	173483	Roadside	82.7	82.7	Not Open	37	37	27	25	22	19
W38 (High View School)	526863	175239	Kerbside	92.3	92.3	Not Open	32	29	22	23	20	18
NE2 (Chesterton School)	528043	176618	Roadside	100	100	Not Open	35	34	24	25	22	20
NE3 (Queenstown Road)	528771	176819	Kerbside	100	100	Not Open	**63**	**59**	**42**	**40**	35	32

Diffusion Tube ID/Site Name	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
NE4 (Lockington Road)	528871	176943	Urban Background	92.3	92.3	36	34	31	24	25	22	19
NE5 (Kirtling Street)	529265	177353	Kerbside	82.7	82.7	Not Open	**46**	39	29	31	26	26
NE6 (Nine Elms Lane)	529413	177486	Kerbside	100	100	Not Open	**54**	**48**	**40**	**40**	34	30
NE7 (1 Nine Elms, Parry)	530129	177727	Roadside	84.6	84.6	Not Open	**49**	**47**	34	34	28	25
NE8 (Battersea Park)	528023	177176	Urban Background	84.6	84.6	Not Open	24c	20	15	16	14	12
YR1 (Trafalgar House)	526201	175340	Kerbside	100	100	Not Open	**53**	**44**	34	31	28	24
YR2 (Royal Academy of Dance)	526581	175731	Kerbside	100	100	Not Open	**75**	**57**	37	36	36	35
YR3 (Cotton Row)	526480	175930	Urban Background	80.8	80.8	Not Open	31	29	24	24	20	19

Diffusion Tube ID/Site Name	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
YR4 (York Road, corner with Falcon Road)	527086	176119	Kerbside	100	100	Not Open	**49**	**49**	38	38	31	28
YR5 (Battersea Park Road)	527109	176022	Kerbside	92.3	92.3	Not Open	**73**	**70**	**52**	**55**	**43**	**42**
YR6 (Battersea Square)	526817	176686	Kerbside	76.9	76.9	Not Open	**44**	**43**	32	30	27	26
W39 (Carlton Dr/ Putney Hill)	523898	174717	Kerbside	100	100	Not Open	Not Open	Not Open	29	32	28	24
W40 (Roehampton High St.)	522343	173805	Kerbside	90.4	90.4	Not Open	Not Open	Not Open	25	26	24	21
W41 (Northcote /Broomwood Rd)	527675	174339	Kerbside	100	100	Not Open	Not Open	Not Open	25	26	20	18

Diffusion Tube ID/Site Name	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
W42 (Bellevue Rd/ Trinity Rd)	527426	173249	Roadside	100	100	Not Open	Not Open	Not Open	**48**	**45**	38	33
W43 Trinity Rd (Fitzhugh Grove)	526783	174250	Roadside	100	100	Not Open	Not Open	Not Open	28	28	25	22
W44 Thessaly Rd (Marsh House)	529425	176920	Roadside	100	100	Not Open	Not Open	Not Open	21	22	19	18
W45 A24 Wimbledon (Sewing Machines)	528096	172439	Roadside	82.7	82.7	Not Open	Not Open	Not Open	31	31	27	26
W46 Trinity Rd	527639	172882	Kerbside	100	100	Not Open	Not Open	Not Open	38	37	30	26
W47 West Hill	525243	174643	Kerbside	100	100	Not Open	Not Open	Not Open	**58**	**64**	**60**	**53**
W48 Balham High Rd	528263	172735	Kerbside	92.3	92.3	Not Open	Not Open	Not Open	27	27	23	21

Diffusion Tube ID/Site Name	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
W49 Garratt Ln/ Earlsfield Rd)	525987	173077	Kerbside	100	100	Not Open	Not Open	Not Open	Not Open	32	29	27
W50 Penwith Rd/Garratt Ln	525945	173083	Roadside	57.7	57.7	Not Open	Not Open	Not Open	Not Open	32	26	22c
W51 Aldrington Road/North Drive	529390	171787	Kerbside	100	100	Not Open	Not Open	Not Open	Not Open	Not Open	19	17
W52 Medfield Street	522481	173792	Kerbside	100	100	Not Open	Not Open	Not Open	Not Open	Not Open	Not Open	25
W53 Smeaton Rd/Merton Road	525213	173701	Kerbside	100	100	Not Open	Not Open	Not Open	Not Open	Not Open	Not Open	18
W54 Roehampton Ln/Medfield St	522382	173779	Kerbside	82.7	82.7	Not Open	Not Open	Not Open	Not Open	Not Open	Not Open	30

Diffusion Tube ID/Site Name	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
W55 Burntwood Ln (Beechcroft Road)	527218	173043	Kerbside	100	100	Not Open	Not Open	Not Open	Not Open	Not Open	Not Open	21
W56 Boundaries Road	528382	173270	Kerbside	92.3	92.3	Not Open	Not Open	Not Open	Not Open	Not Open	Not Open	17
SA1 Louisville Rd,	528160	172414	Kerbside	100	100	Not Open	Not Open	Not Open	Not Open	22	19	18
WH 1 Roehampton Lane/ Upper Richmond Road	522078	175466	Kerbside	100	100	Not Open	Not Open	Not Open	Not Open	32	27	27
WH 2 Priory Lane/ Upper Richmond Rd	521752	175435	Roadside	84.6	84.6	Not Open	Not Open	Not Open	Not Open	27	23	20
WH 3 Clarence Ln/Roehampton Ln	522087	174262	Kerbside	100	100	Not Open	Not Open	Not Open	Not Open	34	29	25

Diffusion Tube ID/Site Name	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
BW 1 Burntwood Ln Tranmere Rd/Aboyne Rd	526503	172556	Kerbside	100	100	Not Open	Not Open	Not Open	Not Open	Not Open	35	24
BW 2 Burntwood Ln Bridgford / France Court	526335	172395	Kerbside	100	100	Not Open	Not Open	Not Open	Not Open	Not Open	22	20
LR1 Lower Richmond Road	523563	175845	Kerbside	92.3	92.3	Not Open	Not Open	Not Open	Not Open	Not Open	Not Open	26

☒ **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 40 µg m^{-3}.are shown in orange and bold.

NO_2 annual means exceeding 60 µg m^{-3}., indicating a potential exceedance of the NO_2 1-hour mean objective are shown in red, 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%. This applied to W50 (Penwith Road/Garratt Lane).

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%).

(c) Data has been “annualised” in accordance with LLAQM Technical Guidance.

The data capture for 2023 for all sites was satisfactory (94%). Only one site (W50 Penwith Road/Garratt Lane) recorded a data capture of less than 75%, so annualising in line with DEFRA guidance LAQM TG (19) was required. The diffusion tube results from the 2023 monitoring (Table E) show that the annual mean national air quality objective (NAQO) of 40 µg m-3 was exceeded at 3 monitoring locations which is 5% of the total monitoring sites (58); this is a decrease of one site from the previous year. The 40 µg m-3 annual mean objective was exceeded at:

- **W4 - Mitcham Road = 41.7 µg m^{-3}**
- **YR5 - Battersea Park Road = 42.4 µg m^{-3}**
- **W47 - West Hill = 52.8 µg m^{-3}**

The overall monitoring results for the borough in 2023 show significant improvements toward borough wide compliance with the annual mean National Air Quality Objective for NO_2. To recap, 95% of monitoring locations achieved compliance at the point of

monitoring, rising to 100% compliance following distance correction to relevant exposure of the 3 exceeding diffusion tube sites (Table O).

It should be noted that no sites exceeded the annual mean of 60 µg m^{-3} which indicates that the 1-hour mean objective was met at all sites, a reduction from 2022 where one site exceeded this target. Data from the borough's diffusion tube network between 2017 and 2023 have been charted in Figures C to H across six charts, the locations have been grouped in exceedances and air quality focus areas to aid comparison.

The impact of COVID-19 resulted in a drop in annual mean NO_2 concentrations at all monitoring locations in 2020. In 2019, 11 monitoring locations exceeded the annual mean NO_2 national air quality objective (NAQO) of 40 µg m^{-3}, compared to 6 in 2020, a significant improvement. While NO_2 concentrations did rebound slightly in 2021, the downward trend continued in 2022 with NO_2 concentrations reducing across the borough as compared to 2021. The number of locations exceeding the annual mean NO_2 NAQO reduced to 4.

In 2023, the number of locations exceeding the annual mean NO_2 NAQO reduced to 3, equating to a compliance rate of 95% with the annual mean NO_2 NAQO. This marks a significant improvement in air quality across Wandsworth. The lowest concentrations for NO_2 recorded in 2023 were at site ID NE8 (Battersea Park) with 12 µg m^{-3}. This means that currently, despite the improvements in air quality, no location monitored in Wandsworth has met the annual mean WHO guideline value of 10 µg m^{-3} set to protect the public from the health effects of gaseous nitrogen dioxide.

In 2023 Wandsworth Council refreshed its AQAP, adopting the interim WHO target levels – the interim targets provide a stepping stone to achieving compliance with the WHO guideline target.

The interim WHO target levels of 30 µg m^{-3} was exceeded at 8 monitoring locations, which is 14% of the total monitoring sites. The 30 µg m^{-3} annual mean objective was exceeded at:

- **W4 - Mitcham Road = 41.7 µg m^{-3}**
- **YR5 - Battersea Park Road = 42.4 µg m^{-3}**
- **W47 - West Hill = 52.8 µg m^{-3}**
- **W42 – Bellevue Road = 33 µg m^{-3}**
- **YR2 – Royal Academy of Dance, York Road = 35 µg m^{-3}**
- **NE3 – Queenstown Road = 32 µg m^{-3}**
- **W24 – Putney McDonalds = 38 µg m^{-3}**
- **W23 – West Hill = 33 µg m^{-3}**

In 2023 the number of sites exceeding this new objective decreased by 3 from the previous year, equating to a compliance rate of 86% with the interim WHO target levels.

The majority of diffusion tubes across the monitoring network had reductions of 1-4 µg m^{-3} from 2022 to 2023, and at five sites a decrease of 5 µg m^{-3} or more was recorded. These are sites W23 (37 West Hill), W24 (Putney McDonalds), W42 (Bellevue Road/Trinity Road), W47 (West Hill) and BW1 (Burntwood Lane Junction of Tranmere Road and Aboyne Road). All these sites are roadside locations and are situated on busy main roads. Sites W23 and W42 exceeded the NAQO in 2021 (complying in subsequent years), W24 exceeded the NAQO in 2022 (complying for the first time in 2023) and W47 still exceeds, however it fell below the NAQO at the nearest receptor (see Table O).

The London Borough of Wandsworth is classified as an inner London Borough and borders outer London boroughs to the south and west, and is in close proximity to central London to the northeast of the borough. In 2021 the Ultra Low Emission Zone was extended to the south circular, incorporating part of the borough. Monitoring sites W21 and W22 (Felsham Road), W23 (West Hill), W24 (Putney McDonalds), YR1 (Trafalgar House), YR2 (Royal Academy of Dance), YR3 (Cotton Row), YR4 (York Road), YR5

(Battersea Park Road), YR6 (Battersea Square), NE2 (Chesterton School), NE3 (Queenstown Road), NE4 (Lockington Road), NE5 (Kirtling Street), NE6 (Nine Elms Lane), NE7 (1 Nine Elms), NE8 (Battersea Park), and W44 (Thessaly Road) all sit within this zone. Focussing on site location W24, as this site has long term data available, there has been a significant reduction in the levels of NO_2 since monitoring began in 2017. The most significant decrease occurred in 2020 when vehicle movements were drastically reduced due to the COVID-19 pandemic. The second largest reduction was in 2018 when low emission buses were introduced on Putney High Street – complying with the hourly mean objective for the first time. The impact of low emission vehicles on the levels of NO_2 can be further witnessed in 2022, the first full year of the extended ultra-low emission zone, with a reduction of 4 µg m^{-3} and then in 2023, when there was a further 5 µg m^{-3} decrease. Site location W42 had a 7 µg m^{-3} reduction in levels of nitrogen dioxide between 2021 and 2022. Whilst the site was not within the first extension of the ULEZ, it was within 2000 metres and around a 10-minute drive, therefore it could be speculated that many people in and around this area had switched to low or zero emission vehicles; there was a further reduction of 5 µg m^{-3} recorded in 2023.

In 2023 the site that had the most significant decrease in NO_2 levels was BW1 (Burntwood Lane – Tranmere Road/Aboyne Road) with a fall of 11 µg m^{-3} from 35 µg m^{-3} to 24 µg m^{-3}. BW1 is a kerbside monitor located on a B road in the borough. It has residential premises on one side and a secondary school on the other side. The nearest monitoring site to BW1 is BW2 (Burntwood Lane - Bridgeford Road/Fracis Court Road) - circa 460 metres southwest of BW1. As the sites are both located near junctions the levels of NO_2 would be expected to be similar, however in 2023 BW2 had a reduction of just 2 µg m^{-3} falling from 22 µg m^{-3} to 20 µg m^{-3} – this is in line with the majority of monitoring sites across the borough. There was no traffic management in 2022 to suggest that levels of traffic between the two sites would be different, however there is a large ongoing development located at Springfield hospital. In 2022 there was an increase of HGVs associated with the construction of this development. Hoarding was erected at the site boundary, and this would have created a temporary canyon effect, trapping NO_2 at street level. This hoarding has been

removed and a new green space has been created, which has improved dispersion of pollutants. In 2023 NO_2 levels at BW1 are similar to BW2 so it can be surmised that the increase levels in 2022 were as a result of the Springfield hospital development.

The main source of pollution in the borough remains road traffic. The updated London Atmospheric Inventory (LAEI 2019) released in 2022, estimates 60% of nitrogen oxide emissions originate from road transport, followed by industrial/commercial heat and power 20%, and domestic heat and power 12%.

As road transport is the largest contributor to NO_2 emissions, many factors at all levels of central and local government have contributed to the reduction in emissions that we are observing.

The Euro 6 standard (directive set by the European Union to help reduce the level of harmful pollutants produced by new diesel and petrol vehicles) is having a positive effect on emission levels. The Society of Motor Manufacturers and Traders (SMMT) state

“It would take 50 new cars today to produce the same amount of pollutant emissions as one vehicle built in the 1970s.” The following figures quoted by the SMMT highlight the extent to which Euro standards are reducing harmful by-products.

- Carbon monoxide (CO): petrol down 63%, diesel down 82% since 1993
- Hydrocarbons (HC): petrol down 50% since 2001
- Nitrogen oxide (NOx): down 84% since 2001
- Particulate matter (PM): diesel down 96% since 1993

The announcement by the previous UK government that all new petrol and diesel-powered cars and vans are set to be banned from sale in the UK in 2035 also appears to have helped. Whilst the new UK government did not announce the ban of ICE cars and vans in the Kings Speech, they did announce the sale of new petrol and diesel-powered cars and cars in their manifesto. This could

mean that from 2030 the only new cars and vans that can be sold will be pure electric ones, plus any hydrogen-powered cars, that may exist at the point.

In 2023 a total of 1,903,054 new cars were registered and reached the road, marking a 17.9% increase from 2022, but still 17.7% below pre-pandemic levels according to the latest figures from the SMMT. Fleet investment was instrumental in driving the growth; fleet deliveries rose by 38.7%. Meanwhile, private consumer demand remained stable.

Low and zero emission vehicle sales grew in 2023: Hybrid Electric Vehicle (HEV) and Plug-in Hybrid Electric Vehicle (PHEV) sales increased, whilst Battery-powered Electric Vehicle (BEV) volumes reached a record high. BEVs accounted for one in six new cars registered in 2023. Many fleet and business buyers opted for them due to tax incentives. As for used cars sold in 2023 the number was 7,242,692 compared to 6,890,777 in 2022. That is a 5% increase in used car sales in 2023 compared to 2022. Of those 7.2 million used cars sold, 56% were petrol, 38% were diesel, 3% were HEV, 2% were BEV, and 1% were PHEV. Used BEV sales increased by 91% from 2022. In 2023, the total market share of diesel vehicles was 13.6%, declining from 16.4% in 2022, however there was a 37% increase of diesel vehicle sales in 2023 compared to 2022.

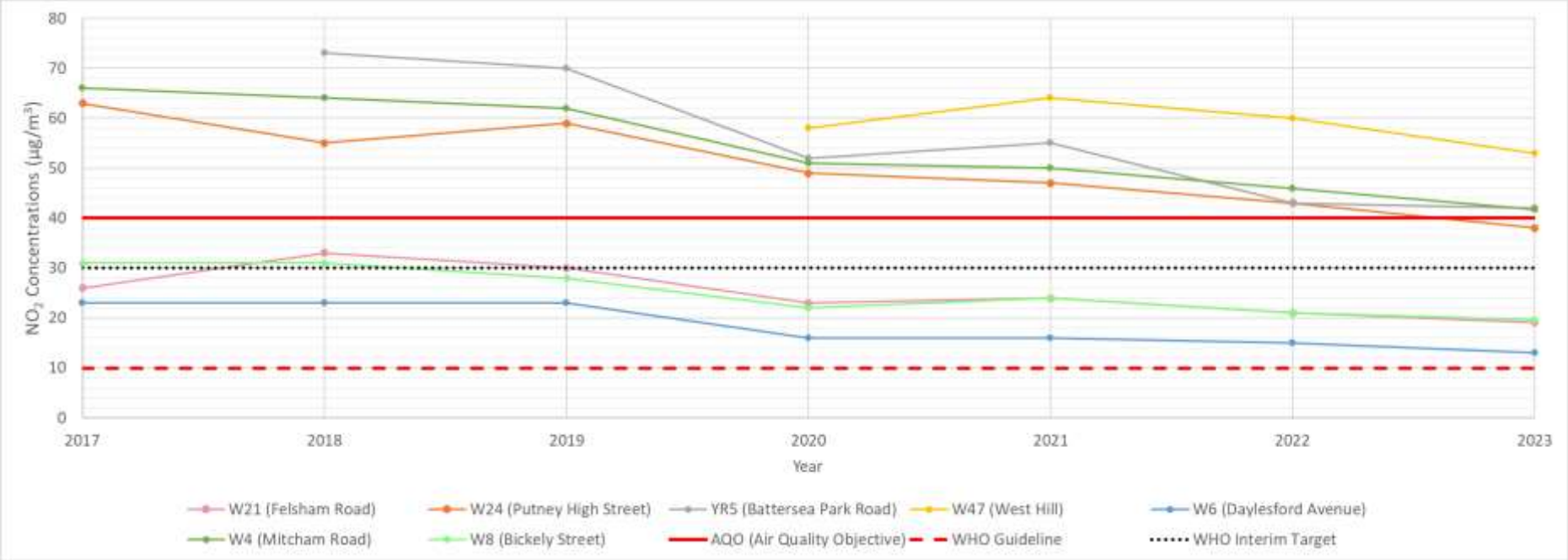
According to data released by TfL, in autumn 2023 traffic flows in both inner and outer London were around 7%-8% below pre-pandemic levels. This shows that vehicles are not only cleaner, but less people are driving.

There are a number of Air Quality Action Plan measures that are directly linked to reducing road transport emissions and progress against these are reported in Table K. In summary:

- There are 28 operational School Streets in the borough.
- Encouragement for modal shift away from private car onto bicycles, cargo bikes, walking, and public transport.
- Cargo bike hubs for businesses are supported in the borough, with the first hub installed in Wandsworth Town.

- Planning applications are assessed to encouraged car free development in accordance with the London Plan.
- Electric vehicle charge points (EVCP's) are conditioned in all possible planning applications and are being rolled out borough wide.
- Idling is a priority in Wandsworth. Targeted monthly awareness events are delivered which are increasing driver awareness and behaviour change away from engine idling.

Figure C: Long term NO_2 concentration trends in Wandsworth 2017-2023 from non-automatic monitoring (diffusion tubes)

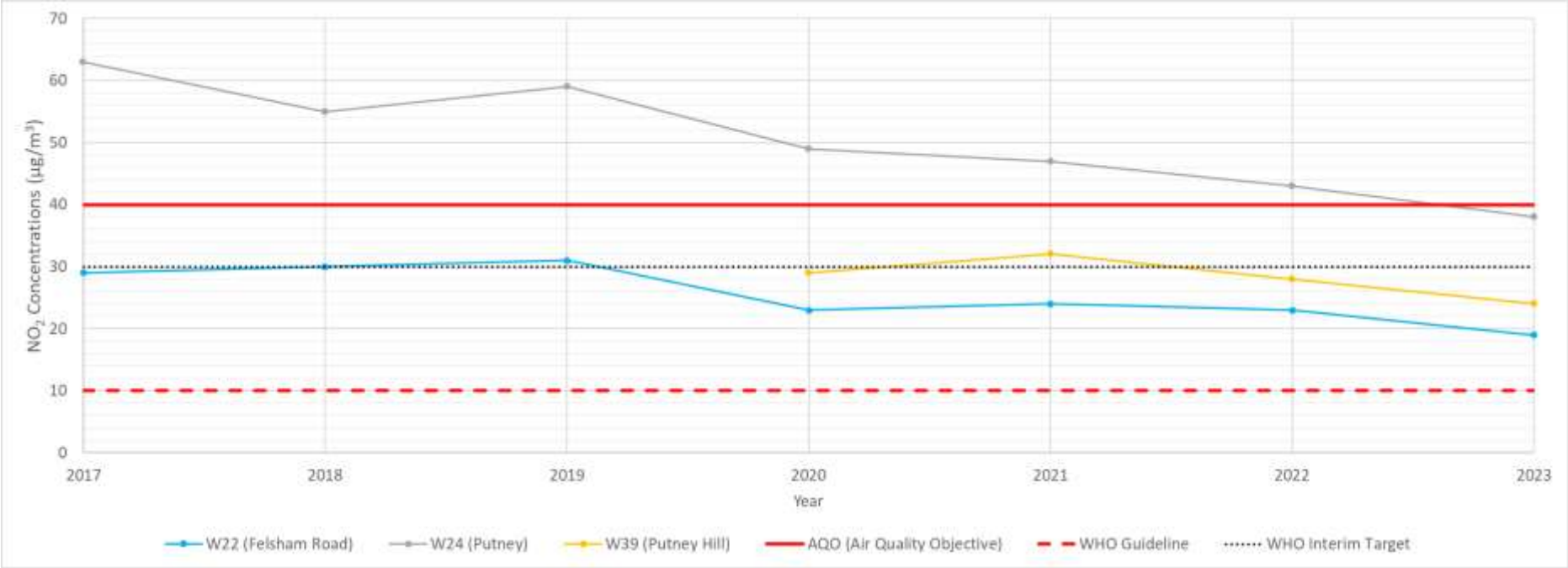


Notes

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

WHO interim target adopted by Wandsworth in September 2023 and incorporated in the AQAP: Ambient (outdoor) air pollution (who.int)

Figure D: Long term NO_2 concentration trends in Wandsworth 2017-2023 from non-automatic monitoring (diffusion tubes) in Putney High Street/Putney Bridge Road/Richmond Road focus area.

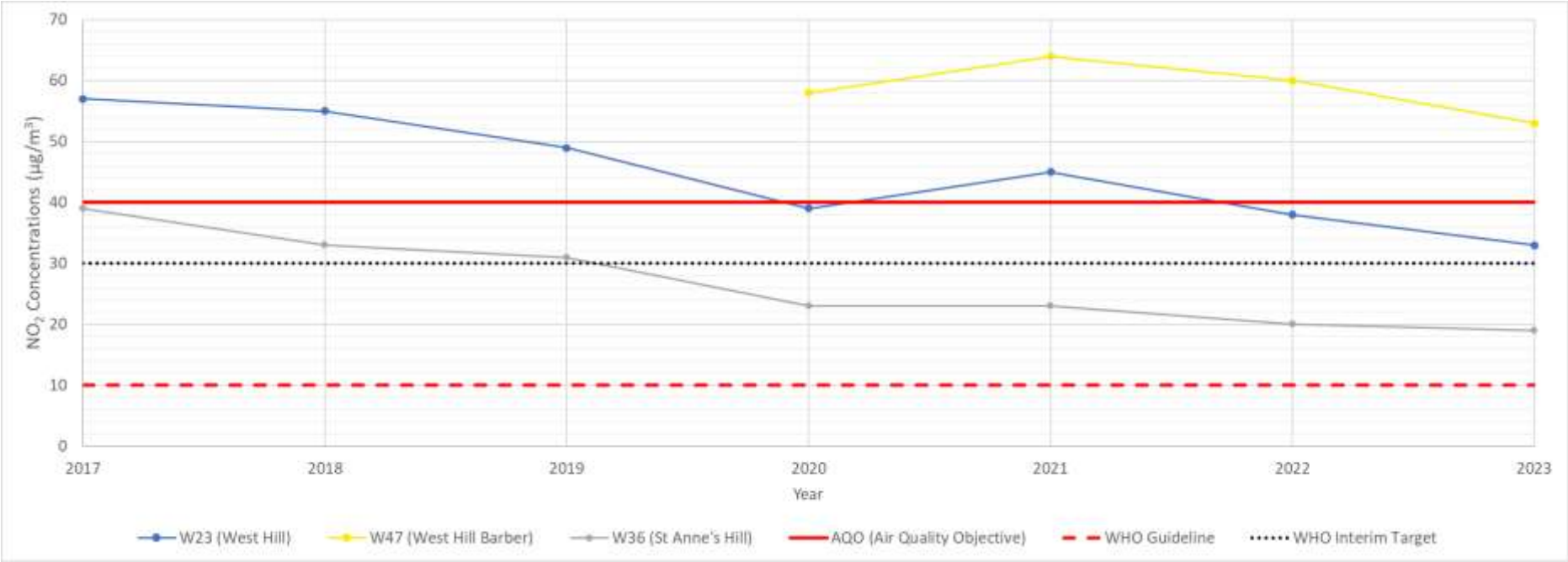


Notes

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

WHO interim target adopted by Wandsworth in September 2023 and incorporated in the AQAP: [Ambient (outdoor) air pollution (who.int).]

Figure E: Long term NO_2 concentration trends in Wandsworth 2017-2023 from non-automatic monitoring (diffusion tubes) Wandsworth Gyratory/Wandsworth High Street/ Armoury Way

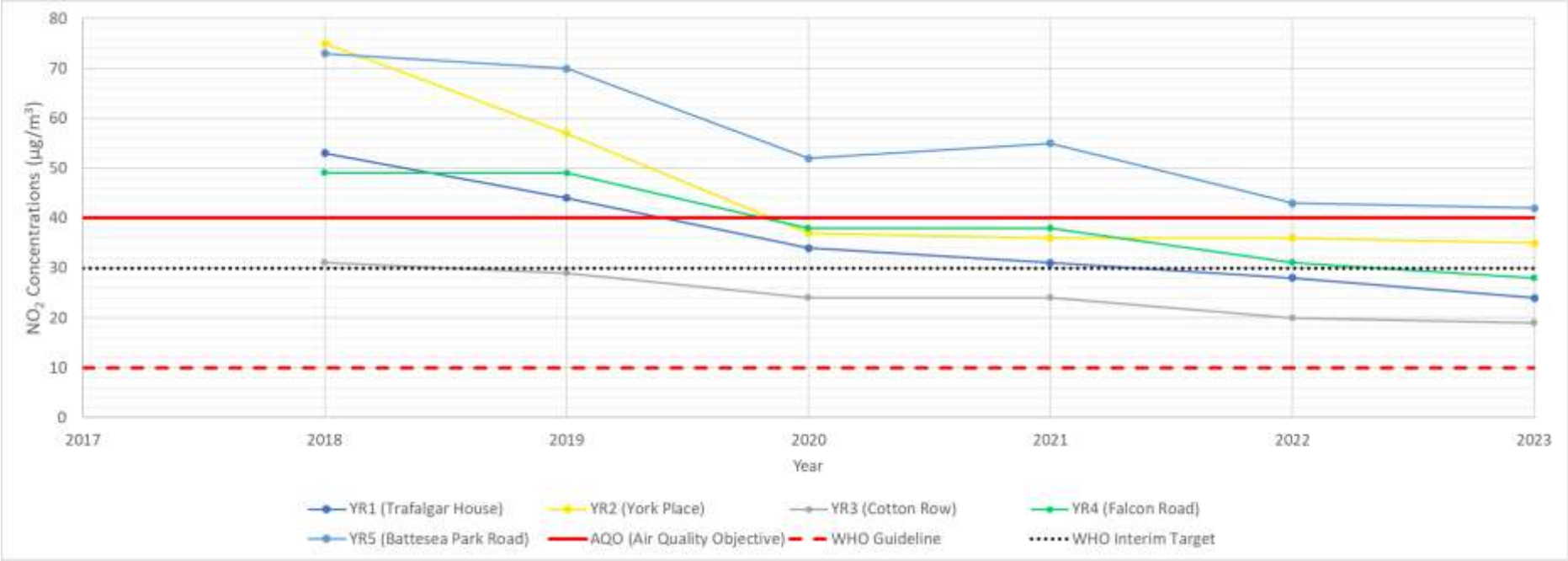


Notes

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

WHO interim target adopted by Wandsworth in September 2023 and incorporated in the AQAP: Ambient (outdoor) air pollution (who.int)

Figure F: Long term NO_2 concentration trends in Wandsworth 2017-2023 from non-automatic monitoring (diffusion tubes) York Road(A3205) from Wandsworth Bridge to Latchmere Road



Notes

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

WHO interim target adopted by Wandsworth in September 2023 and incorporated in the AQAP: [Ambient (outdoor) air pollution (who.int)]

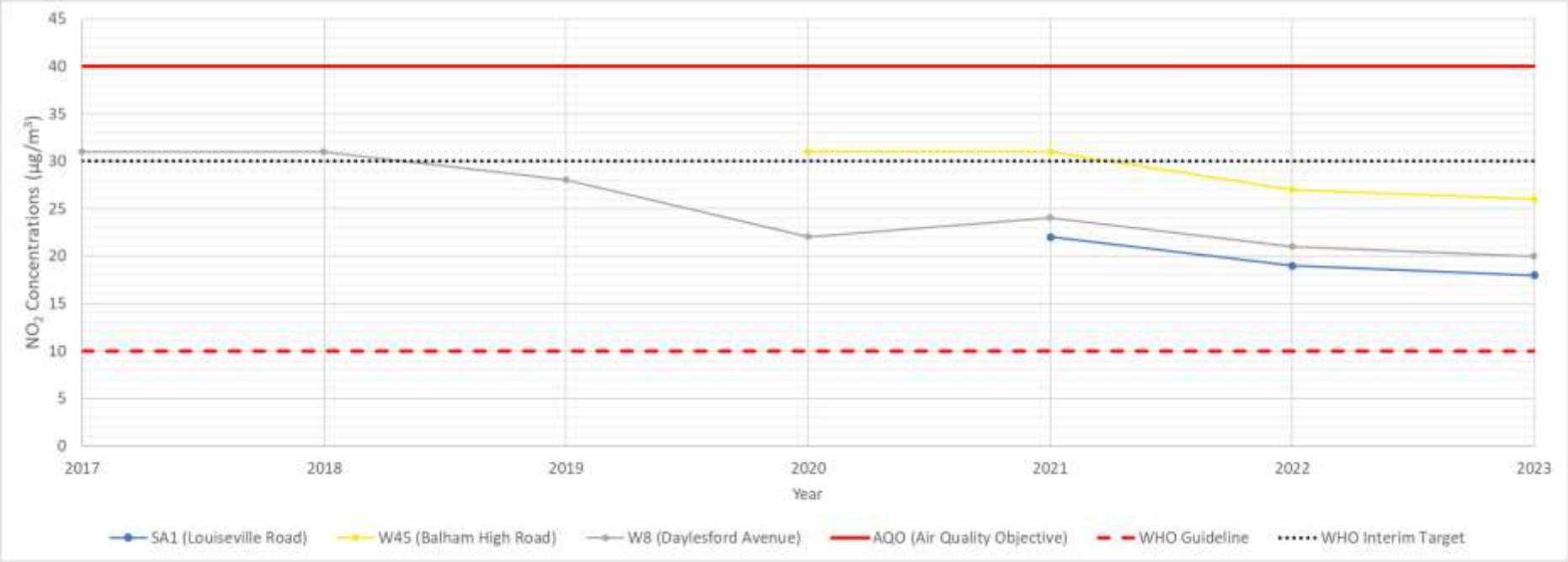
Figure G: Long term NO2 concentration trends in Wandsworth 2017-2023 from non-automatic monitoring (diffusion tubes) Clapham Junction Falcon Road/Northcote Road/ Battersea Rise/ Lavender Hill

Notes

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

WHO interim target adopted by Wandsworth in September 2023 and incorporated in the AQAP: [Ambient (outdoor) air pollution (who.int)]

Figure H: Long term NO_2 concentration trends in Wandsworth 2017-2023 from non-automatic monitoring (diffusion tubes) Tooting High Street and Upper Tooting Road



Notes

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

WHO interim target adopted by Wandsworth in September 2023 and incorporated in the AQAP: Ambient (outdoor) air pollution (who.int)

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

Site ID/Site Name	Valid data capture for monitoring period %([a])	Valid data capture 2023 %([b])	2017	2018	2019	2020	2021	2022	2023
WA2 Wandsworth Town Hall	100	90	0	0	0	0	0 (89.5)	0	0
WA7 Putney High Street	23	23	**76 (247)**	**26**	11	4	1	Insufficient valid data	Insufficient valid data
WA8 Putney High St. first floor	0	0	9	5	**19**	1	0	0 (137.7)	Insufficient valid data
WA9 Felsham Rd; Putney	0	0	7 (179)	0	0	0	0	Insufficient valid data	Insufficient valid data
WAA Thessaly Rd, Battersea	81	81	0 (98)	0 (97)	0	8	0	0	0 (94.6)
WAB Tooting High Street	70	70	0	2	3	0 (104)	0 (97.9)	0 (119.8)	0 (98.7)
WAC Lavender Hill, Clapham Junction	0	0	0	0	0	0	0	Insufficient valid data	Insufficient valid data

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 F provides the results from the automatic monitoring stations for NO_2 for the 1-hour mean objective of 200 µg m^{-3}. In 2023 for the fourth consecutive year the hourly objective was met at all sites and there were no exceedances recorded, however data capture was not sufficient at four of the automatic monitoring stations (WA7 Putney High Street, WA8 Putney High Street first floor, WA9 Felsham Road, Putney and WAC Lavender Hill, Clapham Junction).

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
WA7 Putney High Street	89	89	21	25	22	19	20	20	18
WA9 Felsham Road (Putney)	92	92	17	17	18	16	16	15	13
WAA Thessaly Road (Battersea)	64	64	27	25	23	25	23	20	16c
WAB Tooting High Street	98	98	23	23	23	21	23	21c	19

Site ID	Valid data capture for monitoring period %([a])	Valid data capture 2023 %([b])	2017	2018	2019	2020	2021	2022	2023
WAC Lavender Hill (Clapham Junction)	98	98	20	21	20 c	19	19	20	18

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%. This applied to WAA (Thessaly Road).

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

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

(c) Data has been "annualised" in accordance with LLAQM Technical Guidance.

All 2023 data from the automatic monitoring stations have been fully ratified. Data capture rate above 75% was achieved at all monitoring stations apart from WAA (Thessaly Road), which achieved a data capture rate of 64%, therefore the data was annualised.

Over the 7-year period from 2017–2023 PM_{10} concentrations have been relatively consistent with minor fluctuations. However, a clearer downward trend from 2021 can be seen. This is encouraging; however, we cannot get complacent, and it is essential to continue monitoring the trends.

The National annual mean objective of 40 µg m^{-3} was comfortably achieved in 2023 however, the measured concentrations at WA7 (Putney High Street), WAA (Thessaly Road), WAB (Tooting High Street) and WAC (Lavender Hill, Clapham Junction) exceed the recommended World Health Organisation (WHO) guideline of 15 µg m^{-3}. It should be noted that whilst all five sites meet the NAQO limit value (40 mg m^{-3}) all, but one site (WA9 Felsham Road) fail to meet the new, stricter WHO guidelines (15 mg m^{-3}) for PM_{10}.

There was 2 µg m^{-3} trend decrease in the levels of annual mean PM_{10} concentrations recorded at WAC (Lavender Hill, Clapham Junction), WAB (Tooting High Street), WA9 (Felsham Road), WA7 (Putney High Street). A larger decrease of 4 µg m^{-3} was recorded at the WAA (Thessaly Road) monitoring location.

The annual mean PM_{10} results are further illustrated by Figure I. The red line indicates the air quality objective of no more than 40 µg m^{-3}. The inclusion of the red dashed line indicates the World Health Organisation target of 15 µg m^{-3}. The data capture rates for the automatic monitoring stations achieved above 75% apart from WAA Thessaly Road (Battersea) which achieved 64%. The data was annualised in accordance with LLAQM Technical Guidance.

Around half of UK concentrations of all PMs comes from anthropogenic sources in the UK, such as wood burning and tyre and brake wear from vehicles. In Wandsworth, where wood burning fires are still popular, specific efforts are being made to reduce PMs from burning, (Table K). In Winter 2022 Wandsworth ran a wood burning campaign and continued to investigate complaints regarding unauthorised burning and non-compliant appliances. An added complication is the range of PM_{10} pollution, it is not confined to localised sources but can travel large distances. Often PM_{10} pollution episodes (periods of higher-than-normal particulate concentrations) often originate from agriculture and industry in continental Europe.

Figure I: Automatic monitoring stations annual mean particulate matter (PM_{10}) trend chart 2017-2023

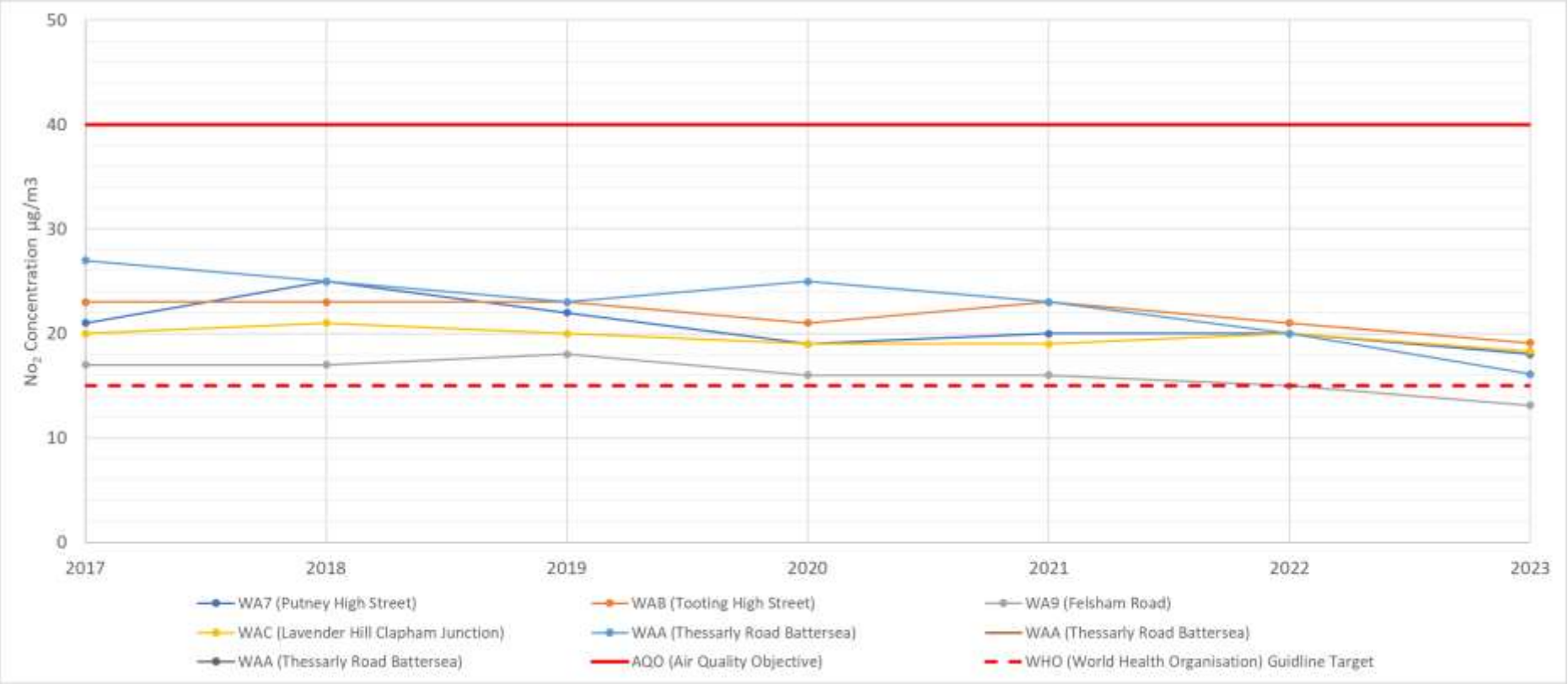


Table H. PM_{10} Automatic Monitoring Results: Comparison with 24-Hour Mean Objective, Number of PM_{10} 24-Hour Means > 50 µg m^{-3}

Site ID/Site Name	Valid data capture for monitoring period %[(a)]	Valid data capture 2023 %[(b)]	2017	2018	2019	2020	2021	2022	2023
WA7 Putney High Street	89	89	2	3	9	2	3 (30.2)	2	4
WA9 Felsham Road (Putney)	92	92	5	1	5	2	0 (23)	1	1
WAA Thessaly Road (Battersea)	64	64	16	10	14	23	9	7	2 (30.4)
WAB Tooting High Street	98	98	11	3	9	4	4 (32.6)	0 (35.7)	3
WAC LavenderHill (Clapham Junction)	98	98	4	3	2	5	0	1	3

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 H provides the comparison with the 24-hour mean objective for PM_{10}. The objective of no more than 35 days exceeding 50 ug m^{-3} was met at each site for all years since 2017. All the five sites exceeded the 24-hour mean objective at least once for the years reported. Overall, in 2023 the number of days exceeding the daily standard remains relatively low. In previous years WAA (Thessaly Road) in Battersea has recorded elevated levels, for both long term and short-term objectives, in comparison to the other monitoring station in the borough. Levels last year have reduced, becoming more in line with the other stations across the borough; it should be noted that the monitoring station needed to be annualised due to poor data capture. 2 days were recorded exceeding the 50 µg m^{-3} for 2023 compared to the 7 days that were recorded for the year of 2022. This is likely due to a decrease in localised construction site activity. Many have now completed the stages where there is a high degree of risk for dust generation. Even with levels decreasing vigilance is required as construction sites are still active and many new developments within the local plan are yet to commence.

Elevated PM_{10} levels can result from episodes, which are often the result of local combined with imported transboundary conditions from elsewhere in the UK and Europe. In 2023 there were numerous pollution episodes which contributed to the exceedance of the 24-hour mean objective for PM_{10} and none of these were due to localised incidences, unlike 2021 when there were two exceedances which were caused by local works. These episodes took place in January, February, and April. There was a further pollution episode in September, however this episode did not result in the exceedance of PM_{10} levels in monitoring stations in Wandsworth.

Pollution episodes in the early part of year (January and February) were due to the build-up in local emissions at roadside locations and poor dispersion, coupled with gritting salt being crushed up and suspended. According to the ERG, domestic fuel burning in the afternoon and evening also contributed to these episodes.

Funding has been agreed to install new PM_{10} and $PM_{2.5}$ monitors across the borough, including 3 monitors in the Air Quality Focus Areas.

Breathe London measurement network

In addition to our statutory monitoring network, LB Wandsworth operates a network of indicative monitors using Breathe London monitoring devices, or “nodes.” In total of both 2022 and 2023 this included a total of 19 nodes, being 4 in 2021, 6 in 2022 and 19 by May 2023. While these instruments measure both hourly $PM_{2.5}$ and NO_2, the measurements of NO_2 are considered less reliable due to interference from temperature and humidity, and these NO_2 measurements are not discussed further. Of the nodes, one was located at an Urban Background site, and the remainder at Roadside (7) and Kerbside (11) sites.

Table I.1 Annual mean measurements of PM2.5 from Wandsworth’s Breathe London network

Table I.1. Annual mean measurements of $PM_{2.5}$ from Wandsworth’s Breathe London network, µg m^{-3}		
$PM_{2.5}$, µg m^{-3}	**2022**	**2023**
All nodes	11.6±1.1	8.8±0.8
Kerbside	11.8±1.2	8.7±1.0
Roadside	Insufficient data	8.0±0.4
Urban Background	10.9	9.9

Table J.2 Breathe London Node Results for $PM_{2.5}$

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for period (%)	Valid Data Capture 2023 (%)	2022	2023
CLDP0103	528,860	176,958	Kerbside	94.0	94.0	10.5	8.4
CLDP0123	524,862	173,896	Kerbside	97.4	97.4	12.0	9.8
CLDP0172	523,885	174,704	Urban Background	96.4	96.4	10.9	9.9
CLDP0236	522,604	174,038	Kerbside	99.9	99.9	12.8	10.1
CLDP0319	528,028	176,544	Roadside	90.6	90.6		8.2
CLDP0344	528,612	173,339	Roadside	98.9	98.9		7.7
CLDP0393	529,345	176,641	Kerbside	85.6	85.6		7.7

Quality control of the data

In 2022, 4 monitoring nodes achieved 80% or better valid hourly measurements for $PM_{2.5}$, while in 2023 7 nodes achieved this level. Within the years 80% or greater data availability was achieved over many nodes over individual seasons. Given this high level of data availability, we confine our analysis to statistics based on high data availability nodes and periods. To estimate uncertainty in the results presented below, we use the standard deviation, though the small number of nodes in the sample means this is only indicative. A more detailed analysis of the instrumental sources of error in the Breathe London nodes is beyond the scope of this report. Analysis has also been completed to investigate the impact of changes in the node network from 4 to 7 nodes with sufficient data on the results (not shown) which suggests this is unlikely to have skewed the results presented below. A similar approach was used for the maps shown above and below, though caution is required when interpreting contour maps generated from a small number of sites.

Figure J: Distribution of $PM_{2.5}$ annual mean comparison between 2023 and 2024

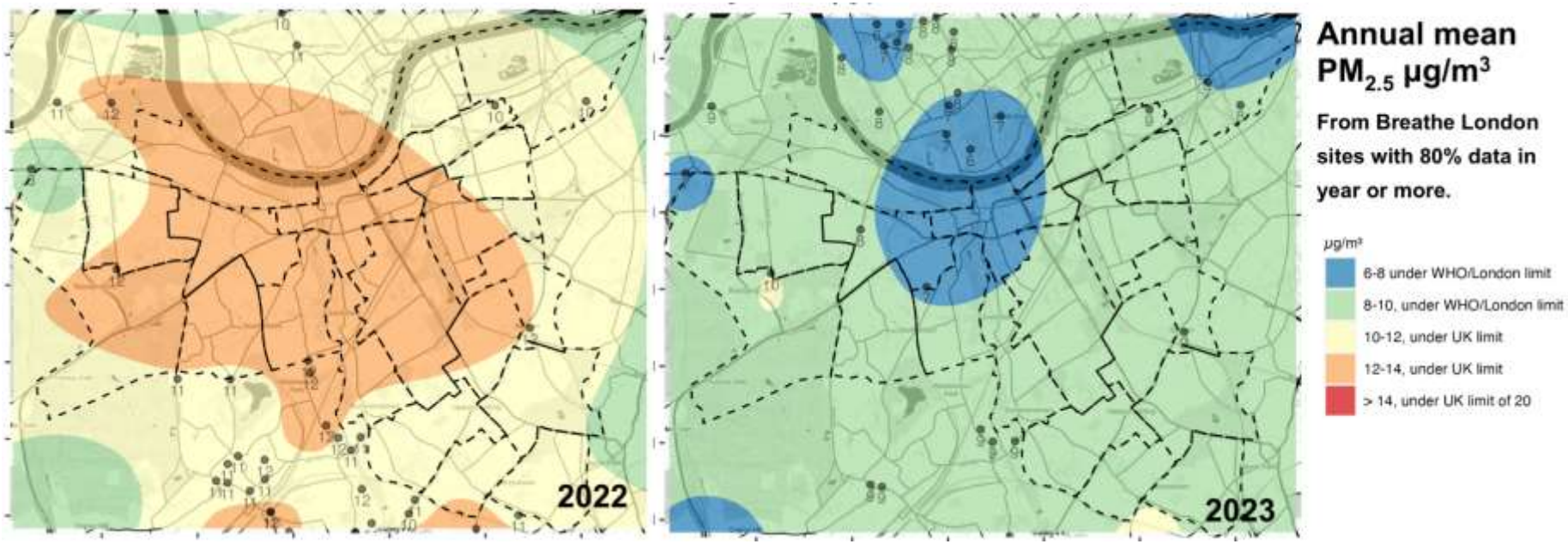
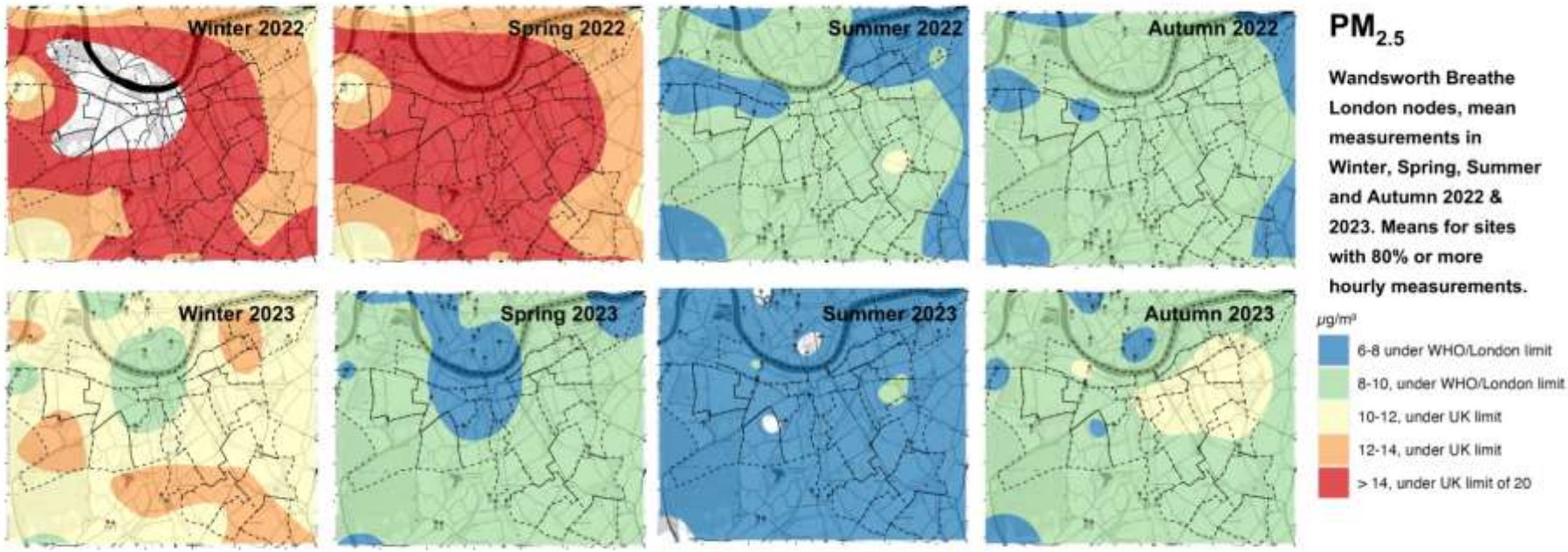


Figure K: Distribution of $PM_{2.5}$ by season using standard interpolation techniques, as shown in the maps presented below.



Analysis

Using data from nodes with 80% or higher in period, several observations are evident (See Table I.1). First, while in 2022 the average values of $PM_{2.5}$ across the network of nodes were 11.6±1.1 µg m^{-3} which is above the Greater London Authority target for London, in 2023 the annual mean was 9.3±0.9 µg m^{-3} which is below the London target. Separating the observations for Roadside and Kerbside sites from those for the Urban Background site finds that in 2022 the Urban Background site measured values above the London target by 1.6 µg m^{-3}, while the Roadside and Kerbside exceeded the target by around 1 and 2 µg m^{-3} respectively, but

in 2023 measurement values were below the target at 8.8±1.1 µg m^{-3}. Given the uncertainties in the value, it is likely that this is a statistically significant difference, provoking the question of whether the reductions in 2022 seen at roadsides is due to a change in traffic composition, flows or behaviours. An initial analysis of weather patterns in the two years indicates no substantial differences in key wind or temperature patterns that might explain difference due to dispersion or vertical stability in the atmospheric boundary layer. Clearly further analysis is required, not least as in 2023 the Urban Background site had a higher average than the roadside and kerbside sites.

Considering the annual and seasonal maps of $PM_{2.5}$ presented above, higher $PM_{2.5}$ levels were evident in the Winter and Spring of 2022 than in the same seasons in 2023. Similar distributions and patterns are also evident in the data, with higher levels towards the West, East and South of the borough, which could be representative of underlying emissions patterns. Further analysis is planned.

Conclusions

Initial analysis of the measurements suggest that $PM_{2.5}$ in Wandsworth in 2023 was below the WHO Interim Target 4/London target for $PM_{2.5}$ of 10 µg m^{-3} annual mean, though above it in 2022. Considering the distribution of the measurements across road and background sites, and having initially ruled out effects from meteorology and changes in the network of nodes between the two years, a statistically significant improvement was observed.

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 the London Borough of Wandsworth can be found in Table k. The table presents a description of the AQMA that is currently designated within the London Borough of Wandsworth. Appendix C provides maps of the AQMA and 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
- PM_{10} 24-hour mean

Table K. 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
Wandsworth AQMA	Declared 01/01/2001	Nitrogen dioxide NO_2 – Annual mean Particulate Matter PM_{10} – 24 hour mean	The whole borough	NO	Information not available	NO_2 annual mean-53 µg m^{-3} measured at West Hill (W47) non-automatic site. PM_{10} 24 hour mean compliant 7 years	Not compliant	Wandsworth Council AQAP, September 2023	Wandsworth AQAP

☒ **The London Borough of Wandsworth confirm the information on UK-Air regarding their AQMA(s) is up to date.**

☒ **The London Borough of Wandsworth confirm that all current AQAPs have been submitted to GLA.**

2.2 Air Quality Action Plan Progress

A new Air Quality Action Plan was approved by Environment Committee in September 2023. The Air Quality Action Plan used the recommendations of the Wandsworth Air Quality Citizens' Assembly as the basis for creating the new Action Plan, which established a new target for air quality that is aligned to WHO standards as well as increased engagement and communication on the risks of poor air quality and what residents, communities and businesses can do to improve it. The Air Quality Action Plan also includes actions around improving transport, walking and cycling, supporting businesses, parks and green space, protecting children and the most vulnerable as well as reducing air pollution from homes and buildings.

The Wandsworth Air Quality Citizens' Assembly was held from February 2023 to April 2023 and involved 50 participants representing a cross section of Wandsworth. Held across 4 days, the Citizens' Assembly considered evidence from the Council, academic experts, businesses and community groups on air quality, seeking to address the question 'How can we all tackle poor air quality across Wandsworth in a way that improves our health and addresses climate change?' As part of the wider engagement approach a borough wide survey was carried out to get input on shaping the recommendations, with over 500 responses.

The Citizens' Assembly produced a recommendation report with 52 recommendations, which was presented by members of the Citizens' Assembly to the Environment Committee in June 2023, alongside a launch event featuring members of the Citizens' Assembly in July 2023. Ongoing engagement with members of the Citizens' Assembly is in place with the development of the Air Quality Ambassadors programme.

Table L provides a brief summary of the London Borough of Wandsworth 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 L. Delivery of Air Quality Action Plan Measures

Measure	LLAQM Action Matrix Theme	Action	Progress
1	Leading by example	Support extension of London's Ultra-Low Emission Zone, with Wandsworth's £1million sustainable transport fund.	The Council has to date assisted about 150 households to replace their vehicles with £1,000 grants over and above the TfL scrappage scheme
2	Leading by example	Adopt WHO Guidelines on Air Quality, with interim $PM_{2.5}$ target of 10 µg m^{-3}, and interim NO_2 target of 30 µg m^{-3}.	In September 2023 the AQAP 2023-2028 was approved by Environment Committee. The AQAP established a new target for air quality that is aligned to WHO standards.
3	Leading by example	Roll out an Air Quality Ambassadors programme, building on the outcomes of the Citizens Assembly.	In December 2023 a Partnership and Engagement Officer was recruited to run the Air Quality Ambassadors programme.
4	Leading by example	Campaign against the Heathrow 3rd Runway expansion plan.	The Council remains opposed to any plans to expand operations at Heathrow. On the 18th of April 2024, officers attended the annual forum hosted by the Council for the Independent Scrutiny of Heathrow Airport which included a discussion on night flight restrictions and airspace modernisation.

Measure	LLAQM Action Matrix Theme	Action	Progress
5	Leading by example	Deliver our Decarbonisation Strategy to reduce emissions from Council Buildings, extending it beyond GHGs to include unhealthy air pollutants.	Preparation for phases 3 and 4 of the Decarbonisation strategy are currently underway and are expected in June 2024. Works have been completed at three sites: Fayland Independent Living Centre where loft insulation was installed, and an air source heat pump and electric hot water heater have been installed at both Yvonne Carr and Tooting Hub. A decarbonisation roadmap is being created that will map out actions to reduce the councils' emissions within the next few years, to achieve the Councils' 2030 target of carbon neutrality.
6	Leading by example	Perform our statutory and regulatory duties to ensure smoke control zones are identified and enforced, permitting of Part B emissions sources, and management of air quality relating to construction and construction sites.	The Council remains committed to raise awareness about the smoke control order in the whole borough and that the use of some solid fuel is prohibited. All complaints investigated by Environment Health officers on unauthorised burning and appliances. All permitted processes inspected and compliant. CSCO working with developers to ensure best practice and GLA compliance. Non-road mobile machinery (NRMM) working across boroughs. 16 construction sites were audited in 2023 and all were compliant in regards to NRMM regulations.
7	Leading by example	Reduce the health impact of high ozone episodes , including them in our plan to treat the Climate Emergency as a Health Emergency.	The new Public Health Climate Change Action Plan was finalised in 2022/23. Several actions from this action plan have already been completed or are in progress, including (but not limited to): • Training: the MECC module on climate change and health was finalised in mid-2023 and presented at and shared with the Climate Change Public Health London Network, VCS networks and at the SWL ICB NHS Green Plan Delivery Group. Communication and Engagement: A Public Health Engagement and Communications plan has been developed; climate change workshops have been delivered; climate change briefs for the community voluntary sector have been developed and circulated; the Council website has been updated with climate change and health information; and participated in Clean Air Day, Car Free Day, and the Big Green Week.

Measure	LLAQM Action Matrix Theme	Action	Progress
8	Leading by example	Construction Low Emissions Zone and London Council's Non-Road Mobile Machinery programme.	16 construction sites were audited in 2023 and all were made compliant in regard to NRMM regulations.
9	Leading by example	Lead on local events to promote the Councils climate and air quality work.	For Clean Air Day in June 2023 an air quality event took place in Putney High Street which included air quality information, police bike marking, and a free cargo bike taxi service. Along with air quality officers, members of the public health and transport planning team were in attendance, offering advice to members of the public on how to reduce their exposure to and their impact on air pollution. A workshop was run to launch Great Big Green Week in March 2023. Thirty-eight microgrant applications were received as a result of the workshop and surrounding communications. This resulted in 35 microgrants being awarded and 75 events being run as part of the Great Big Green Week programme during the second week of June 2023, engaging approximately 2500 residents. A stalls pack has been developed that includes indoor and outdoor banners and is ongoing as the council improves offerings for pop-up stands. Public Health have developed an air pollution engagement strategy, which will be rolled out from 2024.
10	Leading by example	Develop and deliver local climate & air quality newsletter	At the start of 2023 the Council re-launched a regular climate newsletter. This newsletter is promoted regularly through council comms channels, and at all climate events. This includes information on air quality events as well as wider climate change information. 7 instalments were sent out in 2023 – with March's newsletter solely focussing on air quality and the citizens assembly. The distribution list currently has 2425 subscribers.

Measure	LLAQM Action Matrix Theme	Action	Progress
11	Leading by example	Establish an expert network to connect local sustainability experts with local businesses and community groups	This project is currently in the scoping phase but was pushed back due to team capacity being spent on recruiting a new engagement member of staff. The approach will link into the existing Wandsworth Sustainability Partnership.
12	Leading by example	Help our staff to travel sustainably for work by walking, cycling or public transport	A staff salary sacrifice scheme has been introduced for Electric Vehicles to encourage staff to transition to non-petrol or diesel cars, through a scheme which makes it more affordable. The council's Bike 2 work scheme continues to be promoted with a continued series of 'Dr Bike' clinics to encourage cycle use. Communications about shower facilities within the offices have increased to remind staff these facilities are available and are currently being refreshed.
13	Leading by example	Improve collaboration and partnership on climate change across health and social care.	Wandsworth Council's Director of Public Health addressed the Air Quality Citizens' Assembly in the opening session of the Assembly, and Public Health Colleagues were involved in the shaping of the approach and key question. Representatives from Public Health and Climate Change and Sustainability teams are part of the South West London Integrated Care Board Change and Sustainability Group, which is directing joined up health work on sustainability and the NHS' net zero targets. They are also part of the Green Plan working group, the sub-group which is shaping the development and delivery of the actions in the SWL ICB Green Plan. This has included leading sessions on Air Quality and health linkages, as well as sharing best practice examples.
14	Leading by example	Improve the sustainability of parks contractors by upgrading their fleet to zero tailpipe emissions and use of electric tools	Continental Landscapes has and will continue to use cargo bikes for litter picking on Wandsworth Common and Tooting Common whilst Enable will use them to support the delivery of volunteering sessions. The use of EVs will continue for Continental Landscapes supervisors. A "watching brief" will continue on the developments of commercial EV (Electric Vehicle) – currently there are no viable options that meet the required capacity and / or towing needs for Continental Landscapes and tree maintenance and planting contractors.

Measure	LLAQM Action Matrix Theme	Action	Progress
15	Leading by example	Increase the number of contracts that are commissioned and procured sustainably, also minimising unhealthy air pollutant emissions.	The Procurement team have recruited a Policy and Governance Officer, to support on low carbon and sustainable procurement. They are also recruiting a Social Value Monitoring Officer who will support in the rollout of low carbon and sustainable procurement. The Procurement team are also developing a new tool to further embed the Low Carbon Toolkit within procurement practices, which will enable the monitoring of suppliers' sustainability commitments. The rollout of this tool will begin in 2024.
16	Leading by example	Maintain and Build on Wandsworth Sustainability Partnership for public sector partners, businesses and community groups to facilitate knowledge sharing, networking and increased	Three partnerships events were held (February, June and November) with each session designed to reflect feedback from the prior to help the partnership continue to evolve into a useful space for attendees. Over 180 residents, public sector representatives and businesses have engaged with the forum since it started in November 2022. Ongoing conversations are being had about what splinter groups and forums may be needed to further support the work of the partnership group.
17	Leading by example	Procure new waste fleet which will be lower emission than the previous waste fleet and establish infrastructure needs for an EV heavy waste fleet.	A new waste fleet running on hydrogenated vegetable oil (HVO) has been procured through an SO83A agreement for purchase of vehicles from December. Committee have decided to extend the contract with SERCO, with a need to calculate emissions on extra vehicles. Going forward, single compartment vehicles will be the new normal, with separate stream collection, meaning a higher volume of journeys but all with a lower environmental impact. Specific communications on this change and the justification for it will follow.

Measure	LLAQM Action Matrix Theme	Action	Progress
18	Leading by example	Promote energy efficiency and decarbonisation of buildings for schools, considering air quality.	Options appraisals on decarbonisation have been completed with 3 schools, Garratt Park, Riversdale and Smallwood. These were completed in November and are waiting on Operation & Maintenance plans from Ameresco before proceeding to the next stage. Workshops have been held with schools and continue to be held over the coming year, with information and events shared via the S4S hub. In line with Wandsworth's net zero targets, we have launched the net zero decarbonisation framework to support schools in achieving their decarbonisation goals. The school's decarbonisation framework sets out information and guidelines on how schools can reduce their consumption and stay on track with their decarbonisation targets. Within the decarbonisation framework there is a list of funding streams that may be available for schools, along with contact details for the relevant organisations. There is also a range of information to assist schools with energy and waste management. These pages will operate as a hub where the energy and sustainability team will communicate regularly with schools via monthly bulletins and can share future information related to the decarbonisation framework. An energy audit trial for and three schools in Wandsworth has been completed to investigate tailored options for schools to reduce their energy consumption. These trials will inform the structure and details of the school's decarbonisation procurement framework, which will ensure that schools are receiving the most efficient improvements when it comes to decarbonising their buildings.

Measure	LLAQM Action Matrix Theme	Action	Progress
19	Leading by example	Roll out a programme of energy efficiency, GHG and air quality emissions improvements across our estates, buildings and homes.	Preparation for phases 3 and 4 of the Decarbonisation strategy are currently underway and are expected in June 2024. Heat Decarbonisation plans for the remainder of the top consuming portfolio will be commissioned, with a draft scope of works developed that will go out to consultants around April. Works have been completed at three sites: Fayland Independent Living Centre where loft insulation was installed, and an air source heat pump and electric hot water heater have been installed at both Yvonne Carr and Tooting Hub. We are creating a decarbonisation roadmap that will map out actions to reduce the councils' emissions within the next few years, to achieve the Councils' 2030 target of carbon neutrality. We are currently in Phase 1 of our Solar PV strategy. This phase involves reviewing all our current solar installations to ensure that we are optimising their efficiency and generation. Upon completion of Phase 1, Phase 2 will involve scoping the viability of solar generation across the portfolio. A new four-year contract for the purchasing of electricity and gas via the LASER Framework has been signed from October 2024, with commitments to a future zero carbon Power Purchase Agreement (PPA) and the continued purchase of Renewable Energy Guarantee of Origin (REGO) certificates, which was agreed in Paper 23/234. Due to capacity constraints, there has been limited involvement with the Renewable Power for London programme.
20	Leading by example	Transition the Council's vehicle fleet to low and zero emission vehicles	The council worked with Cenex to develop a vehicle fleet decarbonisation transition plan. The report details the current vehicles in the council's fleet, including their usage and distances travelled, to present a plan for decarbonising the fleet. This report also includes EV charging infrastructure needs and carbon emissions reductions associated with the transition plan. Overall, the report provides a detailed recommended plan for replacing the fleet with EVs and measures ensuring council operations are not negatively affected. The council has developed an electric charging point to operational buildings phase 1 options appraisal. This details the proposed rollout of EV charging on council sites, as part of the first phase of charging infrastructure rollout. The council currently has 14 EVs. Although this has not increased since 2022 as the council has not yet procured new EVs for Housing Estate Services, the new vehicle decarbonisation plan details the replacement schedule for the council's vehicles, with all but one vehicle due to be replaced. The council is due to mobilise 19 new vehicles for Building Maintenance.

Measure	LLAQM Action Matrix Theme	Action	Progress
21	Raising awareness, enabling protection	Widely share the data collected by the Council to help residents understand air quality in their neighbourhoods, for example through Citizen Science projects and outside schools.	Data from the Annual Status report is shared with the general public at awareness raising community events. A targeted approach to sharing data will take place in 2024.
22	Raising awareness, enabling protection	Deliver a unified anti-idling campaign across the borough.	A draft idling strategy has been created and will go to committee in late 2024. Prior to 2023 over 200 anti-idling signs were installed in the borough at schools, level crossings and taxi ranks. A further 20 No Idling signs were installed in 2023 following a comprehensive review of idling complaints received by the Pollution Team. An Anti-Idling Action Plan (AIAP) was created in 2021, the plan covers internal and external partner engagement, communications, signage, and events. The plan aims to deliver one event each month of the year (excluding July and August). Events are primarily delivered by Air Quality Officers and focus on idling hotspots such as level crossings and schools but also in response to complaints. The air quality officers are supported by volunteers, including councillors and members of resident's associations at certain events, particularly the level crossing events when there is likely to be tailbacks of queuing traffic. The officers are also supported by students at school idling action events, who approach drivers and encourage them to switch off. Ten anti-idling events were delivered during 2023, four of those events took place in the borough, four events took place around school sites, and the other two events were held following a resident's association raising concerns about a particular area, the other event materialised following a councillor request. The AIAP is a live document and continues to be implemented in 2023.
23	Raising awareness, enabling protection	Roll out a programme of awareness raising on air pollution and climate, promoting other information sources such as airTEXT	The council supports airTEXT

Measure	LLAQM Action Matrix Theme	Action	Progress
24	Raising awareness, enabling protection	Work with health professionals so they have the right information to provide to those most vulnerable to air pollution including how people can protect themselves, including within their homes and workspaces.	The Air Quality and Health project started in 2024. This projects links air quality team, the council's public health team and NHS employees.
25	Raising awareness, enabling protection	Continue our air quality monitoring at 89 locations and extend this where its practical to do so. This monitoring network includes regulatory standard automatic sensors, low cost, lower accuracy automatic sensors and diffusion tube monitors.	Ongoing
26	Improving Transport	We will work with the Mayor, other boroughs and London Councils to campaign for the protection and improvement of public transport services.	The Council has started conversations with TfL to improve public transport services across the borough following the inclusion of action 26 in the new AQAP.
27	Improving Transport	We will work with the Mayor to improve and electrify the bus fleet and add our support to his voice at Government level for more improvements.	The Council has started conversations with TfL on electrification of bus routes following the inclusion of action 27 in the new AQAP.

Measure	LLAQM Action Matrix Theme	Action	Progress
28	Improving Transport	We will install 525 more EV charging points in Wandsworth in 2023 to enable greater use of electric and hybrid electric vehicles, and a total of 2000 more by 2033.	472 of the planned phase of 525 chargepoints were delivered in 2023/24. The final 53 were delayed by a pause in installations while the contractor Ubitricity resolved an issue surrounding guidance from the Distribution Network Operator UKPN. This has now been resolved and the remaining sites are on track for installation by the end of May 2024. This brings the total number of on-street chargepoints (sockets) in the borough to 1,433. Further phases of standard and fast charging are planned for 2024/25 and 2025/26 using Office for Zero Emission Vehicles (OZEV) grant (both On Street Residential Chargepoint Scheme (ORCS) and Local Electric Vehicle Infrastructure (LEVI) funds). The number of chargepoints to be delivered via each fund is not known as they will depend on the outcome of procurement in 2024/25, with tenderers expected to contribute match funding to OZEV grant and potentially fully-fund installations themselves as well. It is expected these phases will make significant progress towards the target of 2,000 chargepoints.
29	Improving Transport	Continue our work to improve connections between TfL, Network Rail and walking and cycling facilities, so they are more accessible and attractive	Continuing to develop improvements to Old York Road, focusing on improving pedestrian and cycle routes to Wandsworth Town Station. As part of the wider Roehampton transport review we will soon consult on new cycling routes to all of the stations in Putney We introduced additional cycle parking outside Wandsworth Town station We are currently introducing 111 designated parking bays for e-bikes and e-scooters as part of the TfL e-scooter trial

Measure	LLAQM Action Matrix Theme	Action	Progress
30	Walking and Cycling	Action to improve accessibility on foot	A detailed review of existing crossing provisions along the key corridors in the borough was completed in 2021, and this included recommendations where improvements should be made. A total of five zebra crossings (Broomwood Road, Franciscan Road, Westbridge Road, Vicarage Crescent, and Lytton Grove) have been installed to make it easier for people to cross the streets this financial year, and further controlled crossings are planned along major roads and near schools to support active travel. Several dropped kerbs have also been installed following enquires and continuous footway (Copenhagen) crossings are being considered as part of schemes implementation to prioritise pedestrian movements.
31	Walking and Cycling	Action to improve all active travel methods	An update of the Council's walking and cycling was considered in February 2024. Designs for quiet cycle routes have been produced for consultation in 2024
32	Walking and Cycling	Support rollout of dockless e-bikes and cargo bikes, monitor their use and expand availability based on usage.	It is estimated that over 1 million trips have been taken on hire e-bikes in the borough in 2023. Four companies currently operate e-bikes in Wandsworth and deployment of e-bikes is prioritised in areas of low public transport accessibility, helping ensure that the majority of the borough is within a 5-minute cycle of a station. Additionally, an e-scooter trial will be launched in spring 2024. A 6-month trial e-cargo delivery hub has launched in Southside Centre, which aims to reduce last-mile deliveries by using e-cargo bikes. Three e-cargo bikes are currently operating in the borough, with another e-cargo bike to hire scheme (in Earlsfield) to launch in March/April 2024.
33	Walking and Cycling	Use our Healthy Street Forums to explore whether Liveable Neighbourhoods can work for Wandsworth residents	The Healthy Streets Forum has continued to meet quarterly to discuss the Council's forward plan of walking, cycling and public realm projects.

Measure	LLAQM Action Matrix Theme	Action	Progress
34	Walking and Cycling	Annual Car Free Sunday	The council encourage residents to come together and celebrate Car Free Day and Clean Air Day, waiving the fee. Car free day saw 19 streets closed across the borough over Saturday 23rd and Sunday 24th September 2023. Small grants of £50 were offered to the first 30 streets to apply to go towards equipment and non-alcoholic refreshments. With London Play encouraging people to take part by running its Swap your Car for a Spacehopper campaign – providing free play equipment like spacehoppers, toys and games to the first 100 streets that get in touch.
35	Walking and Cycling	Provide new and improve existing quiet routes for walking and cycling, through action to improve local connections, signage, traffic calming and maintenance of roads and footpaths	Installed 71 on-street bikehangars and 22 on estates in 2023/24 Approval granted to proceed to construction on northern section of Queenstown Road in November 2023, which focuses on upgrading the existing Cycle Superhighway 8 between Chelsea Bridge and Queen's Circus Approval granted for initial consultation on a series of 'quiet' cycle routes in February 2024 with consultation to start after election in July 2024
36	Walking and Cycling	Promote our free cycle training offer to adults and primary school children and seek opportunities to grow the council's bike stock for these training sessions.	533 children received level 2 bike ability training, across 40 schools and 339 adults/families received 1-2-1 training in 2023-24 (April to March).
37	Supporting Our Businesses	Support our businesses to improve their sustainability across all domains, including air quality, with a pilot programme providing sustainability audits for businesses. This will include use of an Environmental Management System to enable them show their credentials to their retail and business customers.	Officers are working with external service providers to identify a suitable site for a waste consolidation hub in Wandsworth Town

Measure	LLAQM Action Matrix Theme	Action	Progress
38	Supporting Our Businesses	To help improve air pollution in workplaces, we will purchase indoor air quality monitors so employers can test the air quality in workplaces and take action if needed.	Air Quality Monitors now purchased and we have identified 2 locations as a priority.
39	Supporting Our Businesses	Support and grow Wandsworth's cargo bike delivery projects, including new hub at Southside Shopping Centre	A six-month micro logistics hub trial was launched in Southside Shopping Centre Car Park on 31st August 2023. This was part of the Cross River Partnership's Defra-funded Clean Air Logistics for London and Smarter Greener logistics Programme. Over the six-month period, which encompassed January and February of 2024, the emissions savings were 12,957g of NOx, 190g of $PM_{2.5}$ and 264g of PM_{10}.
40	Supporting Our Businesses	Work with other councils to identify cost effective ways to reduce $PM_{2.5}$ emissions from commercial kitchens, and lobby Government to improve standards and legislation.	To start in 2024
41	Supporting Our Businesses	Work to eliminate high pollution pockets through transport emissions management and improvements from point source emissions such commercial kitchens, as well as the Low Emissions Logistics Project, Tooting Town Centre projects, Clapham Junction projects, and by applying lessons learned from Putney High Street to Clapham Junction and Tooting High Street.	A Community cargo bike scheme has been introduced in three locations, to rise to four locations. A freight consolidation/break-down centre was established in Wandsworth town centre and opportunities for agnostic lockers are being investigated.

Measure	LLAQM Action Matrix Theme	Action	Progress
42	Protecting and Improving Our Parks and Green Spaces	Every year plant 300 new trees on streets prioritising areas with the fewest trees.	Achieved
43	Protecting and Improving Our Parks and Green Spaces	Plant 700 trees across the borough in 2023/24, including replacements and new trees.	Achieved – 800 planted overall this year **Framework delivered and available here** Together on nature - Wandsworth Borough Council
44	Protecting and Improving Our Parks and Green Spaces	Protect and improve our green spaces during planning, using the Neighbourhood Community Infrastructure Levy to improve local neighbourhoods.	Achieved Green Flags for 6 parks in Wandsworth.
45	Protecting and Improving Our Parks and Green Spaces	Collaborate with community groups to trial community orchards, empowering them and others to cultivate their fruit. Enhance collaboration with council teams and community groups on biodiversity projects.	Discussions underway with one group for a possible orchard on a council greenspace
46	Protecting and Improving Our Parks and Green Spaces	Promote the Wandsworth Local Fund and Wandsworth Grant Fund to bolster the number of local environment projects and support the grant application process	One bid submitted for improved interpretation of biodiversity on a greenspace.
47	Protecting and Improving Our Parks and Green Spaces	Provide more information to residents about conserving and enhancing biodiversity throughout the borough.	On Your Street biodiversity survey piloted in 2023.

Measure	LLAQM Action Matrix Theme	Action	Progress
48	Protecting and Improving Our Parks and Green Spaces	Develop action and project plans to implement our Biodiversity Strategy that protects our local wildlife species and habitats	Direct delivery for all priority habitats and for some priority species. Other delivery for priority species secured through the planning / development process.
49	Protecting and Improving Our Parks and Green Spaces	Increase information available to residents on how they can protect and improve biodiversity across the borough.	Underway – information on action for pollinators, birds and stag beetles made available throughout 2023
50	Protecting Our Children and The Most Vulnerable	Establish a programme of Air Quality Ambassadors to be led by the Council's Air Quality Champion. Launch an engagement and communication programme for schools to increase awareness and activity regarding air quality and climate change.	Recruitment for an officer to lead the Air Quality Ambassadors programme was completed in January 2024.
51	Protecting Our Children and The Most Vulnerable	Make school air quality information available, including through variable message signage outside schools, and through school events with the Air Quality Ambassadors.	Joint feasibility project underway
52	Protecting Our Children and The Most Vulnerable	School Streets.	Officers are preparing to launch 3 new schemes in June 2024 which will bring the number of schools in the school street programme to 29. Three additional schemes will be consulted on in May 2024.

Measure	LLAQM Action Matrix Theme	Action	Progress
53	Protecting Our Children and The Most Vulnerable	Conduct air quality and climate audits at every school and at other key locations such as care homes, sharing the information directly and through the Air Quality Ambassadors, and acting on recommendations.	Air quality audits were undertaken at an additional 5 schools in 2023. These were at Riversdale Primary School; Chesterton Primary School; St Anne's Church of England Primary School; Westbridge Academy; and Park House School. The recommendations of idling events and air pollution workshops were carried out at 3 schools. The air quality ambassadors' group for schools was established in 2024.
54	Protecting Our Children and The Most Vulnerable	Work with TfL so that bus routes passing schools are prioritised for electrification.	The Council has already started conversations with TfL on electrification of bus routes and prioritising Wandsworth's routes passing schools.
55	Improving Our Homes and Buildings	Provide advice and support for energy efficiency improvements, including solar and other renewable energy, insulation and retrofit to homes able to fund it installation themselves	We have completed delivery of the Green Homes Grant and have successfully rolled out the Warm Home Packs project to almost 3,000 homes in Wandsworth.
56	Improving Our Homes and Buildings	Provide energy efficiency advice and help for residents to address the Cost-of-Living crisis.	The council have partnered with SW Leap and Thinking Works to provide energy efficiency advice, boiler checks and home visits to residents. In winter 2023 a warm home packs service was rolled out, inviting eligible residents to collect a free pack including energy efficient light bulbs, draught proofing and radiator foils to improve their home's energy efficiency and reduce household bills.
57	Improving Our Homes and Buildings	Replacing heating systems with renewable, low-emission alternatives.	The council have an ongoing trial for approximately another 6 months with two flats installed with graphene based IR heating systems. Both being monitored for energy use and effectiveness to possibly replace night storage heaters. Study so far suggests systems can provide sufficient heating but cost to tenant to be confirmed.

Measure	LLAQM Action Matrix Theme	Action	Progress
58	Improving Our Homes and Buildings	Apply Air Quality Neutral, Air Quality Positive, CHP and biomass air quality policies for new construction, as appropriate, and require strict standards on dust and other emissions during building demolition, and during construction of new buildings	Air Quality Neutral Assessments in line with the Sustainable Design and Construction SDP being undertaken. In 2023, within the Environmental Protection Team, officers reviewed planning applications in terms of air quality for both minor and major developments. The Air Quality Team reviewed air quality assessments, air quality neutral reports, dust management plans, construction environmental management plans, schemes for monitoring dust on construction sites, method statements for the reduction of emissions from construction vehicles in compliance with the London Low Emission Zone, schemes of air pollution mitigation measures to protect future occupiers from air pollution exposure while living in their properties.
59	Improving Our Homes and Buildings	Implement the Future Homes Standards when these come into force.	Fossil fuel powered heating system at Holmleigh court is to be replaced by am ASHP lead system supported by solar panels, part funded by the Heat Network Efficiency Scheme (HNES). Further work is continuing improving the efficiency of the heat networks serving the Arndale estate and Doddington Estate through the Heat Network Efficiency Opportunities fund (HNOO). The council is also in communication with district heat network operators to examine the role of large heat networks in the Council's decarbonisation plans.
60	Improving Our Homes and Buildings	Improve the energy efficiency of our social housing stock	The council has a policy of installing energy saving fabric measures in Void properties where energy performance is low. The council is also working with the energy company OVO to install further fabric measures in low-performing properties around the borough, part funded by the Energy Company Obligation (ECO) scheme, aiming to renovate over 100 homes.
61	Improving Our Homes and Buildings	Discourage use of wood burning stoves with a targeted information campaign, while we lobby Government for powers to eliminate wood burning in Wandsworth.	In Winter 2023 Wandsworth ran a wood burning campaign though its resident's magazine publication 'Brightside'. The council are part of the GLA's wood burning steering group and lobby central government to eliminate wood burning in Wandsworth.

Measure	LLAQM Action Matrix Theme	Action	Progress
62	Improving Our Homes And Buildings	Link together the air quality and climate change agendas.	The climate change and air quality teams worked closely on the air quality citizens' assembly and development of the new Wandsworth Air Quality Action Plan. One of the outcomes of this new plan was the recruitment of a Partnership and Engagement Officer (Climate Change and Air Quality) who works across both teams, increasing the collaborative work across the climate change and air quality teams. Funding for retrofit and energy efficiency has been delivered via the Council's Cost of Living Programme. Over 2,800 eligible residents received a Warm Homes Pack. A further 169 homes received home visits with associated installations of small measures and 96 residents receiving telephone advice. In addition, SW Leap have continued their programme of energy advice events. Thinking Works funding has been extended to provide a handyman service and additional fuel vouchers to 100 homes in Wandsworth via the WRAP service to have more impactful interventions, with a focus on securing warmth for homes. A bid has been put in for the MCS Foundation's Local Authority Retrofit Accelerator project, and there is a commitment to develop a Retrofit Strategy for Wandsworth over the coming year.

New Projects which commenced in 2023:

Smarter Greener Logistics (SGL) - Collaborating for Clean Air project. Active dates 1st July 2023 – 31st December 2024

Wandsworth Council are part of Smarter Greener Logistics – a Defra funded project run by the Cross River Partnership, aimed at reducing NO_2 emissions. The project started in July 2023. Wandsworth Council are part of workstreams aimed at reducing deliveries by installing parcel lockers and increasing the use of cargo bikes. The roll out of parcel lockers is expected to be completed in 2024. A cargo bike hub was installed in Southside shopping centre, Wandsworth Town in 2023 (see measure 39 in table K) and an additional cargo bike will be purchased to expand the community cargo bike scheme ‘our bike’ in Earlsfield and installing parcel lockers to reduce deliveries and a workstream to increase cargo bike use from deliveries. Wandsworth Council have also worked with the CRP on other workstreams in the SGL project, such as kerbside management, shared electric vehicle schemes and river freight. These strands of the project did not come to fruition; however, Wandsworth Council will be using strategies and case studies created with other partner boroughs as learnings in future projects.

3. Planning Update and Other New Sources of Emissions

Table M. Planning requirements met by planning applications in the London Borough of Wandsworth in 2023

Condition	Number
Number of planning applications where an air quality impact assessment was reviewed for air quality impacts	20
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	1
Number of developments required to install Ultra-Low NO_X boilers	3
Number of developments where an AQ Neutral building and/or transport assessments undertaken	13
Number of developments where the AQ Neutral building and/or transport assessments not meeting the benchmark and so required to include additional mitigation	1
Number of planning applications with S106 agreements including other requirements to improve air quality	0
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.	2 conditions included.
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.	20 Compliance Information Total Audits: 16 *Self-compliant: 7 **Compliant: 4 Non-compliant: 0 No NRMM: 1 Site Complete: 4 Pending: 0  Zonal Distribution of Sites Canary Wharf (CW): 0 Central Activity Zone (CAZ): 0 Greater London (GL): 9 Opportunity Areas (OA): 7

All major developments, and developments where there is likely to be an increase in emissions or receptors, are passed to the Air Quality Officers in the Pollution Team for comment. All major developments are required to submit an Air Quality Assessment. All relevant national, Mayoral and Wandsworth local policies are applied by the Pollution Team to all relevant planning consultations. Sites are considered for construction dust on a case-by-case basis, particulate matter (PM_{10}) monitoring required, and locations agreed, where a moderate or high risk to receptors are identified. CHP/biomass are not recommended and actively discouraged, developers are urged to select non-combustion or at least ultra-low NOx heating systems. We are observing over time that more developments are proposing non-combustion, maximum insulation and renewables to increase BREEAM ratings. The largest contribution to emissions from development coming from transport and not buildings.

Air Quality Neutral Assessments are required as part of the planning process to assess the building and transport nitrogen dioxide and fine particulate matter ($PM_{2.5}$) emissions from a proposed development. Where emissions exceed the benchmark, mitigation is required to reduce the excess emissions. Where emissions cannot be reduced a Section 106 agreement may be considered to offset emissions.

NRMM condition recommended to be attached to all planning applications where construction and demolition is proposed. NRMM is a standard planning condition applied to all major developments.

3.1 New or significantly changed industrial or other sources

Tooting Indoor Markets have been identified as a public space that is subject to very high levels or PM2.5. Although the council is limited in its powers we are currently working with the Markets and local groups to tackle the issue at source, it is thought that the cause of the problem is lack of ventilation from cooking activities.

The project will increase knowledge of air quality in indoor environments where commercial cooking occurs. We will implement a range of mitigation measures, with monitoring undertaken before and after to enable the benefits of different measures to be assessed. The knowledge derived will be transferable to other indoor markets and communicated to local authorities and industry bodies.

Engaging with the market operators and stall holders on the impacts of $PM_{2.5}$ on health, sources within the market, and mitigation measures is a key part of the project. The food outlets are generally micro businesses, with few resources to mitigate their impacts.

Initial monitoring undertaken by the council has demonstrated very high levels of $PM_{2.5}$ in the two indoor markets. The project will include continuous static and personnel exposure monitoring to understand the levels in the markets. A range of mitigation measures will be implemented and assessed.

4. Additional Activities to Improve Air Quality

4.1 London Borough of Wandsworth Fleet

There are 13 Zero Emission vehicles and 7 zero emission capable vehicles. 33% of the fleet is made up of electric and hybrid electric vehicles.

4.2 NRMM Enforcement Project

The London Borough of Wandsworth has committed to supporting the NRMM Enforcement project until March 2026. The London Borough of Wandsworth has also committed in supporting the Beyond Construction – a project funded by the Mayors Air Quality Fund. Beyond construction looks at regulating emissions from Non-Road Mobile Machinery for highways, waste sites and events.

Standard NRMM planning condition:

> *"All Non-Road Mobile Machinery (NRMM) used during the course of the development that is within the scope of the Greater London Authority 'Control of Dust and Emissions during Construction and Demolition' Supplementary Planning Guidance (SPG) dated July 2014, or any subsequent amendment or guidance, shall comply with the emission requirements therein."*

The NRMM wording is applied in the Decision Notice. The NRMM planning condition is applied to all major planning applications and any planning applications where the air quality officer requests it i.e. schools.

4.2 Air Quality Alerts

We continue to support airTEXT and its expansion in the borough. It is however clear from pilot work carried out by the Regulatory Services Partnership that there is a clear gap in information about local and internal air quality and the impact on the vulnerable. We coordinated a DEFRA bid on behalf of 15 London Boroughs, but this was not successful. It is anticipated that this work will be picked up locally by the borough in mid-2024 and coordinated though Public Health and comms.

Appendix A Details of Monitoring Site Quality QA/QC

A.1 Automatic Monitoring Sites

NO_2 Monitoring

All data undergoes quality assurance and quality control (QA/QC) procedures to ensure that the data obtained are of a high quality. Automatic monitoring took place over the full 12-month period in 2023.

The NO_2 continuous analyser is automatically calibrated every night and also manually checked and calibrated every two to four weeks by the contractor, TRL, employed by the London Borough of Wandsworth for Local Support Officer (LSO) visits during 2023. There is a need for frequent calibration adjustments as the gradual build-up of dirt within the analyser reduces the response rate. This fall off in response needs appropriate correction, to ensure the recording of the true concentrations. The calibration process involves checking the monitoring accuracy against a known concentration of span gas. The span gas used is nitric oxide and is certified to an accuracy of 5%. Both the automatic and manual calibrations use this same certified span gas (i.e. the automatic overnight one does not use the less accurate permeation tube method).

The NO_2 continuous analysers is serviced every six months by TRL and audited by the National Physical Laboratory (NPL) every six months as part of Environmental Research Groups (ERG) - Imperial College London's, London Air Quality Network (LAQN) QA/QC procedure, to ensure optimum data quality.

There was insufficient data capture for WA7 (Putney High Street), WA8 (Putney High Street first floor), WA9 (Felsham Road) and WAC (Lavender Hill, Clapham Junction) due to multiple failures in equipment, including low including low converter efficiencies and valve leaks found at audits, over-heating issues, sampling problems and poor record-keeping by the LSO.

Wandsworth Council have undergone a procurement process to refresh the monitoring network and, at the time of writing, installation of 4 new monitoring stations is underway.

PM_{10} Monitoring Adjustment

PM_{10} particulates are measured using a Tapered Element Oscillating Microbalance (TEOM) analyser, with the data presented as the gravimetric equivalent.

No automatic or fortnightly calibrations are carried out on the TEOM. Calibrations are only carried as part of the routine servicing and regular independent audits. The ongoing performance of the monitor is checked online, by the ERG - Imperial College London Duty Officer. The role of the LSO at the fortnightly visits is to make more detailed performance checks. The LSO is also on standby at other times, to change the TEOM's monitoring filter as required, depending on the filter loading. Since 2009, TEOM data have been improved by routine adjustments, using the volatile correction method (VCM). This corrects for the loss of any volatile mass, which has been driven off by the heat applied in the TEOM's inlet column. The VCM adjustments are carried out by Imperial College London, prior to dissemination of the data.

The TEOM equipment is serviced every six months by TRL and also audited by NPL every six months as part of the Imperial LAQN QA/QC procedure, to ensure optimum data quality. Both sites are part of the LAQN and KCL are responsible for the daily data collection, storage, validation and dissemination via the LAQN website (www.londonair.org.uk). KCL ratifies the data periodically, viewing data over longer time periods and using the results from fortnightly checks, equipment services and equipment audits.

For the monitoring data collected from the monitoring stations located in Putney High Street (WA7), Thessaly Road (WAA), Tooting High Street (WAB) and Lavender Hill (WAC), the Volatile Correction Method (VCM) has been used to correct the data. An FDMS was installed at the Felsham Road (WA9) monitoring station until 21 January 2015. This has now been converted to a TEOM, and therefore from 2019 the Volatile Correction Method (VCM) was used to correct the data.

During the annual data ratification process due to ongoing issues with the monitoring equipment, a portion of the data was void reducing the valid data capture for WAA (Thessaly Road, Battersea) to 64% for 2023.

As part of a network refresh of the monitoring stations across the borough the installation has commenced. New $PM_{2.5}$ BAM (1020) analysers will be installed at

Putney High Street (WA7), Battersea (WAA), Tooting High Street (WAB), Lavender Clapham Junction (WAC).

A.2 Diffusion Tubes

Directive 2008/50/EC of the European Parliament and of the Council on ambient air quality and cleaner air for Europe (EC, 2008) sets air quality objectives for NO_2 along with other pollutants. Under the Directive, annual mean NO_2 concentration data derived from diffusion tube measurements must demonstrate an accuracy of ±25 % to enable comparison with the NO_2 air quality objectives of the Directive.

In order to ensure that NO_2 concentrations reported are of a high quality, strict performance criteria need to be met through the execution of QA and QC procedures. A number of factors have been identified as influencing the performance of NO_2 diffusion tubes including the laboratory preparing and analysing the tubes, and the tube preparation method (AEA, 2008). QA and QC procedures are therefore an integral feature of any monitoring programme, ensuring that uncertainties in the data are minimised and allowing the best estimate of true concentrations to be determined.

NO_2 diffusion tubes for the London Borough of Wandsworth are analysed by Gradko using 50% TEA in acetone method of preparation.

This section contains details of Gradko International Ltd.'s Results of laboratory precision.

- Performance in AIR NO_2 PT Scheme (September 2021 – October 2023)

- Summary of Precision Scores for 2021 – 2023

- UKAS schedule of accreditation (November 2023)

Gradko International Ltd is a UKAS accredited laboratory and participates in laboratory performance and proficiency testing schemes. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO_2 concentrations reported are of a high calibre.

Summary of Laboratory Performance in AIR NO_2 Proficiency Testing Scheme (May 2020 – June 2022).

Gradko demonstrated “satisfactory” laboratory performance in 2023 for 50% TEA in Acetone.

Details of the scheme can be found at: https://laqm.defra.gov.uk/wp-content/uploads/2022/07/LAQM-NO2-Performance-data_Up-to-June-2022_V2.1.pdf

Table 1: Laboratory summary performance for AIR NO_2 PT rounds AR046, 49, 50, 52, 53, 55, 56, 58 and 59

The following table lists those UK laboratories undertaking LAQM activities that have participated in recent AIR NO_2 PT rounds and the percentage (%) of results submitted which were subsequently determined to be **satisfactory** based upon a z-score of ≤ ± 2 as defined above.

AIR PT Round	AIR PT AR046	AIR PT AR049	AIR PT AR050	AIR PT AR052	AIR PT AR053	AIR PT AR055	AIR PT AR056	AIR PT AR058	AIR PT AR059
Round conducted in the period	September – October 2021	January – February 2022	May – June 2022	July – August 2022	September – October 2022	January – February 2023	May – June 2023	July – August 2023	September – October 2023
Aberdeen Scientific Services	100 %	100 %	100 %	100 %	100 %	0 %	100 %	100 %	75 %
Cardiff Scientific Services	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Edinburgh Scientific Services	75 %	NR [2]	50 %	100 %	100 %	100 %	75 %	100 %	50 %
SOCOTEC	100 % [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]
Exova (formerly Clyde Analytical)	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Glasgow Scientific Services	NR [2]	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Gradko International	100 %	100 %	100 % [1]	100 %	100 %	100 %	100 %	100 %	100 %
Kent Scientific Services	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Kirklees MBC	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Lambeth Scientific Services	75 %	50 %	75 %	100 %	50 %	0 %	75 %	50 %	0 %
Milton Keynes Council	100 %	75 %	100 %	100 %	100 %	50 %	75 %	100 %	100 %
Northampton Borough Council	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Somerset Scientific Services	100 %	75 %	100 %	75 %	100 %	100 %	75 %	100 %	100 %
South Yorkshire Air Quality Samplers	100 %	NR [2]	NR [2]	NR [2]	NR [2]	NR [2]	NR [2]	NR [2]	NR [2]
Staffordshire County Council, Scientific Services	100 %	100 %	100 %	0 %	100 %	100 %	100 %	100 %	100 %
Tayside Scientific Services (formerly Dundee CC)	100 %	NR [2]	NR [2]	100 %	100 %	NR [2]	100 %	NR [2]	NR [2]
West Yorkshire Analytical Services	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]

[1] Participant subscribed to two sets of test results (2 x 4 test samples) in each AIR PT round.
[2] NR, No results reported.
[3] Cardiff Scientific Services, Exova (formerly Clyde Analytical), Kent Scientific Services, Kirklees MBC, Northampton Borough Council and West Yorkshire Analytical Services; no longer carry out NO2 diffusion tube monitoring and therefore did not submit results.

Precision Summary Results

The diffusion tube precision summary results are provided below. This details the total number of recorded good/bad precision results for the last 3 years for laboratories that currently provide diffusion tube analysis.

2021 - 2023 Summary of Precision Results for Nitrogen Dioxide Diffusion Tube Collocation Studies UK Laboratories including for Gradko Laboratory 50% TEA in Acetone

Precision Summary Table

Diffusion Tube Preparation Method	2021 Good	2021 Bad	2022 Good	2022 Bad	2023 Good	2023 Bad
Gradko, 50% TEA in Acetone	16	0	16	0	14	0
Gradko, 20% TEA in Water	34	0	33	0	21	0
ESG Didcot / SOCOTEC, 50% TEA in Acetone	25	3	29	0	28	0
ESG Didcot / SOCOTEC, 20% TEA in Water	14	1	11	0	4	0
Staffordshire Scientific Services	15	1	13	0	11	0
Glasgow Scientific Services	2	5	3	3	1	0
Edinburgh Scientific Services	6	0	1	0	0	1
Milton Keynes Council	4	0	1	0	1	0
Tayside Scientific Services	1	0	1	0	1	0
Lambeth Scientific Services	8	1	6	4	3	0
Aberdeen Scientific Services	7	0	7	0	7	0
South Yorkshire Air Quality Samplers	1	0	0	0	0	0
ESG Glasgow, 50% TEA in Acetone	0	1	1	0	1	0
ESG Glasgow, 20% TEA in Water	0	1	1	0	1	0
Somerset County Council	11	0	14	0	4	0

Numerical results for this data are contained in the National Bias Adjustment Spreadsheet version 03/24

Numerical results for this data are contained in the National Bias Adjustment Spreadsheet version 03/24. In 2023, the tube precision for NO_2 Annual Field Inter-Comparison for Gradko International using the 50% TEA in acetone method was 'good' for the results of 14/15 participating local authorities, no participating local authorities were deemed to be 'bad'.

Analysed By	Method	Year	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	50% TEA in acetone	2023	UB	City Of London Corporation	10	28	22	26.3%	G	**0.79**
Gradko	50% TEA in acetone	2023	R	City Of London Corporation	11	36	31	15.0%	G	**0.87**
Gradko	50% TEA in acetone	2023	R	LB Newham	12	27	21	28.0%	G	**0.78**
Gradko	50% TEA in acetone	2023	SU	Redcar And Cleveland Borough Council	12	14	10	48.0%	G	**0.68**
Gradko	50% TEA in Acetone	2023	R	Sandwell Mbc	12	33	26	27.6%	G	**0.78**
Gradko	50% TEA in acetone	2023	UB	Sandwell Mbc	11	21	18	15.8%	G	**0.86**
Gradko	50% TEA in acetone	2023	R	Sandwell Mbc	12	23	20	14.2%	S	**0.88**
Gradko	50% TEA in Acetone	2023	UC	Falkirk Council	12	33	29	14.9%	G	**0.87**
Gradko	50% TEA in Acetone	2023	UB	Falkirk Council	12	15	13	8.9%	G	**0.92**
Gradko	50% TEA in acetone	2023	R	London Borough Of Lewisham	11	33	27	22.7%	G	**0.82**
Gradko	50% TEA in Acetone	2023	R	London Borough Of Merton	12	37	31	18.5%	G	**0.84**
Gradko	50% TEA in acetone	2023	KS	Marylebone Road intercomparison	11	47	38	25.7%	G	**0.80**
Gradko	50% TEA in acetone	2023	R	Royal Borough Of Windsor And Maidenhead	11	27	23	21.6%	G	**0.82**
Gradko	50% TEA in acetone	2023	R	Royal Borough Of Windsor And Maidenhead	12	24	24	0.6%	G	**0.99**

Gradko	50% TEA in acetone	2023	R	London Borough Of Richmond Upon Thames	11	18	16	15.6%	G	**0.86**
Gradko	50% TEA in acetone	2023		**Overall Factor[3] (15 studies)**				**Use**		**0.83**

Schedule of Accreditation issued by United Kingdom Accreditation Service (UKAS)

Gradko is accredited by UKAS for the analysis of NO_2 diffusion tubes. It undertakes the analysis of the exposed diffusion tubes by ultra-violet spectrophotometry. The relevant test is shown below on the UKAS Schedule of Accreditation issued 10 November 2023.

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

UKAS TESTING

2187

Accredited to ISO/IEC 17025:2017

Gradko International Ltd
(Trading as Gradko Environmental)

Issue No: 026 **Issue date:** 10 November 2023

St Martins House 77 Wales Street Winchester Hampshire SO23 0RH	Contact: Mr A Poole Tel: +44 (0)1962 860331 Fax: +44 (0)1962 841339 E-Mail: diffusion@gradko.co.uk Website: www.gradko.co.uk

Testing performed at the above address only

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ATMOSPHERIC POLLUTANTS Collected on diffusion (sorbent) tubes and monitors	Chemical Tests	Documented In-House Methods
	Ammonia as ammonium (NH_4^+)	GLM 8 by Ion Chromatography
	Benzene Toluene Ethyl benzene Xylene	GLM 4 by Thermal Desorption/ FID Gas Chromatography
	Hydrogen chloride as chloride (Cl^-) Nitrogen dioxide as nitrite (NO_2^-) Sulphur dioxide as sulphate (SO_4^{2-}) Hydrogen fluoride as fluoride (F^-)	GLM 3 by Ion Chromatography
	Hydrogen sulphide	GLM 5 by Colorimetric determination (UV Spectrophotometry)
	Ozone as nitrate (NO_3^-)	GLM 2 by Ion Chromatography
	Nitrogen Dioxide as nitrite (NO_2^-)	GLM 7 by Colorimetric determination (UV Spectrophotometry)
	Sulphur dioxide as sulphate (SO_4^{2-})	GLM 1 by Ion Chromatography
	Formaldehyde as formaldehyde-DNPH	GLM 18 by HPLC
	Volatile Organic Compounds including: Benzene Toluene Ethylbenzene p-Xylene o-Xylene	GLM 13 by Thermal Desorption GC-Mass Spectrometry

NO_2 diffusion tube analysis method

NO_2 diffusion tubes are passive monitoring devices. They are made up of a Perspex cylinder, with two stainless steel mesh discs, coated with triethanolamine (TEA) absorbent held inside a polythene cap, which is sealed onto one end of the tube. Diffusion tubes operate on the principle of molecular diffusion, with molecules of a gas diffusing from a region of high concentration (open end of the tube) to a region of low concentration (absorbent end of the tube) (AEA, 2008). NO_2 diffuses up the tube because of a concentration gradient and is absorbed by the TEA, which is present on the coated discs in the sealed end of the tube. All of Wandsworth's NO_2 diffusion tubes are prepared by Gradko using 50% v/v TEA with Acetone as the absorbent.

Prior to and after sampling, an opaque polythene cap is placed over the end of the diffusion tube opposite the TEA coated discs to prevent absorption. The NO_2 diffusion tubes are labelled and kept refrigerated in plastic bags prior to and after exposure.

In the laboratory, the steel mesh is removed and washed with distilled water which is then analysed. The concentration of nitrogen dioxide is found by shining ultraviolet light (UV) through the water sample. The amount of light absorbed is equivalent to the concentration of nitrogen dioxide that was present in the air during the monitoring period.

Gradko take an active role in developing rigorous QA and QC procedures in order to maintain the highest degree of confidence in their laboratory measurements. Gradko were involved in the production of the Harmonisation Practical Guidance for NO_2 diffusion tubes (AEA, 2008) and have been following the procedures set out in the guidance since January 2009. Since April 2014 Gradko has taken part in a new scheme AIR-PT, which combines two long running PT schemes: LGC Standards STACKS PT scheme and HSL WASP PT scheme.

<u>Factor from Local Co-location Studies</u>

A co-location study using 2 nitrogen dioxide diffusion tubes has been carried out at the Felsham Road, Putney (automatic monitoring site ID: WA9; non- automatic monitoring site IDs: W21 and W22).

Discussion of Choice of Factor to Use

The local bias adjustment factor at the Felsham Road automatic monitoring station was calculated to a value of 0.89, however the overall continuous monitor data capture was rated at 'poor overall data capture'. As a result, we have used the nationally derived bias adjustment factor of 0.83 as per diffusion Tube Bias Factor s/s 03/2024 for consistency as has been applied in the previous 6 years. As the guidance states, the use of nationally derived bias adjustment factor will provide the best estimate of the true annual mean concentration as it is based on more studies than a locally derived one.

A local bias adjustment factor calculation could be presented in future for comparison with the national factor.

Table N. Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	National	03/24	0.83
2022	National	03/23	0.82
2021	National	03/22	0.83
2020	National	03/21	0.82
2019	National	03/20	0.93
2018	National	03/19	0.93
2017	National	03/18	0.89

A.3 Adjustments to the Ratified Monitoring Data

Short-term to Long-term Data Adjustment

For monitoring sites where data capture is less than 75% of a full calendar year (less than 9 months), the mean of the 'raw' concentrations should be "annualised" in accordance with Box 7.10 of the LLAQM Technical Guidance (TG19) before being compared to annual mean objectives.

NO_2 Adjustment (Diffusion tube Site ID W50)

Data adjustment (annualisation) was required for one diffusion tube monitoring location, as the data capture rate was 58% in 2023. Annualisation is required when data capture falls below 75%. The LAQM annualisation tool was used to ensure the correct methodology for the annualisation off diffusion tubes. An annualisation

summary is provided in the screenshot of the Defra's Diffusion Tube Data Processing Tool below.

Annualisation Summary - Information Only

Go to STEP 3 - Bias Adjustment

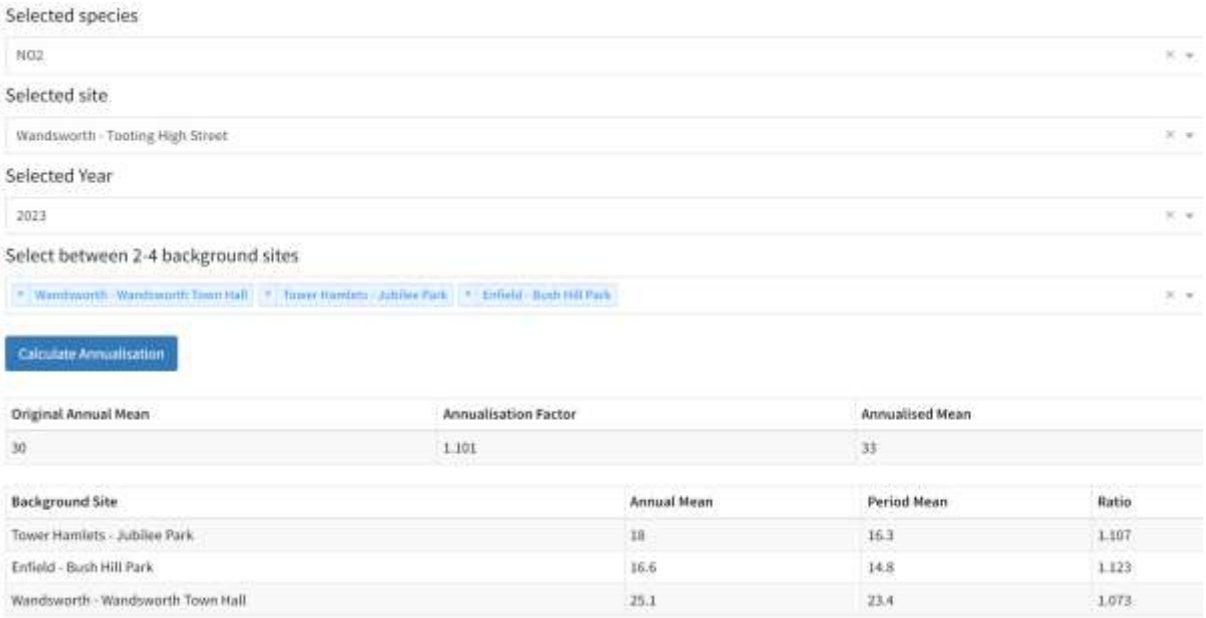
Diffusion Tube ID	Annualisation Factor Site 1 : Merton - Morden Civic Centre 2	Annualisation Factor Site 2 : Richmond Upon Thames - Castelan	Annualisation Factor Site 3 : Wandsworth - Wandsworth Town Hall	Annualisation Factor Site 4: Croydon - Norbury	Average Annualisation Factor	Raw Data Simple Annual Mean (µg/m3)	Annualised Data Simple Annual Mean (µg/m3)	Comments
WS0	1.1172	1.0422	1.1061	1.0807	1.0865	24.3	26.4	

NO_2 Adjustment (Automatic Monitoring Site ID)

Short-Term to Long-Term Monitoring NO_2 Data Adjustment for the continuous monitoring station WAB - Tooting High Street

NO_2 data at the continuous monitoring station WAB (Tooting High Street) had data capture rate of 70% of the full calendar year. Therefore, NO_2 data have been "annualised" using the methodology outlined in LLAQM.TG(19) before being compared to annual mean objectives.

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



Selected species

NO2

Selected site

Wandsworth - Tooting High Street

Selected Year

2023

Select between 2-4 background sites

Calculate Annualisation

Original Annual Mean	Annualisation Factor	Annualised Mean
30	1.101	33

Background Site	Annual Mean	Period Mean	Ratio
Tower Hamlets - Jubilee Park	18	16.3	1.107
Enfield - Bush Hill Park	16.6	14.8	1.123
Wandsworth - Wandsworth Town Hall	25.1	23.4	1.073

WAB -Original Annual Mean: 30

WAB -Annualised Mean: 33

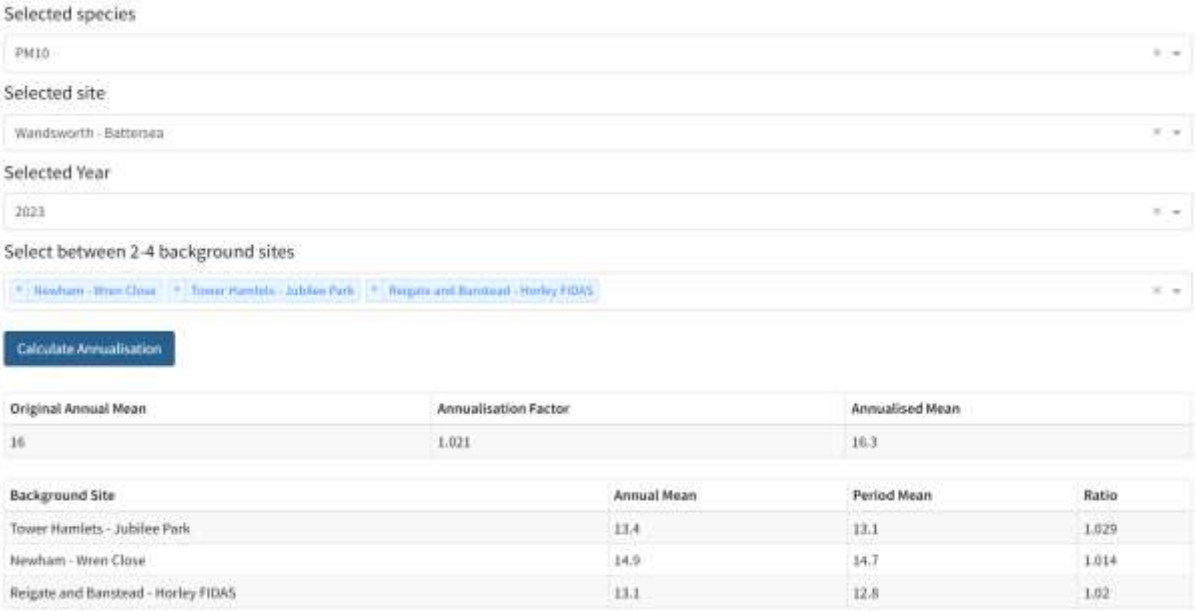
PM_{10} Automatic Site Adjustment

Data capture for the automatic analyser WAA Thessaly Road (Battersea) in 2023 was 64% and as such data adjustment (annualisation) was required. Data was annualised using the LondonAir web tool as described for the NO_2 adjustment at

WAA above. It is not always possible to measure for a whole year to obtain an annual mean for a pollutant. Sometimes instrument faults or problems with data quality can also lead to missing data and a full year's measurements are not achieved. Defra technical guidance (TG16, Feb 18) provides a method for estimating an annual mean that should be used if available data capture is below 75%. This process is termed annualising.

Short-Term to Long-Term Monitoring PM_{10} Data Adjustment for the continuous monitoring station WAA Thessaly Road (Battersea)

PM_{10} data at the continuous monitoring station WAA Thessaly Road (Battersea) had data capture rate of 64% of the full calendar year. Therefore, PM_{10} data have been "annualised" using the methodology outlined in LLAQM.TG(19) before being compared to annual mean objectives.



Original Annual Mean	Annualisation Factor	Annualised Mean
16	1.021	16.3

Background Site	Annual Mean	Period Mean	Ratio
Tower Hamlets - Jubilee Park	13.4	13.1	1.029
Newham - Wren Close	14.9	14.7	1.014
Reigate and Banstead - Horley FIDAS	13.1	12.8	1.02

WAA - Original Annual Mean: 16

WAA - Annualised Mean: 16.3

During the annual data ratification process due to ongoing issues with the monitoring equipment, a portion of the data was void reducing the valid data capture for WAA (Thessaly Road, Battersea) to 64% for 2023.

As part of a network refresh of the monitoring stations across the borough the installation has commenced. New $PM_{2.5}$ BAM (1020) analysers will be installed at Putney High Street (WA7), Battersea (WAA), Tooting High Street (WAB), Lavender Clapham Junction (WAC).

Distance Adjustment

The results presented in the Table O have been adjusted to represent exposure at the nearest façade. To estimate the concentration at the nearest receptor, the procedure specified in LLAQM.TG(19) has been applied to all monitoring locations that record an annual mean concentration above the NO_2 annual objective of 40 µg m^{-3}. The calculation has been applied also to monitoring locations that recorded an

annual mean concentration within 10% of the NO_2 annual objective of 40 µg m^{-3} (i.e. above 36 µg m^{-3}), to account for the inherent uncertainty in diffusion tube monitoring concentration data.

The methodology consists of comparing the monitored annual mean NO_2 concentrations at a given point against known relationships between NO_2 concentrations and the distance from a road source.

The monitored annual mean values used in the calculation are derived from the background site diffusion tube NE8 (Battersea Park).

Table P. 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
W24	2.4	4.7	38.1	12.0	33.7	
W4	0.6	3.6	41.7	12.0	32.0	
YR5	0.6	1.3	42.4	12.0	*38.5*	*Predicted concentration at Receptor within 10% the AQS objective.*
W47	0.7	5.7	52.8	12	*36.7*	*Predicted concentration at Receptor within 10% the AQS objective.*

Appendix B Full Monthly Diffusion Tube Results for 2023

Table Q. NO_2 2023 Diffusion Tube Results (µg 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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
W23	525111	174619	45.4	44.8	37.6	48.1	46.1	44.5	28.9	34.4	43.3	41.6	36.3	29.4	40.0	33.2		
W24	524045	175366	54.0	62.0	53.0	43.8	35.4		40.3	39.9	49.4	45.1	40.0	42.2	45.9	38.1	33.7	
W21	524044	175495	33.0	27.4	25.1	25.3	17.8	20.6	15.4	17.0	23.6	25.0	27.8	18.7	23.1	19.1		
W22	524044	175495	33.5	30.9	21.5	23.9	20.2	19.0	16.2	16.6	24.0	25.8	27.8	18.4	23.1	19.2		
W6	522270	175307	26.7	20.9	12.0	15.4	13.0		8.4	12.0	14.6	17.6	18.1	13.2	15.6	13.0		
W25	522542	173282	28.5	28.2	21.6	21.5	17.2	17.1		17.7		23.2	23.6	18.3	21.7	18.0		
W26	524847	173282	28.2	28.0	16.0	19.3	16.0	17.2	12.1	15.2	16.9	21.6	22.3	16.2	19.1	15.9		
W27	524847	173282	28.6	22.3		15.2	15.0	13.6	8.3	12.6	14.4	20.2	20.9	14.1	16.8	14.0		
W28	526011	172869	26.4	26.6	18.1	17.3	12.9	14.5	9.6	12.3		20.5	21.1		17.9	14.9		
W29	526099	172833	30.3		20.8	21.7	21.1	17.4	10.8	16.8	19.7	24.6	22.5		20.6	17.1		
W4	527688	171204	56.9	62.6	46.3	53.1	44.0	46.9	45.9	47.2	57.8	53.5	50.3	38.8	50.3	41.7	32.0	
W8	527524	171239	35.2	32.3	21.9	25.3	22.1	19.6	13.5	16.0	21.9	24.7	31.7	19.3	23.6	19.6		
W30	528900	172431	29.2	30.4	19.7	17.8	14.7	17.4	13.0	16.5	19.8	22.6	26.3		20.7	17.2		
W31	528607	173333	38.2	33.1	28.3	27.2	25.0	24.8	20.6	24.2	30.7	33.9	28.5	21.6	28.0	23.2		
W32	528436	173133	39.5	32.1	31.0	32.7	25.2	28.0	19.9	24.0	31.2	31.7	29.6	20.0	28.8	23.9		
W34	527569	174986	31.7	28.2	20.2	20.6	17.1	17.1	11.7	16.4	18.6	24.5	25.0	18.0	20.7	17.2		
W35	527487	174981	32.5	35.4	24.0	24.2	19.4	18.8	12.9	19.0	22.2	26.1	27.0	18.6	23.3	19.4		

W36	525875	174616	33.8	34.3	23.6	22.1		17.0	14.7	16.5	20.7	23.7	28.6	19.1	23.1	19.2		
W37	525278	173483	33.0	31.0	21.3	22.9	19.4	19.3	15.7			23.8	27.4	18.1	23.2	19.2		
W38	526863	175239	31.1	31.2	21.6	21.8	18.6	18.1	12.7	18.1	21.9		25.1	16.8	21.5	17.9		
NE2	528043	176618	32.8	35.1	21.4	23.6	20.2	24.6	17.5	22.6	26.9	29.1	22.0	17.1	24.4	20.3		
NE3	528771	176819	45.9	45.4	35.5	44.1	42.8	39.7	28.0	37.1	41.5	37.7	37.8	27.1	38.6	32.0		
NE4	528871	176943	32.4	28.6	22.6	22.3	19.2	19.3	13.9	20.0		28.8	25.6	17.2	22.7	18.9		
NE5	529265	177353	40.2	40.5	29.2	29.9	22.6			26.8	32.8	32.7	33.5	26.5	31.4	26.1		
NE6	529413	177486	44.7	49.9	32.8	38.2	37.4	35.8	27.2	32.3	36.7	38.9	36.2	26.9	36.4	30.2		
NE7	530129	177727	38.1	37.2	30.1	31.5	25.5	27.3		21.8	28.8	28.1	31.8		30.0	24.9		
NE8	528023	177176	21.4	21.8	7.0	15.0		12.1	8.9	12.0		17.3	17.5	11.8	14.5	12.0		
YR1	526201	175340	37.8	35.6	25.9	30.4	28.8	26.9	21.6	26.4	30.8	33.0	31.3	19.1	29.0	24.0		
YR2	526581	175731	48.5	51.4	40.0	42.7	35.4	38.8	39.1	46.2	54.1	43.0	40.4	32.7	42.7	35.4		
YR3	526480	175930	35.4	31.6	21.2	21.5	15.9		13.1		21.0	27.2	24.8	21.4	23.3	19.4		
YR4	527086	176119	43.4	42.8	34.2	31.5	27.8	30.0	28.5	29.6	40.8	33.7	32.8	23.4	33.2	27.6		
YR5	527109	176022	57.9	57.0	46.0	54.7	60.7	58.3	39.9	49.9	59.8		47.7	30.6	51.1	42.4	38.5	
YR6	526817	176686	36.7	33.1	26.4		30.3	30.1	25.6	31.9	40.9		29.3		31.6	26.2		
W39	523898	174717	37.7	41.4	30.1	31.0	27.8	26.5	20.0	22.1	27.1	28.4	31.5	19.1	28.5	23.7		
W40	522343	173805	34.5	34.1	26.3	27.6	20.6	22.9	18.4	23.0	27.2	29.6		18.8	25.7	21.3		
W41	527675	174339	32.8	30.2	21.9	19.9	16.8	18.7	13.6	18.2	21.1	24.6	26.8	17.0	21.8	18.1		
W42	527426	173249	42.4	45.4	36.7	44.1	38.2	41.5	35.8	36.3	50.2	44.9	38.8	24.3	39.9	33.1		
W43	526783	174250	35.5	30.8	27.0	29.0	22.4	24.9	19.7	24.7	28.0	32.0	27.0	22.6	27.0	22.4		
W44	529425	176920	34.4	33.4	20.8	19.3	16.2	19.5	13.5	15.9	21.4	26.1	24.4	17.8	21.9	18.2		
W45	528096	172439	40.5	40.9	31.2	28.8	25.9	26.2			30.6	33.5	35.3	25.5	31.8	26.4		
W46	527639	172882	42.1	38.0	32.0	33.4	26.6	26.1	26.1	25.6	33.1	37.1	35.4	26.4	31.8	26.4		
W47	525243	174643	72.7	69.8	62.0	66.0	63.4	61.5	59.2	57.4	73.7	66.0	53.5	57.8	63.6	52.8	36.7	
W48	528263	172735		34.1	26.1	26.9	24.4	24.7	18.0	21.7	26.0	29.2	29.5	19.0	25.4	21.1		

W49	525987	173077	38.5	41.7	32.7	38.9	36.5	32.5	18.1	26.6	32.9	37.4	33.4	22.5	32.6	27.1		
W50	525945	173083					29.4	27.9	14.8		22.7	27.0	30.2	18.2	24.3	21.9		
W51	529390	171787	26.2	30.0	19.7	23.7	19.4	19.7	10.1	16.8	20.4	22.6	23.3	15.0	20.6	17.1		
W52	522481	173792	34.6	37.9	32.1	33.1	27.3	32.1	24.7	28.1	30.1	32.1	28.8	25.5	30.5	25.3		
W53	525213	173701	31.4	28.5	21.5	22.7	20.4	19.3	11.8	16.7	17.9	23.8	23.8	14.5	21.0	17.5		
W54	522382	173779	44.8	45.8	36.6	43.1	43.3	35.8	23.2	32.6	36.9			21.7	36.4	30.2		
W55	527218	173043	37.9	32.3	25.0	23.8	23.7	23.4	17.7	20.7	25.0	27.7	24.4	19.3	25.1	20.8		
W56	528382	173270		29.3	20.0	22.3	19.9	19.4	11.3	15.5	21.3	26.1	25.3	14.9	20.5	17.0		
SA1	528160	172414	31.1	32.4	20.7	21.1	18.5	17.2	14.2	17.0	20.3	24.5	25.4	19.7	21.8	18.1		
WH 1	522078	175466	34.6	36.3	33.7	34.7	30.1	30.4	22.3	23.8	36.0	43.2	38.3	26.0	32.4	26.9		
WH 2	521752	175435	34.6	33.2	23.1	23.2	24.2	22.7		20.1		24.8	24.7	12.3	24.3	20.2		
WH 3	522087	174262	33.4	37.5	30.8	34.2	31.3	36.0	18.8	28.7	31.9	30.4	25.3	18.3	29.7	24.7		
BW 1	526503	172556	38.8	37.0	30.4	29.2	29.5	25.9	22.0	25.4	32.2	27.5	31.1	22.0	29.2	24.3		
BW 2	526335	172395	33.2	33.8	27.0	19.1	22.2	22.8	18.0	20.1	24.6	28.8	23.7	17.5	24.2	20.1		
LR1	523563	175845	38.7	34.0	30.4	34.1		31.0	22.8	24.9	34.9	27.5	31.7	28.3	30.8	25.5		

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

☒ **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.**

☒ **Wandsworth 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**.

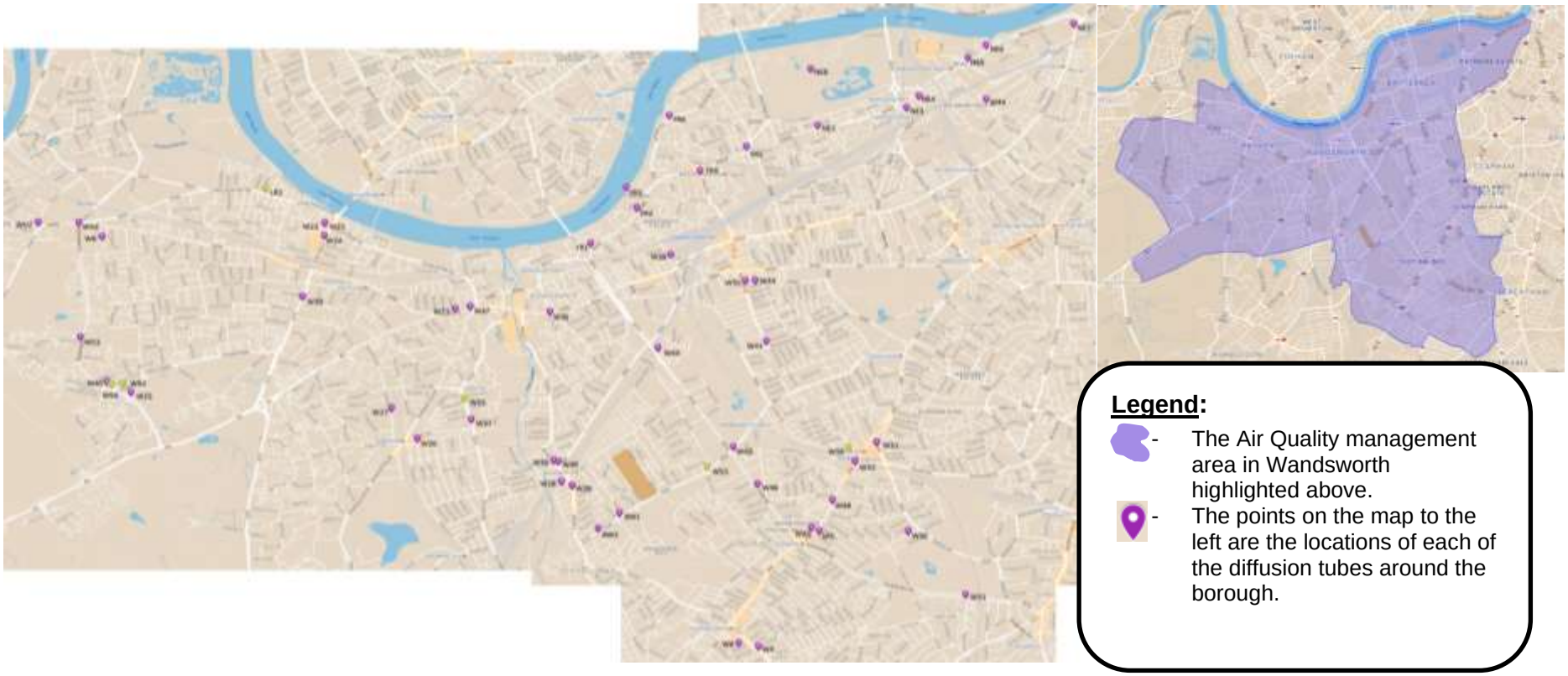
See Appendix C for details on bias adjustment and annualisation.

Appendix C Map(s) of Monitoring Locations and AQMAs

An Air Quality Management Area covers the whole of the borough therefore all monitoring sites, both non-automatic and automatic, sit within an AQMA.

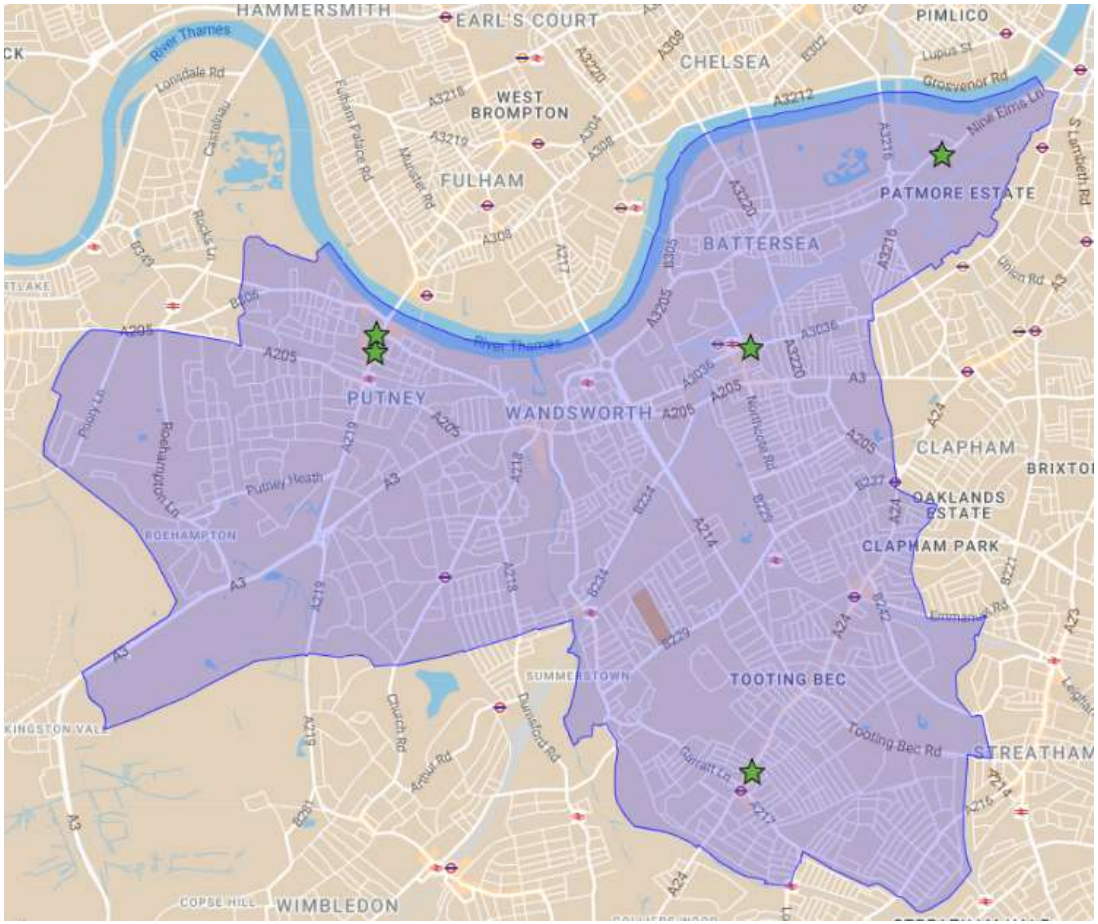
Figure L depicts the location of diffusion tubes across the borough, of which there a total of 58.

Figure L: Map of Non-Automatic Monitoring Sites



Figures M and N depicts the locations of the automatic monitoring stations.

Figure M: Map of Automatic Monitoring Sites: Reference monitors



Legend:

- The location of an automatic reference monitor

Figure N: Map of Automatic Monitoring Sites: Breathe London sensors.