Air Quality

and Action Plan update 2024 (covering 2023)

Date of Publication: May 2024

THE ROYAL BOROUGH OF
KENSINGTON
AND CHELSEA

Royal Borough of Kensington and Chelsea Air Quality Annual Status Report for 2023

Date of publication: May 2024

This report provides a detailed overview of air quality in the Royal Borough of Kensington and Chelsea 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
AQFA	Air Quality Focus Areas
AQMA	Air Quality Management Area
AQN	Air Quality Neutral
AQO	Air Quality Objective
AQP	Air Quality Positive
BEB	Buildings Emission Benchmark
BTEX	Benzene, Toluene, Ethylbenzene and Xylene
CAB	Cleaner Air Borough
EV	Electric Vehicle
GLA	Greater London Authority
KHS	Kensington High Street
LAEI	London Atmospheric Emissions Inventory
LAQM	Local Air Quality Management
LLAQM	London Local Air Quality Management
NO_2	Nitrogen Dioxide
NRMM	Non-Road Mobile Machinery
O_3	Ozone
PM_{10}	Particulate matter less than 10 microns in diameter
$PM_{2.5}$	Particulate matter less than 2.5 microns in diameter
SO_2	Sulphur dioxide
TEB	Transport Emissions Benchmark
TfL	Transport for London
WHO	World Health Organisation

Table 1: 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	-
Ozone (O_3)	WHO AQG[(2)]: 100µg/m^3 not to be exceeded more than 3-4 times a year. (AQO not more than 10 times)	daily 8-hour mean	2021
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 not to be exceeded more than 3-4 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	Updated 2021

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. Executive Summary

Air quality at our reference grade automatic monitoring stations in the borough has improved.

Nitrogen dioxide (NO_2)

In 2023, all five automatic monitors (KC1 – KC5) met the national Air Quality Objective (AQO) and World Health Organisation (WHO) 2005 Guideline Value of 40 µg/m^3. This is the first year that the Council is able to report this. The highest annual average recorded at all sites was at KC5 with 37 µg/m^3. KC5 also showed the biggest improvement reducing by 4 µg/m^3 from 41 from last year. However, it should be noted that KC2, KC3 (particularly) and KC5 saw lower data capture rates (between 80 and 90%) and so it will be important to see if this is sustained in 2024. It is also important to treat the result at KC3 (Knightsbridge) with a little caution, as the diffusion tube, KC49, which is located around the corner from the automatic station, experienced an increase in concentrations and this year recorded an annual average of 43.4 µg/m^3. We will be paying closer attention to this in 2024.

Compliance with the AQO NO_2 1-hour mean objective of 200 µg/m^3 (not to be exceeded more than 18 times in a year) was also achieved at all five automatic monitoring locations during 2023, which is the fifth year in a row.

However, the borough is some distance from any monitoring site meeting the 2021 annual mean WHO Guideline Value of 10 µg/m^3.

PM_{10}

All automatic monitoring stations continued to meet the PM_{10} annual mean AQO of 40 µg/m^3 and the 2005 WHO Guidelines of 20µg/m^3. The 2021 WHO Guideline Value for PM_{10} annual mean concentrations is 15 µg/m^3 and KC1 and KC2 monitoring locations achieved this. KC5 was above at 18 µg/m^3.

$PM_{2.5}$

There are two reference grade automatic monitoring stations where $PM_{2.5}$ is monitored – KC1 and KC2. Compliance with the old national AQO of 25 µg/m^3 was achieved at both. The new AQO and WHO Guideline Value of 10 µg/m^3 was also met at both, but neither met the 2021 WHO Guideline Value of 5 µg/m^3.

More detail information, graphs and data contained within Section 2 of this document.

2. Air Quality Monitoring

2.1 Locations of all monitoring sites

We currently have five automated continuous monitoring locations within the Borough. Appendix C, Figure 22 shows the locations of the monitoring sites and information about each one is summarised in Table 2 below. There has been no change to the locations, the pollutants monitored by the automatic stations or their monitoring technique since the production of our previous ASR. QA/QC audits were carried out at all monitoring stations in March/April 2023 (and again in March 2024).

Table 2: 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?	Monitoring Technique	Distance to Relevant Exposure (1)	Distance to kerb of nearest road (2)	Inlet Height
KC1	North Kensington	Urban Background	524041	181752	NO_2, CO, PM_{10}, $PM_{2.5}$, SO_2, O_3	YES AQMA 1	Chemiluminescent, FIDAS, GFC, Fluorescence UV, Photometric	3.5 m	8 m	3 m
KC2	Cromwell Road	Roadside	526520	178968	NO_2, PM_{10} & $PM_{2.5}$	YES AQMA 1	Chemiluminescent, BAM PM_{10} & BAM $PM_{2.5}$	10 m	4 – 5 m	1.4 m
KC3	Knightsbridge	Kerbside	527518	179395	NO_2	YES AQMA 1	Chemiluminescent	0 m	0.8 – 4.2 m	2.4 m
KC4	Chelsea Old Town Hall	Roadside	527267	178089	NO_2	YES AQMA 1	Chemiluminescent	0 m	7.7 m	34 m
KC5	Earl's Court	Kerbside	525695	178364	NO_2 & PM_{10}	YES AQMA 1	Chemiluminescent & BAM 1020 Heated	5.2 m	0.5 m	1.9 m

Notes:

(1) 0 m 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

2.2 Non-Automatic NO_2 Monitoring Sites

Nitrogen dioxide (NO_2) data is also collected using passive diffusion techniques. Further details on the laboratory, method, bias adjustment, and quality control are in Appendix A. Appendix C, Figures 23 and 24 show the locations of all the non-automatic monitoring stations within the borough and detailed information about each is in Table 3 below. There have been no changes to the locations in the last 12 months.

Table 3: Details of Non-Automatic NO_2 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?	Distance to relevant exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a continuous analyser?	Tube height (m)
KC31	Ladbroke Grove / North Kens. Library	Roadside	524349	181265	NO_2	YES AQMA 1	6.0	3.5	No	6.0
KC32	Holland Park	Urban Background	524786	179600	NO_2	YES AQMA 1	5.0	380.0	No	4.0
KC33	Cromwell Road / Earls Court Road	Roadside	525355	178841	NO_2	YES AQMA 1	1.0	1.1	No	2.1
KC34	Dovehouse Street	Urban Centre	527136	178105	NO_2	YES AQMA 1	30.0	26.0	No	2.8
KC35	Brompton Road / Cottage Place	Roadside	527225	179163	NO_2	YES AQMA 1	40.0	8.0	No	1.5
KC38	Earls Court Station	Roadside	525558	178560	NO_2	YES AQMA 1	1.0	1.7	No	2.7
KC39	Lots Road / Upcerne Road	Roadside	526324	177024	NO_2	YES AQMA 1	30.0	8.1	No	2.5
KC41	Ladbroke Crescent	Urban Background	524287	181193	NO_2	YES AQMA 1	8.0	70.0	No	2.2
KC42	Pembridge Square Library	Roadside	525201	180702	NO_2	YES AQMA 1	9.0	6.0	No	3.1

Diffusion Tube ID	Site name	Site type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants monitored	In 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)
KC43	St Marks Grove	Urban Background	525955	177486	NO_2	YES AQMA 1	12.0	38.0	No	2.3
KC44	Donne Place	Urban Background	527340	178825	NO_2	YES AQMA 1	15.0	55.0	No	2.4
KC45	Chatsworth Court	Roadside	525268	178938	NO_2	YES AQMA 1	13.0	13.0	No	2.0
KC47	Sion Manning School	Urban Background	524051	181752	NO_2	YES AQMA 1	10.0	8.5	Yes	2.1
KC47	Sion Manning School	Urban Background	524051	181752	NO_2	YES AQMA 1	10.0	8.5	Yes	2.1
KC47	Sion Manning School	Urban Background	524051	181752	NO_2	YES AQMA 1	10.0	8.5	Yes	2.1
KC48	Sloane Square	Roadside	528040	178674	NO_2	YES AQMA 1	1.0	7.0	No	3.0
KC49	Harrods	Roadside	527531	179409	NO_2	YES AQMA 1	1.0	4.0	No	2.5
KC50	Chelsea Physic Garden (Gate)	Roadside	527729	177733	NO_2	YES AQMA 1	1.0	4.0	No	2.9
KC51	Chelsea Physic Garden (Met Station)	Urban Background	527690	177811	NO_2	YES AQMA 1	3.0	92.0	No	1.5
KC52	Sloane Avenue	Roadside	527407	178659	NO_2	YES AQMA 1	5.0	2.6	No	2.4
KC53	Walmer House	Urban Background	523796	181189	NO_2	YES AQMA 1	20.0	12.5	No	2.3
KC54	Cromwell Road / NHM	Roadside	526531	178963	NO_2	YES AQMA 1	10.0	3.1	Yes	2.6

Diffusion Tube ID	Site name	Site type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants monitored	In 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)
KC54	Cromwell Road / NHM	Roadside	526531	178963	NO_2	YES AQMA 1	10.0	3.1	Yes	2.6
KC54	Cromwell Road / NHM	Roadside	526531	178963	NO_2	YES AQMA 1	10.0	3.1	Yes	2.6
KC55	Blantyre Street	Urban Background	526605	177428	NO_2	YES AQMA 1	20.0	100.0	No	3.0
KC56	Chelsea Old Town Hall	Roadside	527268	178091	NO_2	YES AQMA 1	14.0	9.0	No	3.1
KC57	Pavilion Street / Sloane Avenue	Roadside	527884	179144	NO_2	YES AQMA 1	25.0	3.0	No	2.4
KC58	KHS / Kensington Church Street	Roadside	525639	179678	NO_2	YES AQMA 1	1.0	13.0	No	2.7
KC59	KHS / Argyll Street	Kerbside	525341	179463	NO_2	YES AQMA 1	1.0	0.7	No	2.5
KC60	Old Brompton Road / Draycott Ave	Kerbside	526191	178430	NO_2	YES AQMA 1	8.0	0.7	No	2.5
KC61	Fulham Road / Limerston Street	Roadside	526384	177878	NO_2	YES AQMA 1	20.0	10.0	No	2.4
KC64	Warwick Road	Roadside	524826	178903	NO_2	YES AQMA 1	8.0	3.5	No	2.6
KC65	Barlby Road	Roadside	523900	182114	NO_2	YES AQMA 1	20.0	0.5	No	1.8
KC66	Acklam Road	Other	524544	181895	NO_2	YES AQMA 1	18.0	16.0	No	2.5
KC67	Southern Row	Other	524059	182149	NO_2	YES AQMA 1	55.0	38.0	No	2.5

Diffusion Tube ID	Site name	Site type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants monitored	In 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)
KC68	Exhibition Road	Kerbside	526862	179112	NO_2	YES AQMA 1	0.5	0.5	No	2.1
KC69	Darfield Way	Urban Background	523586	180893	NO_2	YES AQMA 1	2.0	11.7	No	2.0
KC70	Oakley Street	Kerbside	527173	177984	NO_2	YES AQMA 1	4.0	0.8	No	2.0
KC71	Oakley Street	Kerbside	527269	177814	NO_2	YES AQMA 1	4.0	0.7	No	2.0
KC72	Oakley Street	Kerbside	527332	177718	NO_2	YES AQMA 1	4.0	0.8	No	2.0
KC73	Oakley Street	Kerbside	527227	177918	NO_2	YES AQMA 1	4.0	0.6	No	2.0
KC74	Hans Road	Kerbside	527620	179319	NO_2	YES AQMA 1	3.1	0.3	No	2.2
KC75	Basil Street	Kerbside	527687	179379	NO_2	YES AQMA 1	3.4	0.7	No	2.0
KC76	Basil Street	Kerbside	527677	179327	NO_2	YES AQMA 1	3.4	0.8	No	2.0
KC77	Lonsdale Road	Kerbside	524762	181048	NO_2	YES AQMA 1	1.7	0.7	No	2.0
KC78	Lonsdale Road	Kerbside	524822	181066	NO_2	YES AQMA 1	3.0	0.7	No	2.0
KC79	Cadogan Gardens	Kerbside	527882	178738	NO_2	YES AQMA 1	1.5	0.4	No	2.0
KC80	Pavilion Road	Kerbside	527917	178755	NO_2	YES AQMA 1	2.3	1.2	No	2.0

Diffusion Tube ID	Site name	Site type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants monitored	In 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)
KC81	Brompton Square	Urban Centre	527166	179334	NO_2	YES AQMA 1	20.0	65.0	No	2.7
KC82	KHS LP029	Kerbside	524765	179138	NO_2	YES AQMA 1	0.5	0.5	No	2.0
KC83	KHS LP018	Kerbside	524920	179231	NO_2	YES AQMA 1	0.5	0.5	No	2.3
KC84	KHS / Earls Terrace LP011	Kerbside	525001	179277	NO_2	YES AQMA 1	0.5	0.5	No	2.0
KC85	KHS LP010	Roadside	525025	179290	NO_2	YES AQMA 1	1.0	0.5	No	2.0
KC86	KHS LP064	Roadside	525165	179355	NO_2	YES AQMA 1	1.0	0.5	No	2.0
KC87	KHS LP063	Roadside	525189	179369	NO_2	YES AQMA 1	1.0	0.5	No	2.3
KC88	KHS LP060	Kerbside	525219	179388	NO_2	YES AQMA 1	0.5	0.5	No	2.0
KC89	KHS LP054	Kerbside	525291	179433	NO_2	YES AQMA 1	0.5	0.5	No	2.0
KC90	KHS / Stafford Court	Other	525317	179449	NO_2	YES AQMA 1	0.5	5.0	No	2.0
KC91	KHS LP033	Kerbside	525521	179571	NO_2	YES AQMA 1	0.5	0.5	No	2.1
KC92	KHS LP029	Kerbside	525568	179608	NO_2	YES AQMA 1	0.5	0.5	No	2.1
KC93	KHS LP025	Kerbside	525612	179640	NO_2	YES AQMA 1	0.5	0.5	No	2.1

Diffusion Tube ID	Site name	Site type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants monitored	In AQMA?	Distance to relevant exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube co-located with a continuous analyser?	Tube height (m)
KC94	KHS LP014	Roadside	525720	179693	NO_2	YES AQMA 1	0.5	1.0	No	2.1
KC95	KHS / Kensington Palace Gardens	Kerbside	525787	179717	NO_2	YES AQMA 1	0.5	0.3	No	2.0
KC96	KHS LP002	Roadside	525879	179705	NO_2	YES AQMA 1	0.5	1.0	No	2.0
KC97	KHS LP007	Roadside	525810	179710	NO_2	YES AQMA 1	0.3	0.5	No	2.0
KC98	KHS / Old Court Place LP011	Kerbside	525754	179689	NO_2	YES AQMA 1	0.5	0.5	No	2.0
KC99	KHS LP022	Kerbside	525643	179641	NO_2	YES AQMA 1	0.5	0.5	No	2.1
KC100	KHS / KHS Station LP032	Kerbside	525550	179572	NO_2	YES AQMA 1	0.5	0.5	No	2.3
KC101	KHS / KHS Station LP034	Kerbside	525523	179552	NO_2	YES AQMA 1	0.5	0.5	No	2.1
KC102	KHS / Wrights Land LP037	Roadside	525487	179531	NO_2	YES AQMA 1	0.5	1.0	No	2.1
KC103	KHS / Three	Other	525400	179476	NO_2	YES AQMA 1	0.5	5.0	No	2.5
KC104	KHS / Allen Street LP051	Kerbside	525328	179434	NO_2	YES AQMA 1	0.5	0.5	No	2.1
KC105	KHS / Abingdon Road LP059	Kerbside	525240	179380	NO_2	YES AQMA 1	0.5	0.5	No	2.1
KC106	KHS LP062	Kerbside	525198	179354	NO_2	YES AQMA 1	0.5	0.5	No	2.0

Diffusion Tube ID	Site name	Site type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants monitored	In 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)
KC107	KHS / Earls Court Road LP002	Roadside	525132	179313	NO_2	YES AQMA 1	1.0	1.5	No	2.0
KC108	KHS / Earls Court Road LP009	Kerbside	525034	179273	NO_2	YES AQMA 1	0.5	0.5	No	2.0
KC109	KHS / Melbury Road LP015	Kerbside	524958	179233	NO_2	YES AQMA 1	0.5	0.5	No	2.0
KC110	KHS / Melbury Road LP021	Roadside	524889	179187	NO_2	YES AQMA 1	0.5	1.0	No	2.0
KC111	KHS LP028	Kerbside	524798	179133	NO_2	YES AQMA 1	0.5	0.5	No	2.0

Notes:

(1) 0 m 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.

2.3 BTEX Non-Automatic Monitoring

There has been no change to the number of C_6H_6 (BTEX) diffusion tube monitoring sites within the Non-Automatic Monitoring Network. Further details on the laboratory, method, bias adjustment, and quality control are in Appendix A. Appendix C, Figure 23 shows the locations of all the sites within the borough and detailed information about each is contained in Table 4 below.

Table 4: Details of BTEX Non-Automatic Monitoring Locations for 2023

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA?	Distance to Relevant Exposure	Distance to Kerb of Nearest Road	Inlet Height	Pollutant Monitored	Monitoring Technique
KC01	Ladbroke Grove / North Kensington Library	524342	181271	Roadside	YES AQMA 1	6 m	3.5 m	5.5 m	C_6H_6	N
KC02	Holland Park	524784	179599	Urban Background	YES AQMA 1	5 m	380 m	4 m	C_6H_6	N
KC04	Dovehouse Street	527111	178165	Urban Background	YES AQMA 1	30 m	45 m	2.2 m	C_6H_6	N
KC05	Pembridge Square Library	525191	180705	Roadside	YES AQMA 1	9 m	6 m	4 m	C_6H_6	N
KC0X	Old Brompton Rd/ Clareville Grove	526496	178553	Petrol Station	YES AQMA 1	3 m	12 m	N/A	C_6H_6	N

2.4 Comparison of Monitoring Results with AQOs

Concentration values for the following monitoring sites (bias adjusted and annualised, as required) are provided in Table 5 below. Those following any fall-off with distance correction have not been included here.

Table 5. Annual Mean NO_2 Monitoring Results: Automatic Monitoring (µg/m^3)

Site ID	Site Type	In AQFA?	Valid data capture for monitoring period %[(a)]	Valid data capture 2023 %[(b)]	2017	2018	2019	2020	2021	2022	2023
KC1	Urban Background	N	99.2	99.2	33	29.1	27.4	21	20	18	18
KC2	Roadside	Y	88.94	88.94	**51**	**47.6**	**43.7**	30	30	30	30
KC3	Kerbside	Y	80.87	80.97	**66**	**66.4**	**54.4**	32	34	36	33
KC4	Roadside	N	93.47	93.47	**63**	**59.6**	**55**	**40**	39	35	34
KC5	Kerbside	Y	87.59	87.59	**78**	**78.7**	**55.9**	37	**44**	**41**	37

Notes:

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

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

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

Means for diffusion tubes have been corrected for bias.

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

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

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

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

2.4.1 Interpretation of Automatic Monitoring Annual Mean NO_2 Results

In 2022, we reported that KC1, KC2, KC3 and KC4 continued to meet both the national AQO and WHO 2005 values, whilst KC5 just exceeded at 41 µg/m^3. For 2023, we can report that all five sites met the national AQO and WHO 2005 guideline value of 40 µg/m^3. The highest annual average was at KC5 with 37 µg/m^3, which was last seen in 2020 (i.e. when Covid restrictions were in place). KC5 showed the biggest improvement reducing from 41 to 37 µg/m^3, however it should be noted that KC2, KC3 (particularly) and KC5 saw lower data capture rates (between 80 and 90%) and so it will be important to see if this is sustained in 2024. It is also important to treat the result at KC3, Knightsbridge with a little caution, as the diffusion tube, KC49, which is located around the corner from the automatic station, experienced an increase in concentrations – the only tube to consistently do so for two years in a row (see section 2.4.2) and this year recorded an annual average of 43.4 µg/m^3. We will be paying closer attention to this in 2024. A QA/QC audit was carried out at KC3 in April 2023 and also March 2024.

2.4.2 Air Quality Focus Areas

Air Quality Focus Areas (AQFA’s) are locations that are predicted to exceed the EU Annual Mean Limit value for NO_2 and have high human exposure and where the GLA believes the problem in the borough to be the most acute.

The following three AQFA’s have been identified (though the edges of two AQFAs from Hammersmith and Fulham cross the borough boundary) – see Appendix C, Figure 26.

- A4 Cromwell Road (from Talgarth / Earl's Court / Gloucester Road / Thurloe Place / Knightsbridge)
- A315 from Knightsbridge to Kensington High St, A4204 Kensington Church St to Notting Hill Gate
- Earl's Court Road and Warwick Road (A3220) from Cromwell Road to Cremorne Road

We currently have 54 monitoring sites located within these three AQFA's. Tables 5, 6 and 17 confirm which monitoring device is within an AQFA. All 3 automatic monitoring locations met the annual objective in 2023. Seven diffusion tubes (out of 44) exceeded it – the highest value concentration being 43.4 µg/m^3 at KC49. Of the seven mobile sensors (which are not reference grade and provide indicative data) only two exceeded 40 µg/m^3 in January 2023.

Figure 1: Annual Mean NO_2 Concentrations (2014-2023): Automatic Monitoring Stations

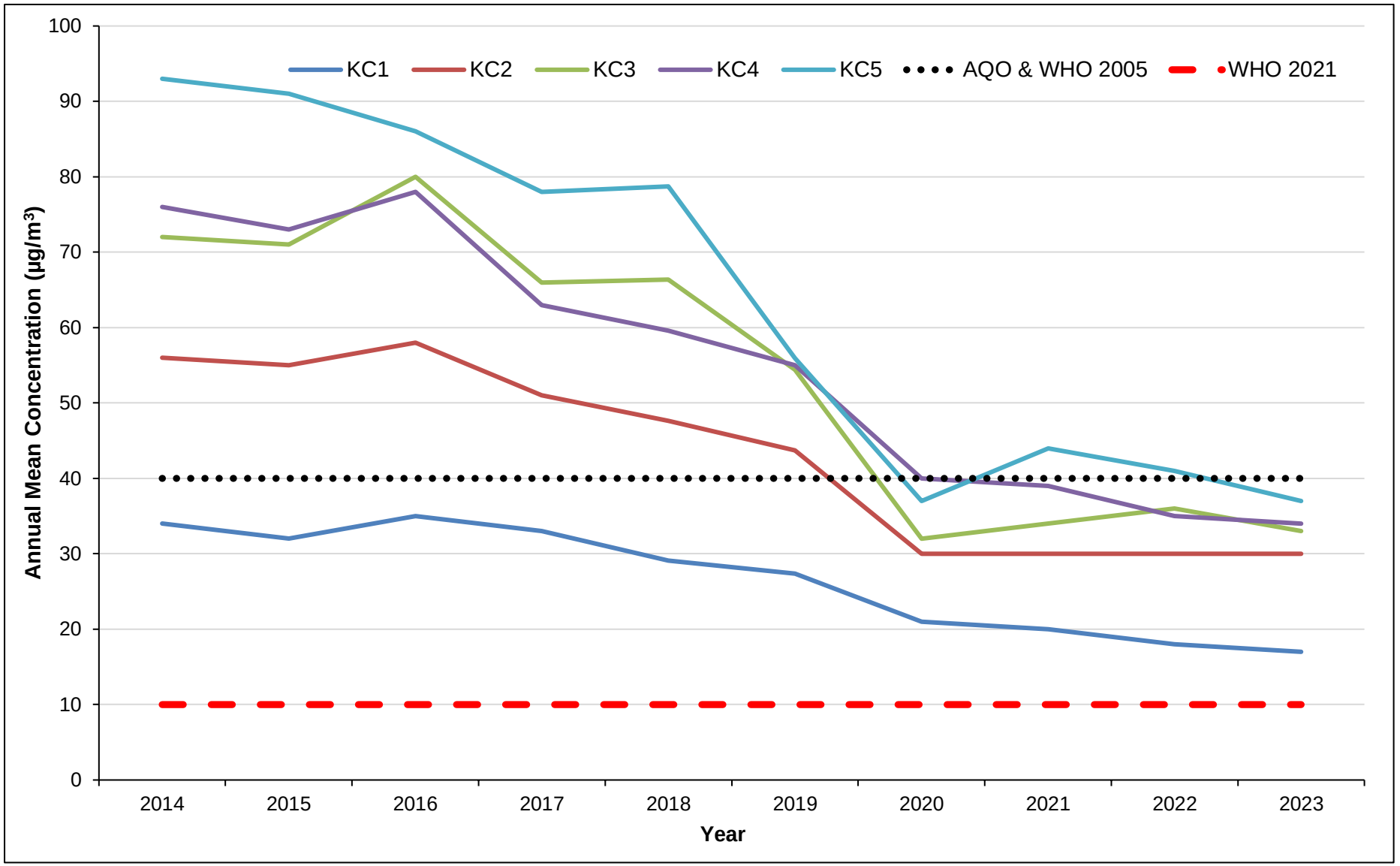

Table 6. Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Site ID	Site type	In AQFA?	Valid data capture for monitoring period %[a]	Valid data capture 2023 %[b]	2017	2018	2019	2020	2021	2022	2023
KC31	Roadside	N	100	100.0	**52.2**	**42.8**	**42.6**	31.8	27.3	25.7	25.5
KC32	Urban Background	N	100	100.0	31.5	26.2	23.8	17.2	15.9	15.1	13.8
KC33	Roadside	Y	100	100.0	**106.1**	**84.0**	**71.6**	**50.5**	**43.8**	**40.5**	**40.6**
KC34	Urban Centre	N	100	100.0	**43.7**	39.0	36.3	26.5	23.4	22.6	20.3
KC35	Roadside	Y	100	100.0	**77.9**	**58.5**	**56.0**	38.0	34.8	34.6	35.0
KC38	Roadside	Y	100	100.0	**119.2**	**75.8**	**70.3**	**47.1**	**41.0**	36.1	35.9
KC39	Roadside	Y	100	100.0	34.7	30.6	29.2	22.9	22.7	17.9	15.9
KC41	Urban Background	N	75	75.0	37.7	32.2	30.5	22.4	20.9	20.2	19.4
KC42	Roadside	N	100	100.0	**45.4**	38.4	34.5	24.5	20.3	20.9	18.0
KC43	Urban Background	Y	100	100.0	36.6	30.0	29.9	22.4	21.2	18.0	17.4
KC44	Urban Background	N	100	100.0	**41.0**	35.5	33.1	24.0	25.5	18.4	18.5
KC45	Roadside	N	82.7	82.7	**50.3**	**44.9**	**41.9**	28.8	22.1	24.6	23.2
KC47	Urban Background	N	100	100.0	33.3	27.7	27.2	19.8	18.6	17.3	16.2
KC47	Urban Background	N	100	100.0	33.3	27.7	27.2	19.8	18.6	17.3	16.2

Site ID	Site type	In AQFA?	Valid data capture for monitoring period %[a]	Valid data capture 2023 %[b]	2017	2018	2019	2020	2021	2022	2023
KC47	Urban Background	N	100	100.0	33.3	27.7	27.2	19.8	18.6	17.3	16.2
KC48	Roadside	N	92.3	92.3	**71.8**	**58.4**	**49.9**	**41.6**	36.6	32.1	31.3
KC49	Urban Centre	Y	71.2	71.2	**- e**	**- e**	**59.9**	39.1	36.7	**41.4**	**43.4**
KC50	Roadside	N	100	100.0	**52.7**	**41.0**	**45.9**	28.5	26.6	23.2	22.1
KC51	Urban Background	N	92.3	92.3	39.5	27.7	31.4	27.0	17.7	16.1	16.0
KC52	Roadside	N	100	100.0	**56.1**	**49.4**	39.4	30.7	28.5	27.3	25.1
KC53	Urban Background	N	100	100.0	**49.0**	**40.7**	38.0	28.6	24.9	22.5	21.0
KC54	Roadside	Y	92.3	92.3	**70.9**	**57.3**	**48.8**	34.8	32.0	33.2	33.0
KC54	Roadside	Y	92.3	92.3	**70.9**	**57.3**	**48.8**	34.8	32.0	33.2	33.0
KC54	Roadside	Y	92.3	92.3	**70.9**	**57.3**	**48.8**	34.8	32.0	33.2	33.0
KC55	Urban Background	Y	100	100.0	**48.0**	**40.5**	37.5	26.4	24.0	22.9	20.1
KC56	Roadside	N	100	100.0	**68.0**	**59.9**	**51.2**	**40.0**	36.5	31.6	31.6
KC57	Roadside	N	100	100.0	**57.2**	**47.1**	**42.8**	27.0	26.2	23.4	21.1
KC58	Roadside	N	100	92.3	**62.7**	**48.0**	**46.0**	36.9	30.0	28.5	25.1
KC59	Kerbside	N	100	100.0	**74.9**	**66.5**	**59.2**	**52.2**	39.8	35.0	32.7

Site ID	Site type	In AQFA?	Valid data capture for monitoring period %[a]	Valid data capture 2023 %[b]	2017	2018	2019	2020	2021	2022	2023
KC60	Kerbside	N	100	100.0	**71.3**	**51.8**	**50.9**	34.1	29.3	28.6	27.3
KC61	Roadside	N	100	100.0	**52.3**	**45.2**	**43.6**	33.4	29.9	27.3	27.7
KC64	Roadside	N	100	100.0	**46.5**	**42.5**	**41.6**	33.0	29.8	28.2	24.8
KC65	Roadside	N	100	100.0	**40.9**	34.5	33.2	24.6	21.4	20.2	18.8
KC66	Other	N	100	100.0	**46.2**	38.5	33.6	27.3	22.1	20.5	18.1
KC67	Other	N	100	100.0	**46.0**	36.8	35.3	25.6	22.7	21.1	20.5
KC68	Kerbside	N	40.4	40.4	**51.9**	**42.1**	39.1	30.7	24.4	22.7	22.3
KC69	Urban Background	N	44.2	44.2	**47.1**	35.8	37.0	24.0	29.2	19.5	19.0
KC70	Kerbside	N	82.7	82.7	**-**	**55.5**	**50.1**	36.8	28.4	29.7	29.5
KC71	Kerbside	N	100	100.0	**-**	**44.0**	**41.6**	30.8	32.0	25.6	24.9
KC72	Kerbside	N	100	100.0	**-**	**59.6**	**51.5**	35.7	27.4	30.4	28.0
KC73	Kerbside	N	90.4	90.4	**-**	**44.0**	**41.2**	30.2	24.6	24.2	23.7
KC74	Kerbside	Y	100	100.0	**-**	**-**	38.8	27.8	28.5	26.4	24.7
KC75	Kerbside	Y	92.3	92.3	**-**	**-**	**48.9**	30.9	33.5	28.2	27.5
KC76	Kerbside	Y	100	100.0	**-**	**-**	**46.2**	30.4	21.8	27.1	26.2

Site ID	Site type	In AQFA?	Valid data capture for monitoring period %[a]	Valid data capture 2023 %[b]	2017	2018	2019	2020	2021	2022	2023
KC77	Kerbside	N	82.7	82.7	-	-	30.4	23.3	21.4	19.4	17.2
KC78	Kerbside	N	82.7	82.7	-	-	30.4	25.5	23.0	23.5	19.2
KC79	Kerbside	N	100	100.0	-	-	34.1	25.6	21.6	21.3	20.1
KC80	Kerbside	N	100	100.0	-	-	35.8	22.0	21.0	20.4	19.4
KC81	Urban Centre	Y	100	100.0	-	32.5	32.0	22.9	21.4	19.0	17.4
KC82	Kerbside	Y	100	100.0	-	-	-	38.2	38.9	36.7	31.6
KC83	Kerbside	Y	100	100.0	-	-	-	-	38.4	30.4	27.4
KC84	Kerbside	Y	100	100.0	-	-	-	**44.6**	**45.6**	38.8	35.5
KC85	Roadside	Y	48.1	48.1	-	-	-	**41.8**	38.2	32.9	25.5
KC86	Roadside	Y	100	100.0	-	-	-	36.8	34.9	33.6	33.0
KC87	Roadside	Y	84.6	84.6	-	-	-	38.6	38.6	34.7	31.0
KC88	Kerbside	Y	100	100.0	-	-	-	**42.0**	38.7	33.6	35.6
KC89	Kerbside	Y	90.4	90.4	-	-	-	**50.4**	**51.3**	**40.0**	37.1
KC90	Other	Y	100	100.0	-	-	-	-	**44.5**	35.5	38.0
KC91	Kerbside	Y	92.3	92.3	-	-	-	**52.4**	**49.3**	**44.1**	**40.3**

Site ID	Site type	In AQFA?	Valid data capture for monitoring period %[a]	Valid data capture 2023 %[b]	2017	2018	2019	2020	2021	2022	2023
KC92	Kerbside	Y	100	100.0	-	-	-	-	**42.5**	37.6	34.2
KC93	Kerbside	Y	100	100.0	-	-	-	**43.0**	**47.3**	**43.4**	**41.0**
KC94	Roadside	Y	100	100.0	-	-	-	37.4	**44.0**	**41.6**	**41.3**
KC95	Kerbside	Y	84.6	84.6	-	-	-	**44.8**	**47.2**	**42.1**	**42.6**
KC96	Roadside	Y	55.8	55.8	-	-	-	-	**41.1**	37.7	35.1
KC97	Roadside	Y	90.4	90.4	-	-	-	**45.7**	**42.4**	**41.5**	**41.0**
KC98	Kerbside	Y	92.3	92.3	-	-	-	**46.3**	**44.7**	**44.6**	**42.4**
KC99	Kerbside	Y	82.7	82.7	-	-	-	**46.4**	**45.3**	**44.0**	38.2
KC100	Kerbside	Y	100	100.0	-	-	-	**50.3**	**41.9**	**40.8**	37.7
KC101	Kerbside	Y	100	100.0	-	-	-	**49.1**	**42.6**	**40.4**	38.1
KC102	Roadside	Y	100	100.0	-	-	-	**44.7**	**43.1**	**40.3**	38.2
KC103	Other	Y	90.4	90.4	-	-	-	-	32.4	28.9	31.0
KC104	Kerbside	Y	100	100.0	-	-	-	**44.6**	37.1	32.8	31.7
KC105	Kerbside	Y	92.3	92.3	-	-	-	**40.4**	39.7	34.3	32.9
KC106	Kerbside	Y	90.4	90.4	-	-	-	**42.3**	38.1	33.7	31.1

Site ID	Site type	In AQFA?	Valid data capture for monitoring period %[a]	Valid data capture 2023 %[b]	2017	2018	2019	2020	2021	2022	2023
KC107	Roadside	Y	84.6	84.6	-	-	-	35.0	36.3	29.6	27.2
KC108	Kerbside	Y	100	100.0	-	-	-	31.7	31.0	29.8	26.5
KC109	Kerbside	Y	100	100.0	-	-	-	36.9	35.5	32.9	29.4
KC110	Roadside	Y	100	100.0	-	-	-	34.4	33.7	29.8	27.6
KC111	Kerbside	Y	100	100.0	-	-	-	34.6	31.8	28.5	25.9

☒ 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 bold. An increase in concentrations from the previous year is shown in the peach colour.

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

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

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

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

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

[e] Data capture was below 25% for the year, therefore annualisation was not completed and data was not presented.

2.4.3 Interpretation of Non-Automatic Monitoring Annual Mean NO_2 Results

Eight diffusion tube monitoring locations exceeded the annual mean objective in 2023 after bias adjustment and annualisation. It was reported in 2022 that eight locations saw an increase (between 2021 and 2022) and that these would be re-examined in this report. Out of these locations, only one (KC49 an Urban Centre location) saw another increase in 2023. KC49 is located within 4 m of the nearest road and is representative of typical population exposure in pedestrian precincts and shopping centres. Data capture at this site was 71 per cent so may not be representative of the whole year. We will continue to monitor this location over the coming months and review against data from KC3. Overall, the annual mean concentration at this location has increased by 6.6 $\mu g/m^3$ between 2021 and 2023 which is significant.

Table 7. Sites which exceeded the NO_2 Annual Mean Objective in 2023

Site ID	Site Type	2022 ($\mu g/m^3$)	2023 ($\mu g/m^3$)	Difference ($\mu g/m^3$)
KC33	Roadside	**40.5**	**40.6**	+ 0.1
KC49	Urban Centre	**41.4**	**43.4**	+ 2
KC91	Kerbside	**44.1**	**40.3**	- 3.8

Site ID	Site Type	2022 (µg/m^3)	2023 (µg/m^3)	Difference (µg/m^3)
KC93	Kerbside	**43.4**	**41.0**	- 2.4
KC94	Kerbside	**41.6**	**41.3**	- 0.3
KC95	Kerbside	**42.1**	**42.6**	+ 0.5
KC97	Kerbside	**41.5**	**41.0**	+ 0.5
KC98	Kerbside	**44.6**	**42.4**	- 2.2

The following monitoring locations saw a small (<1) to medium (<3) increase in their bias adjusted and annualised annual mean concentration between 2022 and 2023.

Table 8. Sites with increased NO_2 Bias Adjusted and Annualised Concentration in 2023

Site ID	Site Type	2022 (µg/m^3)	2023 (µg/m^3)	Difference (µg/m^3)
KC33	Roadside	**40.5**	**40.6**	+ 0.1
KC35	Roadside	34.6	35	+ 0.4
KC44	Urban Background	18.4	18.5	+ 0.1
KC49	Urban Centre	**41.4**	**43.4**	+ 2
KC61	Roadside	27.3	27.7	+ 0.4
KC88	Kerbside	33.6	35.6	+ 2
KC90	Kerbside	35.5	38.0	+ 2.5
KC95	Kerbside	**42.1**	**42.6**	+0.4
KC103	Other	28.9	31.0	+ 2.1

Of the nine monitoring locations that saw concentration increases between 2022-2023, six were located in proximity (<1.5 m) to a road and classified as either Kerbside or Roadside. The remaining locations are a combination of Urban Background, Urban Centre and

Other, which are located between 4 m and 5 m away from a road. Of the tubes that registered an increased annual mean concentration, only one registered an increase in both 2021-2022 and 2022-2023 (KC49).

The most notable reduction in concentrations were recorded at the following locations:

Table 9. Sites with decreased NO_2 Bias Adjusted and Annualised Concentration in 2023

Site ID	Site Type	2022 (µg/m^3)	2023 (µg/m^3)	Difference (µg/m^3)
KC85	Roadside	32.9	25.5	-7.4
KC99	Kerbside	**44.0**	38.2	-5.8
KC82	Kerbside	36.7	31.6	-5.1
KC78	Kerbside	23.5	19.2	-4.3
KC91	Kerbside	**44.1**	**40.3**	-3.8

Figure 2: Annual Mean NO_2 Concentrations (2019-2023): Roadside Monitoring Locations (excluding Ken High St)

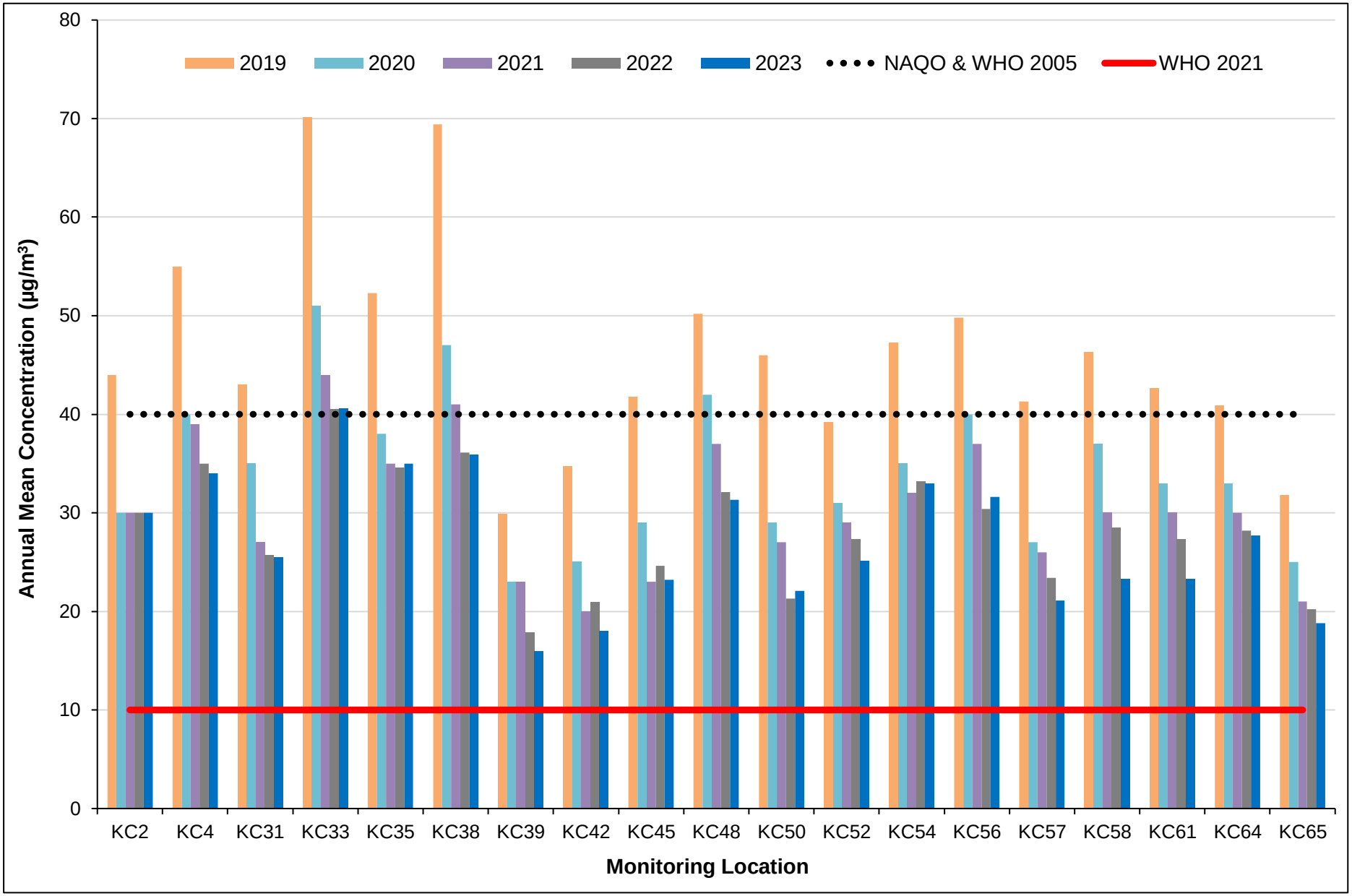

Figure 3: Annual Mean NO_2 Concentrations (2019-2023): Kerbside Monitoring Locations (excluding Ken High St)

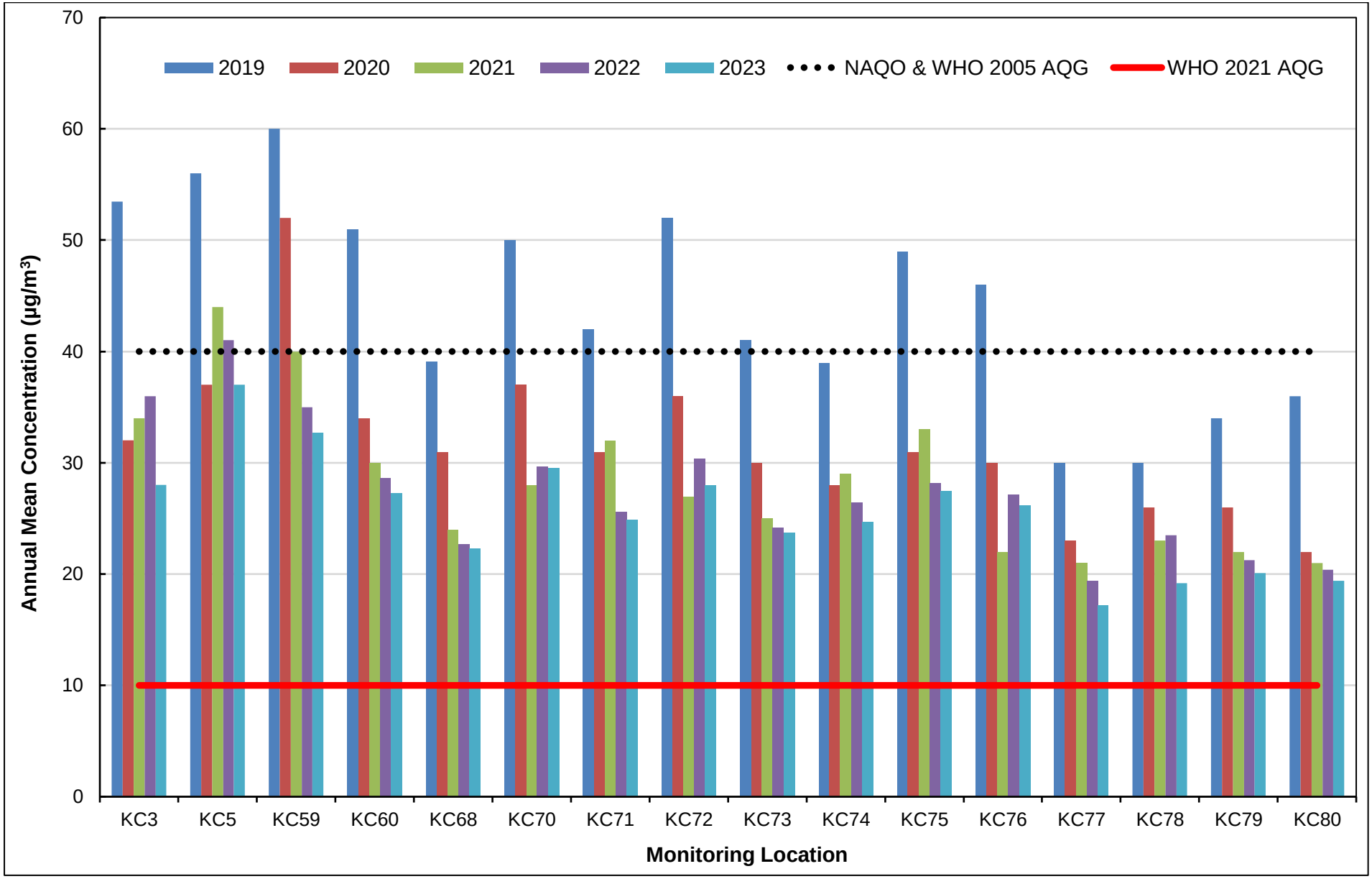

Figure 4: Annual Mean NO_2 Concentrations (2020-2023): Kerbside Monitoring Locations in Kensington High Street

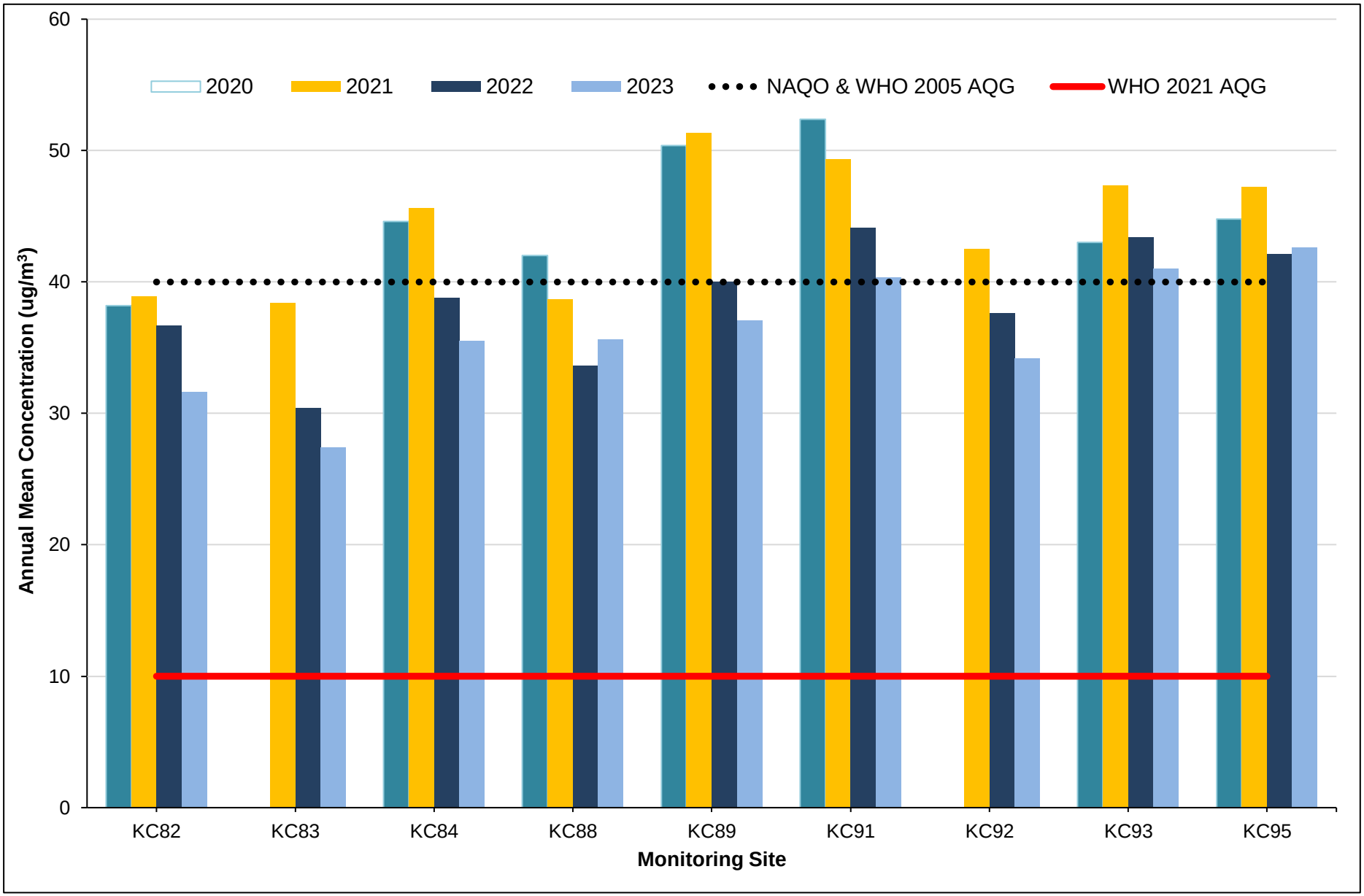

Figure 5: Annual Mean NO_2 Concentrations (2019 – 2023): Urban Background and Urban Centre Locations

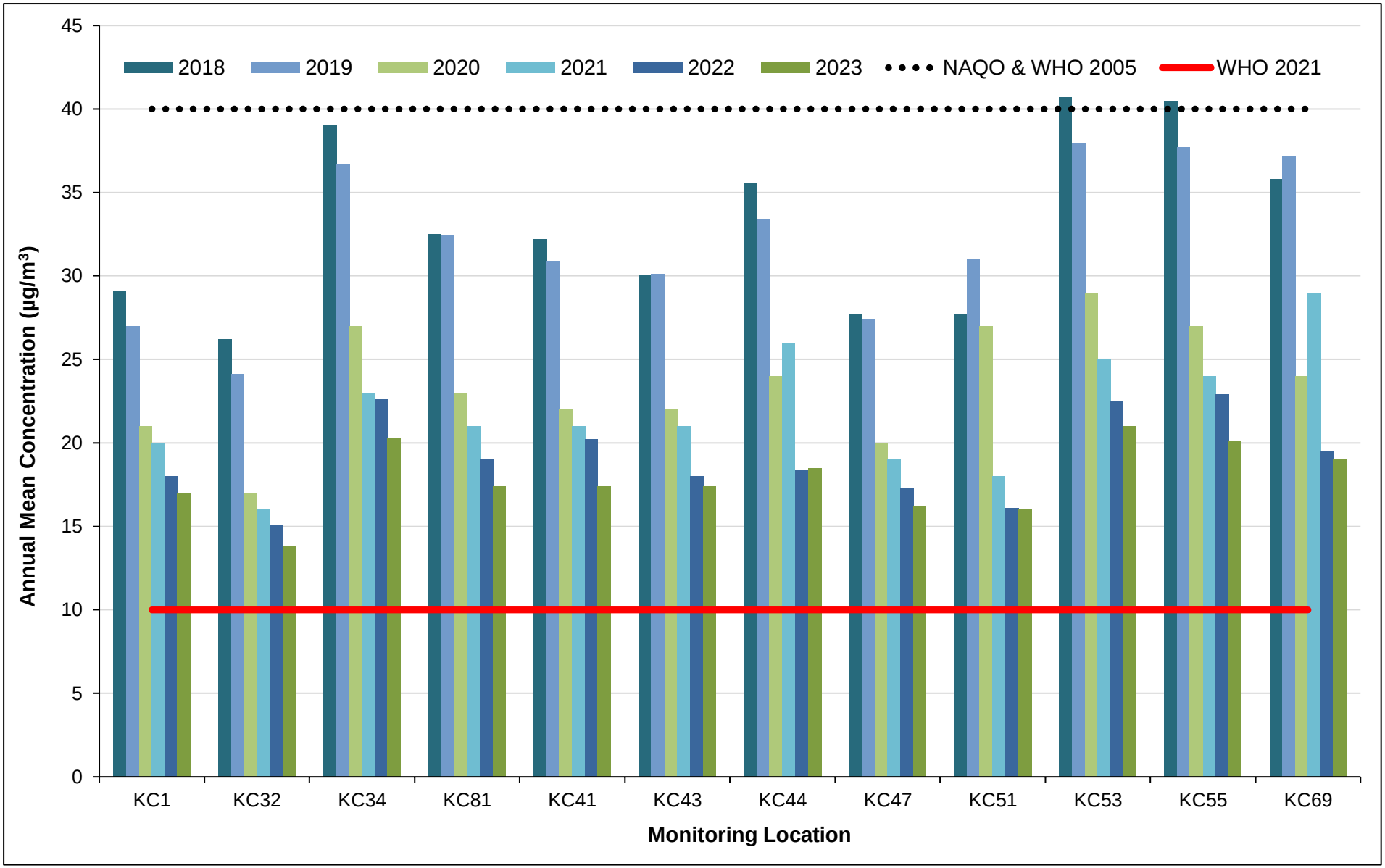

Figure 6: Annual Mean NO_2 Concentrations (2019 – 2023): Railway Monitoring Locations

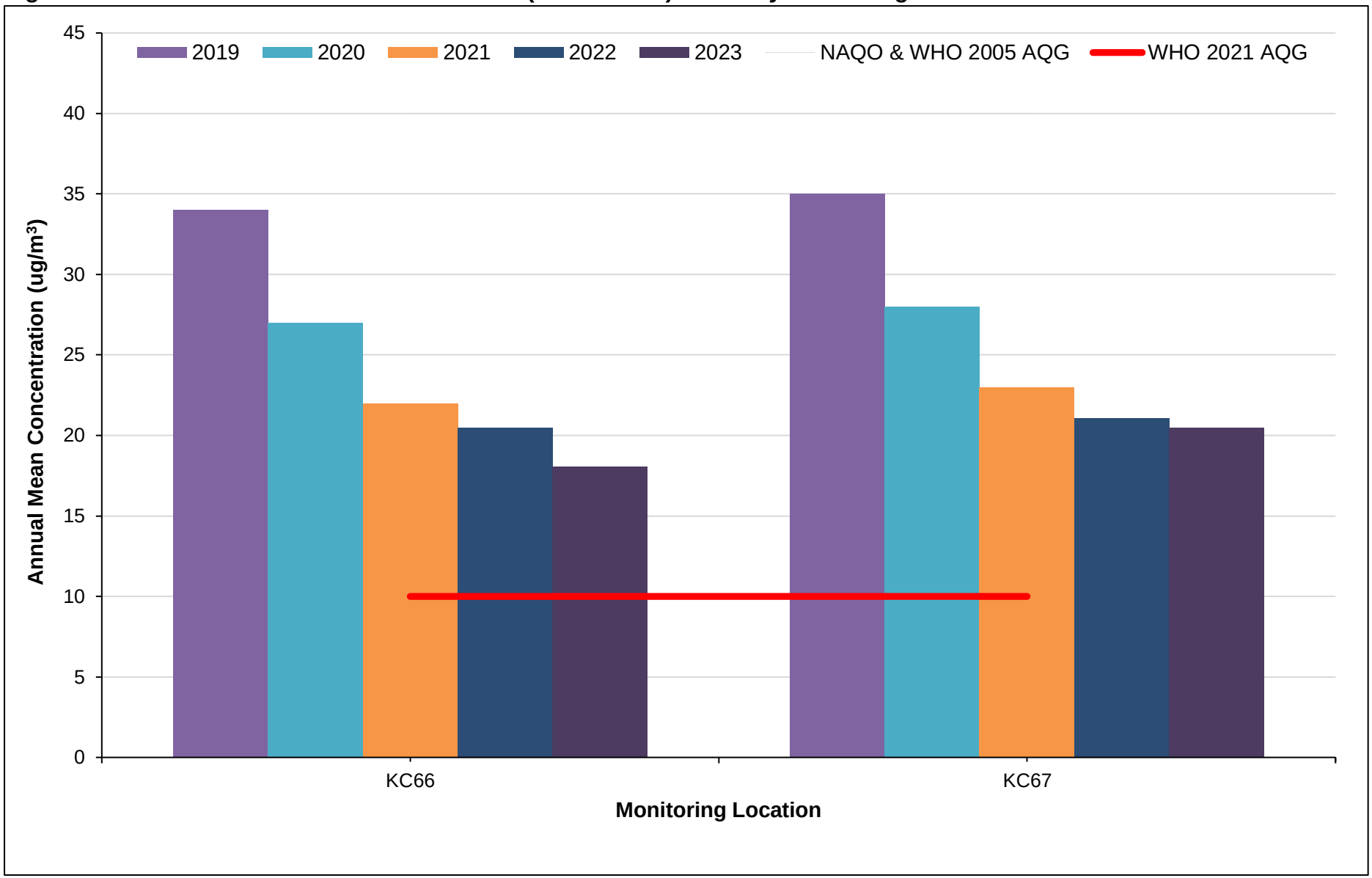

Table 10: NO_2 Automatic Monitoring Results: Comparison with 1-hour Mean Objective, Number of 1-Hour Means > 200 µg/m^3

Site ID	Valid data capture for monitoring period %([a])	Valid data capture 2023 %([b])	2017	2018	2019	2020	2021	2022	2023
KC1	99.2	99.2	1	0	0	0	0	0	0
KC2	88.94	88.94	0	0	0	0	0	0	0
KC3	80.87	80.97	**92**	**43**	15	3	0	0	0
KC4	93.47	93.47	4	0	0	0	0	0	0
KC5	87.59	87.59	**24**	**29**	2	0	0	0	0

Notes

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

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

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

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

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

2.4.4 Interpretation of NO_2 Automatic 1-Hour Mean Objective Results

Compliance with the AQO NO_2 1-hour mean objective of 200 µg/m^3 (not to be exceeded more than 18 times in a year) was achieved at all five automatic monitoring locations during 2023 with no exceedances. This is the fifth year in a row that all locations have achieved compliance with this AQO.

The WHO also recommend a 1-hour objective of 200 µg/m^3; however, this is not to be exceeded more than once in a year. All sites would have met this for the last two years, whilst KC1 and KC2, as Table 10 shows, have met it for some time.

Figure 7 presents the number of 1-hour means in excess of the AQO for the period of 2016-2022. At KC3 and KC5, there has been an overall downward trend in concentrations between 2018 to 2022. Exceedances at KC1 and KC2 have remained consistent throughout the most recent five-year period with no 1-hour NO_2 mean concentrations in excess of 200 µg/m^3.

Figure 7: NO_2 Automatic 1-Hour Mean Objective

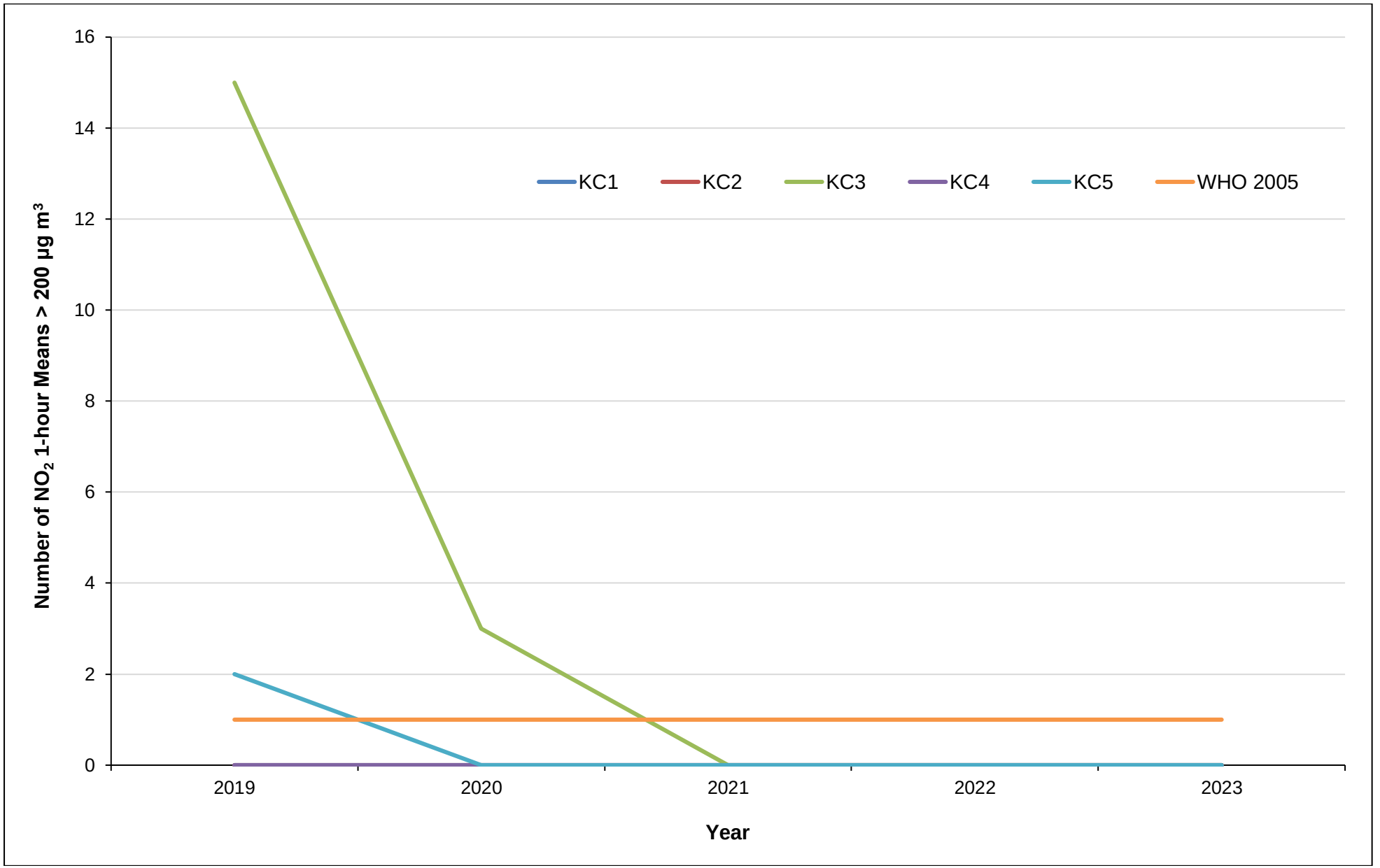

Table 11. Annual Mean PM_{10} Automatic Monitoring Results (µg m^{-3})

Site ID	Valid data capture for monitoring period %([a])	Valid data capture 2023 %([b])	2017	2018	2019	2020	2021	2022	2023
KC1	99.54	99.54	17	14	15	13	14	15	12
KC2	95.96	95.96	20	18	-	-	17	18	15
KC5	87.59	87.59	27	25	24	24	25	22	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%.

(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%).

2.4.5 Interpretation of Annual Mean PM_{10} Results

Figure 8 presents the annual mean PM_{10} concentrations for the period of 2019-2023 for KC1, KC2 (in part) and KC5. Concentrations reduced at all sites. KC1 and KC2, after a slight increase of 1 µg/m^3 in 2022, did see a reduction in 2023, with the lowest concentrations recorded so far of 12 µg/m^3 and 15 µg/m^3 respectively. There has been a gradual decline in concentrations at KC5 between 2017-2023.

Overall, compliance with the PM_{10} annual mean AQO of 40 µg/m^3 continued at all monitoring sites for 2023. We will continue to monitor trends at KC2 as no data was recorded between 2019 and 2020, and a new monitor was installed in May 2021 resulting in only 60 per cent data capture for that year. In addition, at KC5, data capture was 88 per cent for the year, so therefore data may not be as representative as if it had been 100 per cent.

The 2005 WHO Guideline Value for PM_{10} annual mean concentration is 20 µg/m^3 and all monitoring locations achieved this objective in 2023. The 2021 WHO Guideline Value for PM_{10} annual mean concentration is 15 µg/m^3 and KC1 and KC2 monitoring locations achieved this. KC5 was above at 18 µg/m^3.

Figure 8: Annual Mean PM_{10} Monitoring Results (2013-2023)

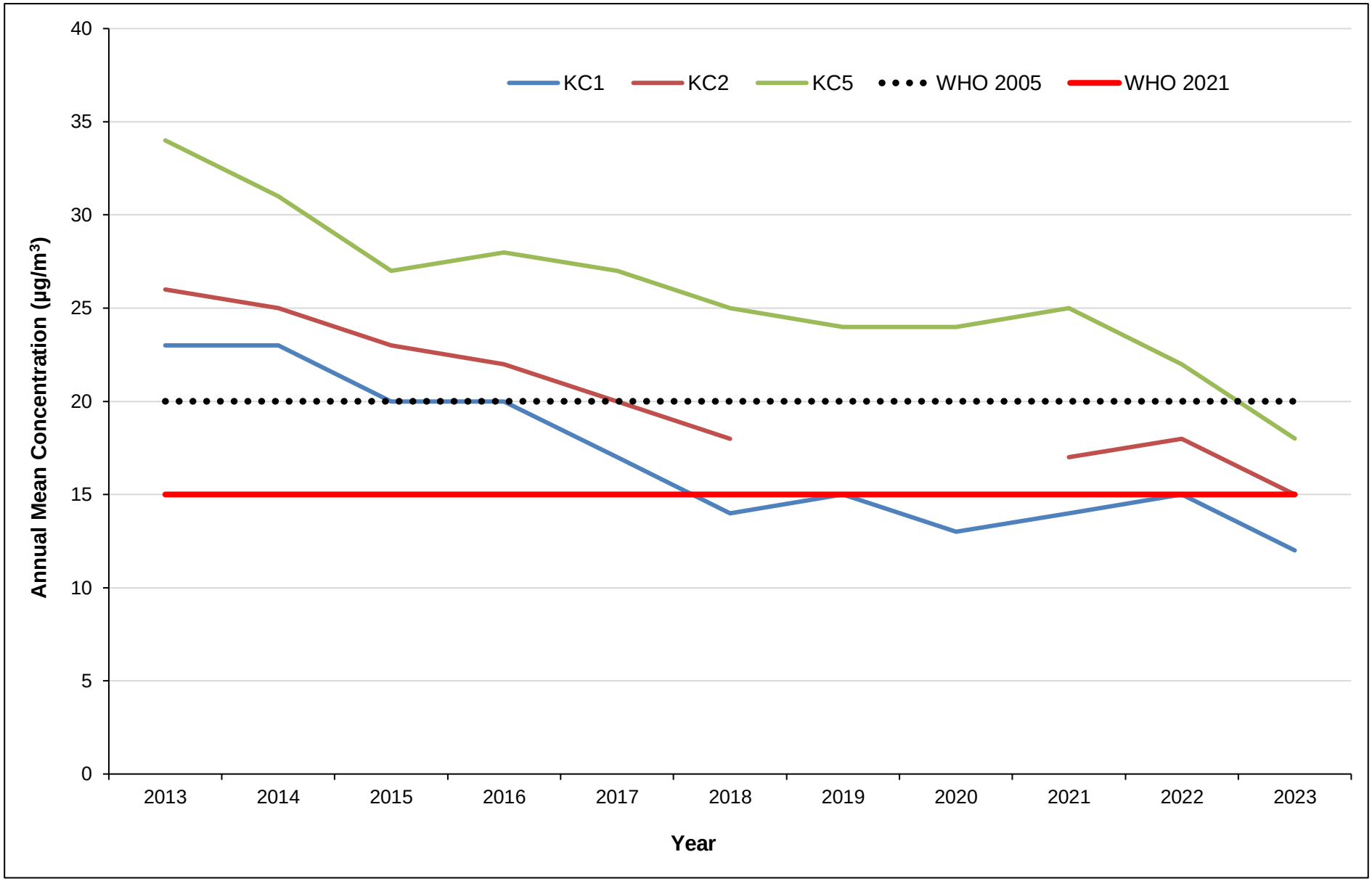

Table 12: PM_{10} Monitoring Results: Comparison with 24-Hour Mean Objective, Number of PM_{10} 24-Hour Means > 50 µg m^{-3}

Site ID	Valid data capture for monitoring period %[(a)]	Valid data capture 2023 %[(b)]	2017	2018	2019	2020	2021	2022	2023
KC1	99.54	99.54	16	1	5	0	1	4	1
KC2	95.96	95.96	6	0	-	-	1	4	1
KC5	87.59	87.59	18	4 (33.2)	13	10	6	10	5

Notes

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

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

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

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

2.4.6 Interpretation of PM_{10} 24-Hour Mean Objective Results

Compliance of the PM_{10} short term AQO of fewer than 35 exceedances of a 24-hour average > 50 µg/m^3 was achieved for 2023 and at all monitoring locations between 2017 and 2023. With the exception of 2022, the number of exceedances of the 24-hour mean have been decreasing over the years.

The 2005 WHO Guidelines suggest a PM_{10} 24-hour mean of 50 µg/m^3, however this concentration is not to be exceeded more than once. KC1 and KC2 have achieved this target, whereas KC5 has exceeded this target. Figure 9 displays the number of daily means in excess of the short term PM_{10} AQO across the KC1 and KC5 monitoring sites for the period of 2019-2023 and KC2 from 2021.

Figure 9: Number of PM_{10} Daily Means >50 µg/m³

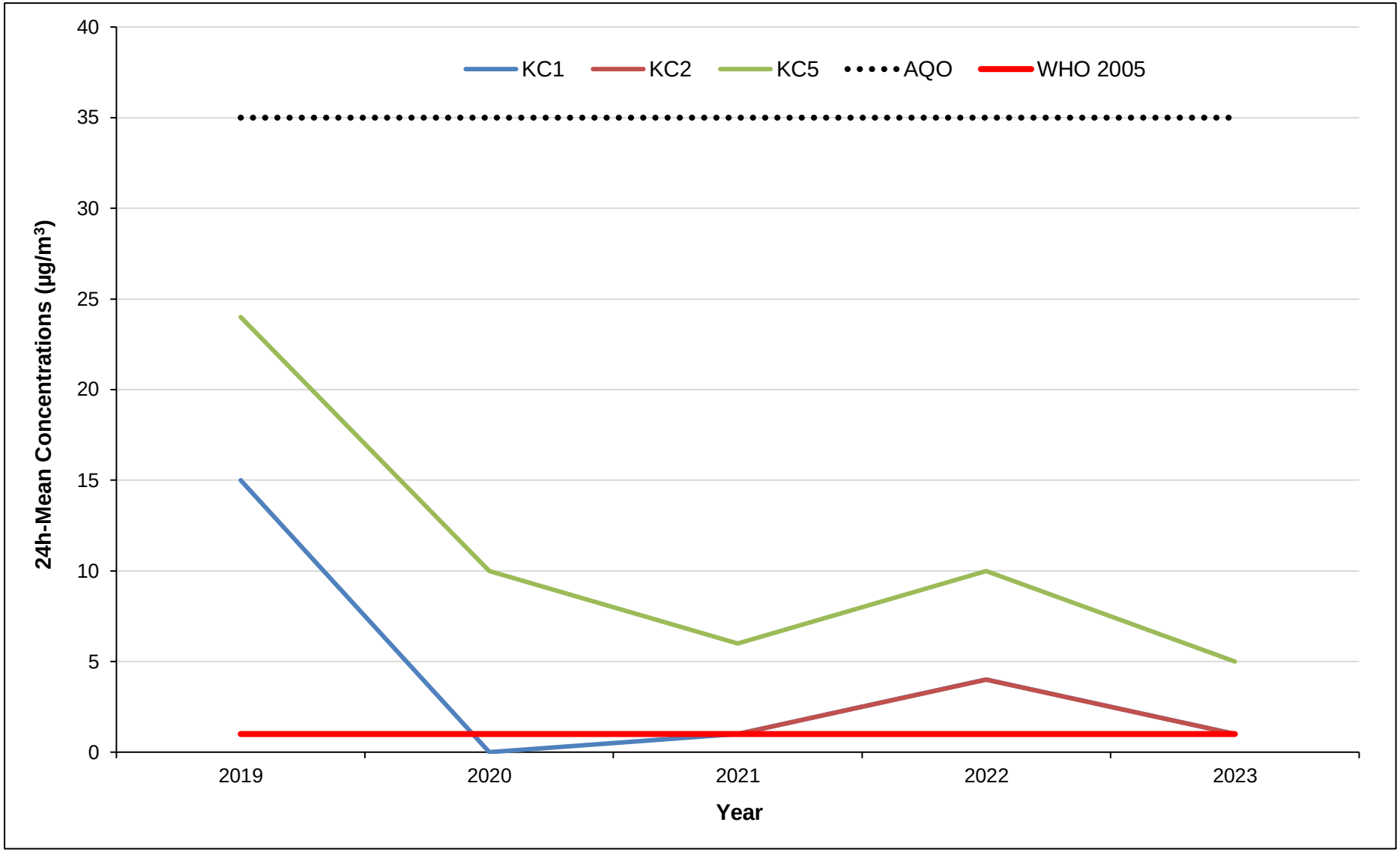

Table 13: Annual Mean $PM_{2.5}$ Automatic Monitoring Results (µg m^{-3})

Site ID	Valid data capture for monitoring period %[(a)]	Valid data capture 2023 %[(b)]	2017	2018	2019	2020	2021	2022	2023
KC1	99.58	99.58	12	9.2	10	8	9	9	8
KC2	95.92	95.92	25	-	-	-	6	**10**	7

Notes

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

Exceedances of the $PM_{2.5}$ annual mean AQO of 20 µg m^{-3} are shown in **bold**.

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

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

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

2.4.7 Interpretation of Annual Mean $PM_{2.5}$ Results

For previous reporting the annual mean $PM_{2.5}$ AQO has been 25 µg/m^3, however with the introduction of the new Environment Act 2021, this has since been tightened to 10 µg/m^3, which is in line with the 2005 WHO Annual Mean Guideline value, albeit with different dates by which to be achieved.

Compliance with the old national AQO of 25 µg/m^3 has been achieved historically at KC1 and KC2. In 2023, the new AQO and WHO Guideline Value of 10 µg/m^3 was also met at KC1 and KC2. Figure 10 presents KC1 concentrations between 2019 and 2023, and KC2 concentrations between 2021 and 2023. Data at KC2 in 2021 should be treated with caution as the monitor was installed part way through the year. The 2021 WHO Air Quality Guideline Value of 5 µg/m^3 has not yet been met.

Figure 10: Annual Mean $PM_{2.5}$ Monitoring Results (2019-2023)

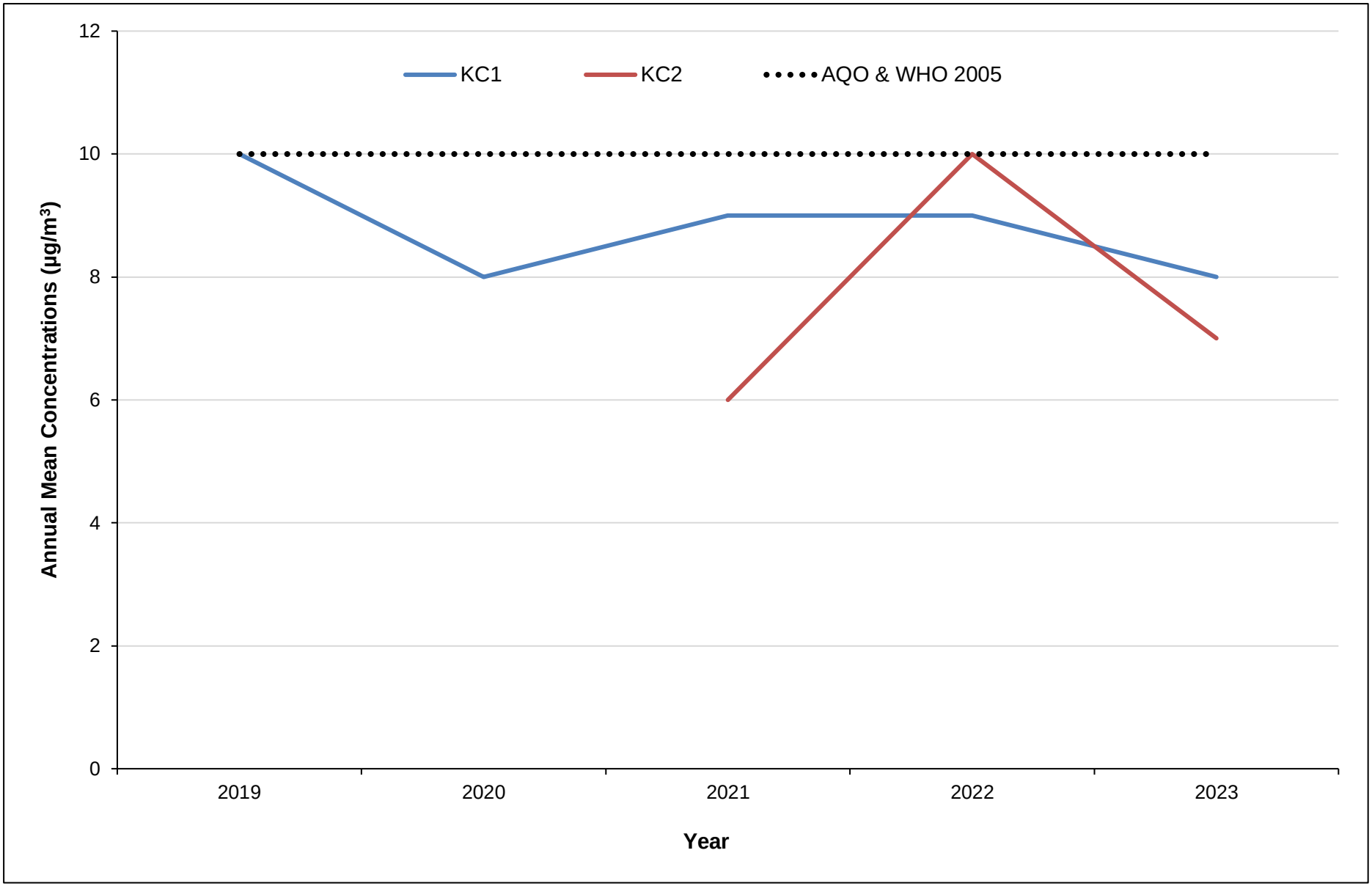

Table 14: SO_2 Automatic Monitoring Results: Comparison with Objectives

Site ID	Valid data capture for monitoring period %[(a)]	Valid data capture 2023 %[(b)]	Number of 15-minute means > 266 µg m^{-3}	Number of 1-hour mean > 350 µg m^{-3}	Number 24-hour mean > 125 µg m^{-3}
KC1	86.53	86.53	0	0	0

Notes

Results are presented as the number of instances where monitored concentrations are greater than the objective concentration.

Exceedances of the SO_2 objectives are shown in **bold** (15-min mean = 35 allowed a year, 1-hour mean = 24 allowed a year, 24-hour mean = 3 allowed a year).

If the period of valid data is less than 85%, the relevant percentiles are 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%).

2.4.8 Interpretation of SO_2 Objective Results

No mean values recorded at KC1 exceeded the 15-minute, 1-hour, or 24-hour SO_2 AQO concentration limits.

Table 15: Ozone (O_3) Automatic Monitoring Results: Comparison with 8-Hour Mean Objective, number of O_3 8-Hour Means > 100 µg/m^3

Site ID	Valid data capture for monitoring period %[(a)]	Valid data capture 2023 %[(b)]	2019	2020	2021	2022	2023
KC1	94.65	94.65	**136**	**308**	**66**	**195**	**213**

Notes:

Exceedances of the O_3 8-hour mean objective (100 µg/m^3 over the permitted 10 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%).

2.4.9 Interpretation of O_3 Objective Results

The results are shown graphically as Figure 11. The 8-Hour Mean Objective was not met in 2023, as only 10 breaches of the objective are permitted per annum for the national AQO.

It is likely that the significant increase in exceedances in 2020 was due to the reduction of freshly produced NOx caused by the lockdown measures of the COVID-19 pandemic. Since the relaxation of COVID-19 restrictions in 2021 the production of NOx increased, resulting in the reduction in O_3 concentrations seen in 2021. Since 2021, there has been an increase in breaches, likely due to the small reduction in NOx at this site. In 2024, we will be installing an additional ozone monitor at KC2 so next year it will be interesting to see the results from this site.

Figure 11: Number of O_3 8-Hour Mean Objectives > 100 µg/m^3 at KC1 between 2014-2023

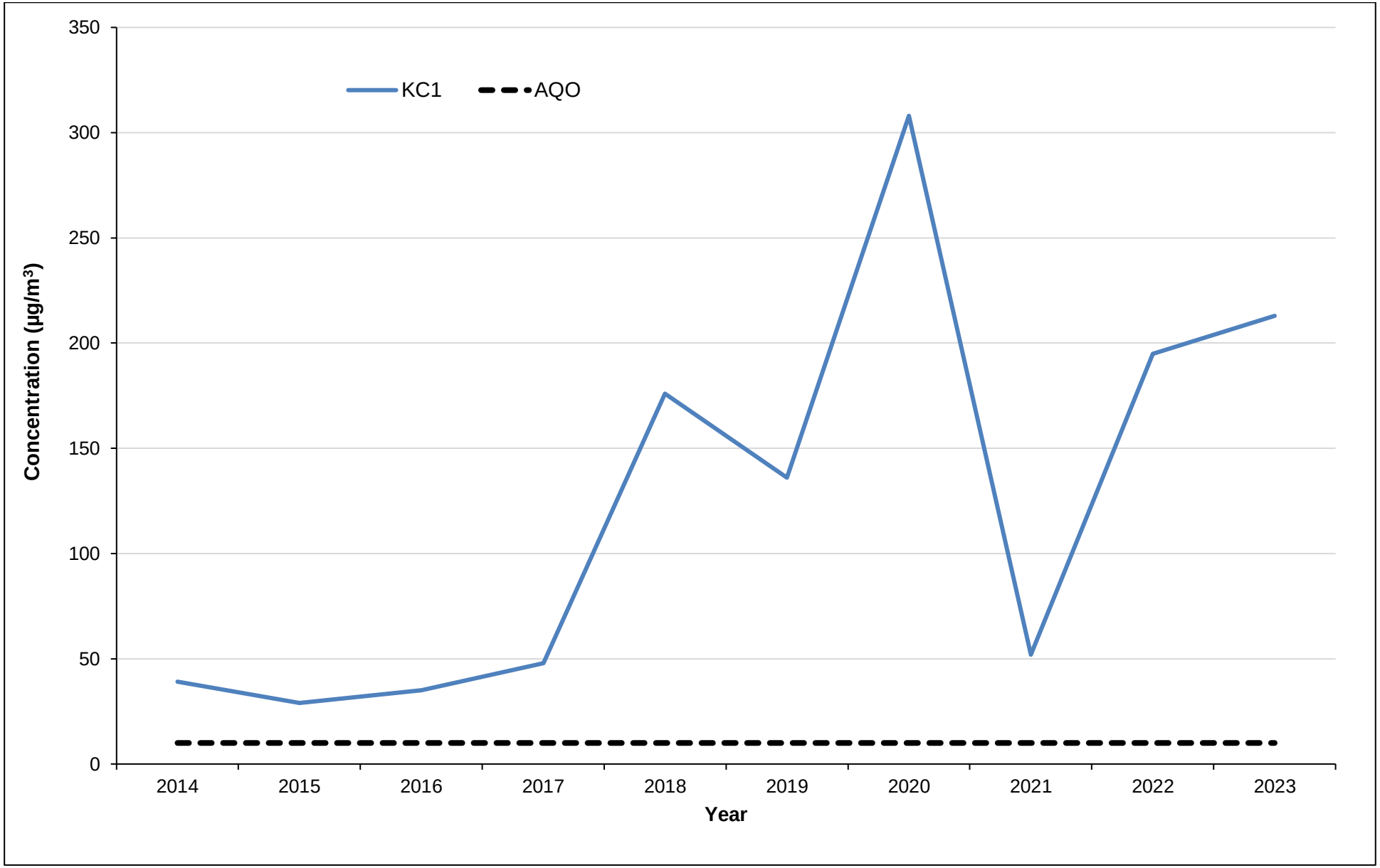

Table 16: Annual Mean Benzene Monitoring Results (µg m³)

Year	KC01	KC02	KC03	KC04	KC05	KC0X
2000	5.1	3.1	11.4	2.6	4.2	-
2001	4.3	2.0	11.0	3.7	2.9	-
2002	4.9	1.8	12.5	2.1	2.6	-
2003	3.9	2.4	9.6	2.5	2.9	-
2004	2.1	1.2	9.5	1.4	1.6	-
2005	2.0	1.3	9.2	1.4	1.8	-
2006	2.3	1.9	9.2	1.7	2.0	5.7
2007	2.2	1.6	Site Discontinued	1.5	1.7	3.2
2008	2.3	1.6	-	1.6	2.0	2.8
2009	2.1	1.6	-	1.7	1.8	2.6
2010	1.6	1.0	-	1.2	1.6	1.7
2011	1.4	1.3	-	1.4	1.9	2.8
2012	1.2	1.1	-	1.0	1.1	1.6
2013	1.0	0.7	-	0.7	0.9	1.2
2014	0.9	0.7	-	0.7	0.8	1.3
2015	1.25	0.78	-	1.0	0.94	1.8
2016	1.18	0.87	-	0.89	0.92	*6.75*
2017	0.57	0.56	-	0.55	0.61	0.73
2018	0.57	0.47	-	0.78	0.53	0.85
2019	0.49	0.38	-	0.42	0.44	0.69
2020	0.53	0.40	-	0.45	0.42	0.71
2021	0.47	0.39	-	0.40	0.40	0.62
2022	0.50	0.46	-	0.43	0.49	0.84
2023	0.45	0.49	-	0.43	0.44	0.66

Notes

Exceedances of the running annual mean of 16.25 µg/m³ are shown in bold.

Exceedances of the annual mean of 5 µg/m³ are shown in italics and underlined.

2.4.10 Interpretation of Benzene Monitoring

Benzene (C_6H_6) monitoring was undertaken at five locations using BTEX diffusion tubes in 2023. Locations include two roadside, two background, and one site in close proximity to a petrol station forecourt. The petrol station has operated Stage Two (in addition to Stage One) Vapour Recovery since 2007.

Two AQOs have been set for the assessment of benzene; a running annual mean of 16.25 µg/m^3 to be met by 31/12/2003, and a more stringent annual mean of 5 µg/m^3 to be achieved by 31/12/2010.

Table 16 demonstrates that there have been no exceedances of the Running Annual Mean of 16.25 µg/m^3 since 2000 (the measured annual mean has assumed to be the equivalent of the running annual mean), and only one exceedance of the more stringent annual mean (5 µg/m^3) at KC0X in 2016, which recorded a concentration of 6.75 µg/m^3.

Since 2000 the highest annual mean concentrations of benzene have been recorded at sites within close proximity to petrol stations; KC03 and KC0X. KC03 was located next to the petrol station on Warwick Road before its closure in 2007, when the monitoring location was then discontinued. KC0X is located close to the petrol station situated on the Old Brompton Road / Clareville Grove.

2.5 Mobile Sensors

Kensington and Chelsea Council remains a member of the Breathe London Network. In 2023 we saw the number of nodes deployed across the borough rise to 18, an increase 6 nodes from the 12 deployed in 2022. Nodes BL1-BL9 were installed in 2021, BL11-13 in 2022 and BL14-18 in 2023. Nodes BL14-18 were provided to schools participating in the Mayor of London's Future Neighbourhoods Project and installed during the first quarter of 2023.

The network continues to be run by the Imperial College Projects Limited (Imperial College London) and nodes have been provided by their partner Clarity Movement Co and the Mayor of London. Prior to deployment, all the nodes are co-located with London Air reference monitors for two weeks. All scaled and processed data is available to download on the individual Node information pages and through the API. Details of Nodes BL1-BL18 are provided in Table 17.

The data presented in Figures 12-17 from the mobile sensors give an indication of the local air quality rather than a definitive picture as these are not reference grade instruments.

In 2024, as part of the planned air quality audits in schools and nurseries in RBKC, we will be installing a further 16 nodes for a period of 12 months.

Table 17: Details of Breathe London Sensors

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA?	In AQFA?	Distance to Relevant Exposure	Distance to Kerb of Nearest Road	Height	Pollutants Monitored	Sensor Type
BL1	Oxford Gardens Primary School	523720	181240	Roadside	YES AQMA 1	N	1 m	10 m	4 m	NO_2 & $PM_{2.5}$	Clarity Node-S
BL2	North Kensington	524041	181752	Background	YES AQMA 1	N	2 m	5 m	4 m	NO_2 & $PM_{2.5}$	Clarity Node-S
BL3	Al Manaar, Acklam Road	524731	181797	Roadside	YES AQMA 1	N	0.5 m	1.5 m	4 m	NO_2 & $PM_{2.5}$	Clarity Node-S
BL4	St Mary Abbots Primary School	525554	179655	Roadside	YES AQMA 1	Y	1 m	50 m	4 m	NO_2 & $PM_{2.5}$	Clarity Node-S
BL5	Kensington High Street	525231	179383	Urban Traffic	YES AQMA 1	Y	0.5 m	1 m	4 m	NO_2 & $PM_{2.5}$	Clarity Node-S
BL6	South Kensington Underground Station	526823	178830	Urban Traffic	YES AQMA 1	Y	1 m	0.5 m	4 m	NO_2 & $PM_{2.5}$	Clarity Node-S
BL7	Royal Marsden Hospital	526921	178467	Urban Traffic	YES AQMA 1	N	0.5 m	5 m	2 m	NO_2 & $PM_{2.5}$	Clarity Node-S
BL8	Sloane Street	527831	179524	Urban Traffic	YES AQMA 1	Y	0.5 m	3 m	4 m	NO_2 & $PM_{2.5}$	Clarity Node-S
BL9	Holy Trinity Church of England Primary School	528080	178466	Roadside	YES AQMA 1	N	0.5 m	5 m	1.5 m	NO_2 & $PM_{2.5}$	Clarity Node-S
BL10	Oakley Street	527329	177713	Kerbside	YES AQMA 1	N	0.5 m	0.5 m	2.5 m	NO_2 & $PM_{2.5}$	Clarity Node-S
BL11	Royal Brompton Hospital, Fulham Wing	526899	178410	Roadside	YES AQMA 1	N	0.5 m	2.0 m	2 m	NO_2 & $PM_{2.5}$	Clarity Node-S
BL12	Sloane Square	528049	178652	Roadside	YES AQMA 1	N	1.0 m	5.0 m	5 m	NO_2 & $PM_{2.5}$	Clarity Node-S

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA?	In AQFA?	Distance to Relevant Exposure	Distance to Kerb of Nearest Road	Height	Pollutants Monitored	Sensor Type
BL13	Warwick Road	525309	178406	Kerbside	YES AQMA 1	Y	0.5 m	0.5 m	4 m	NO_2 & $PM_{2.5}$	Clarity Node-S
BL14	St Francis of Assisi Primary School	523816	180710	Kerbside	YES AQMA 1	N	0.5 m	0.1 m	3.5 m	NO_2 & $PM_{2.5}$	Clarity Node-S
BL15	Avondale Park Primary School	524025	180627	Background	YES AQMA 1	N	0.5 m	20 m	4 m	NO_2 & $PM_{2.5}$	Clarity Node-S
BL16	Thomas Jones Primary School	524214	181119	Background	YES AQMA 1	N	0.5 m	9.5 m	1 m / 2 m (fence on split level)	NO_2 & $PM_{2.5}$	Clarity Node-S
BL17	Colville Primary School	524811	181076	Background	YES AQMA 1	N	0.5 m	15 m	3.0 m	NO_2 & $PM_{2.5}$	Clarity Node-S
BL18	Lancaster West RA	523781	180877	Roadside	YES AQMA 1	N	0.5 m	3.5 m	3.0 m	NO_2 & $PM_{2.5}$	Clarity Node-S
KCM01	Kensington High Street 1 (VS009)	525726	179690	Urban Traffic	Y AQMA 1	Y	0.5	1	4	NO_2, PM_{10} & $PM_{2.5}$	Vaisala
KCM02	Kensington High Street 2 (VS010)	525273	179415	Urban Traffic	Y AQMA 1	Y	0.5	1	4	NO_2, PM_{10} & $PM_{2.5}$	Vaisala
KCM03	Sedding Street (VS008)	528048	178781	Urban Traffic	Y AQMA 1	N	0.5	0.5	4	NO_2, PM_{10} & $PM_{2.5}$	Vaisala
KCM04	Holland Park Avenue / Norland Square (VS014)	524338	180083	Urban Traffic	Y AQMA 1	N	1	0.5	4	NO_2, PM_{10} & $PM_{2.5}$	Vaisala

Figure 12: Monthly Average NO_2 Concentrations for Breathe London School & Hospital Sites

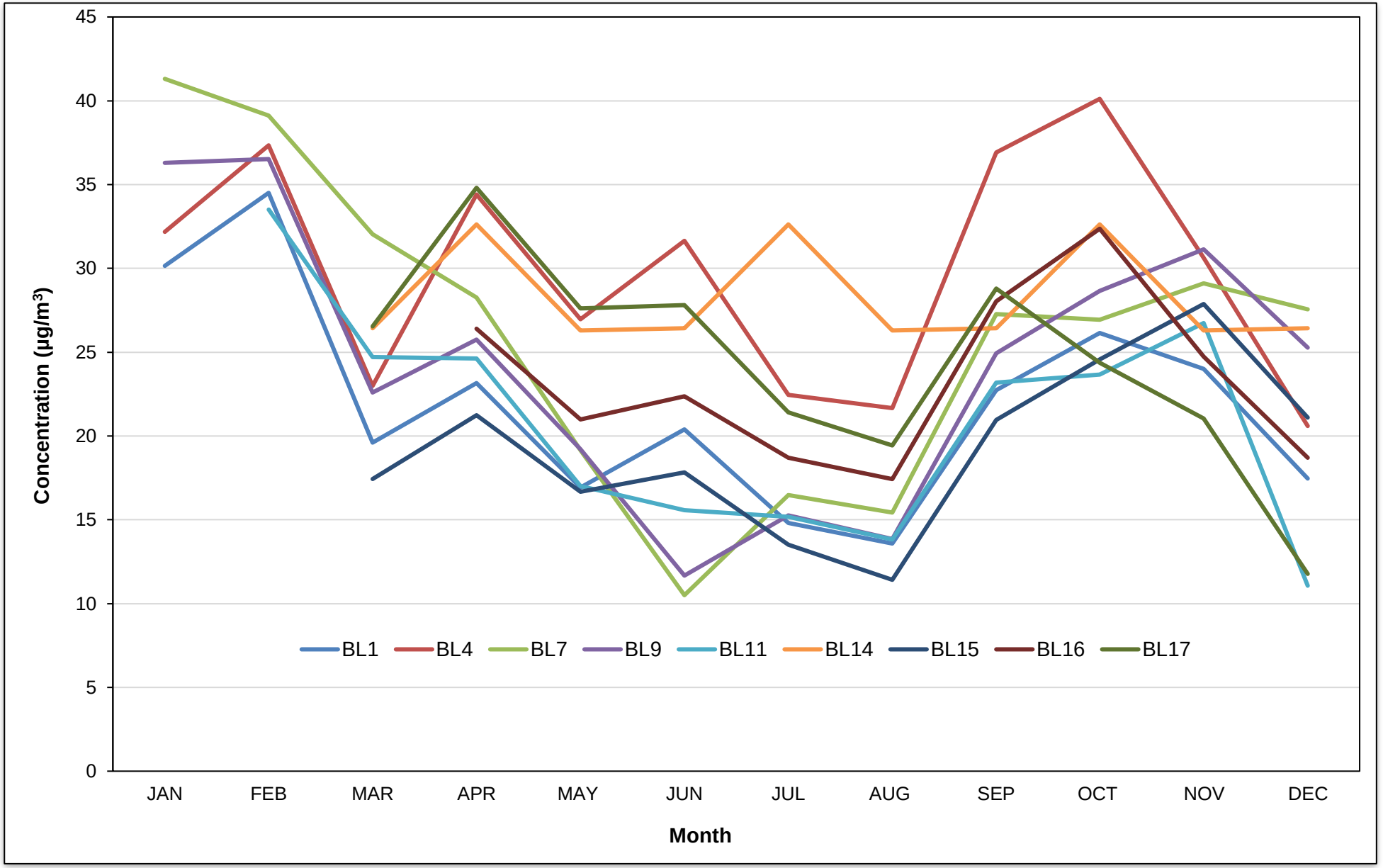

Figure 13: Monthly Average $PM_{2.5}$ Concentrations for Breathe London School and Hospital Sites

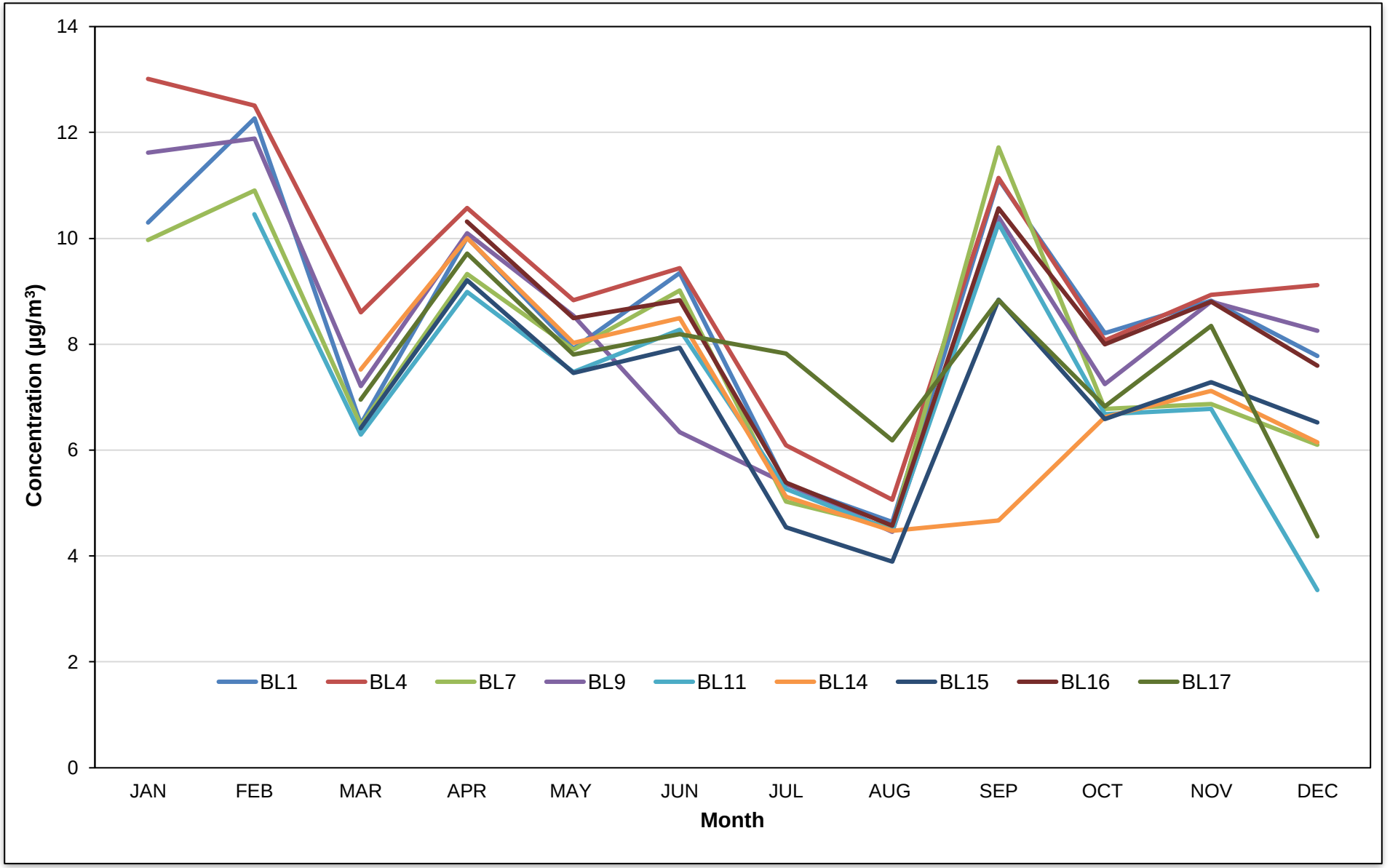

Figure 14: Monthly Average NO_2 Concentrations for Breathe London Road Sites

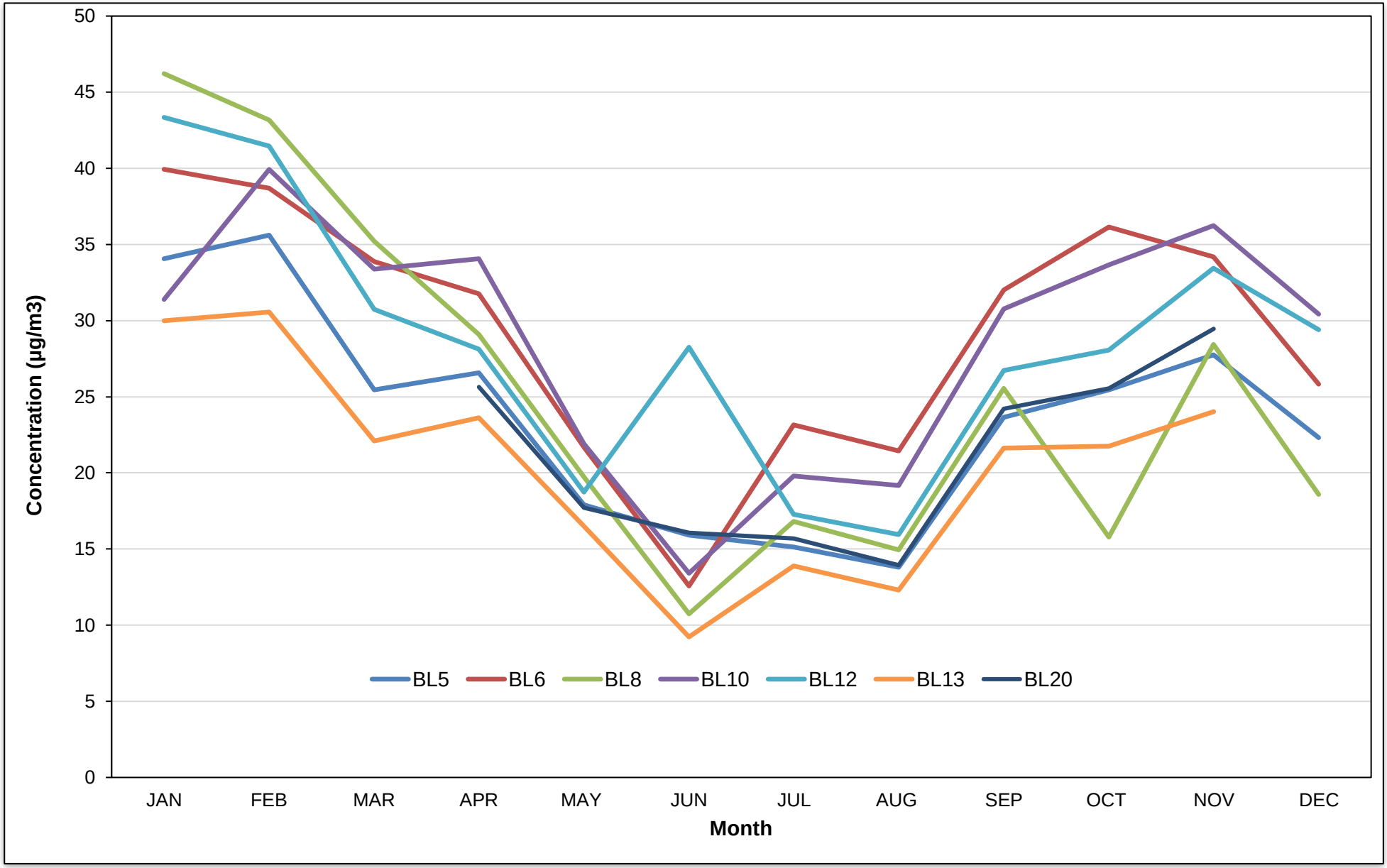

Figure 15: Monthly Average $PM_{2.5}$ Concentrations for Breathe London Road Sites

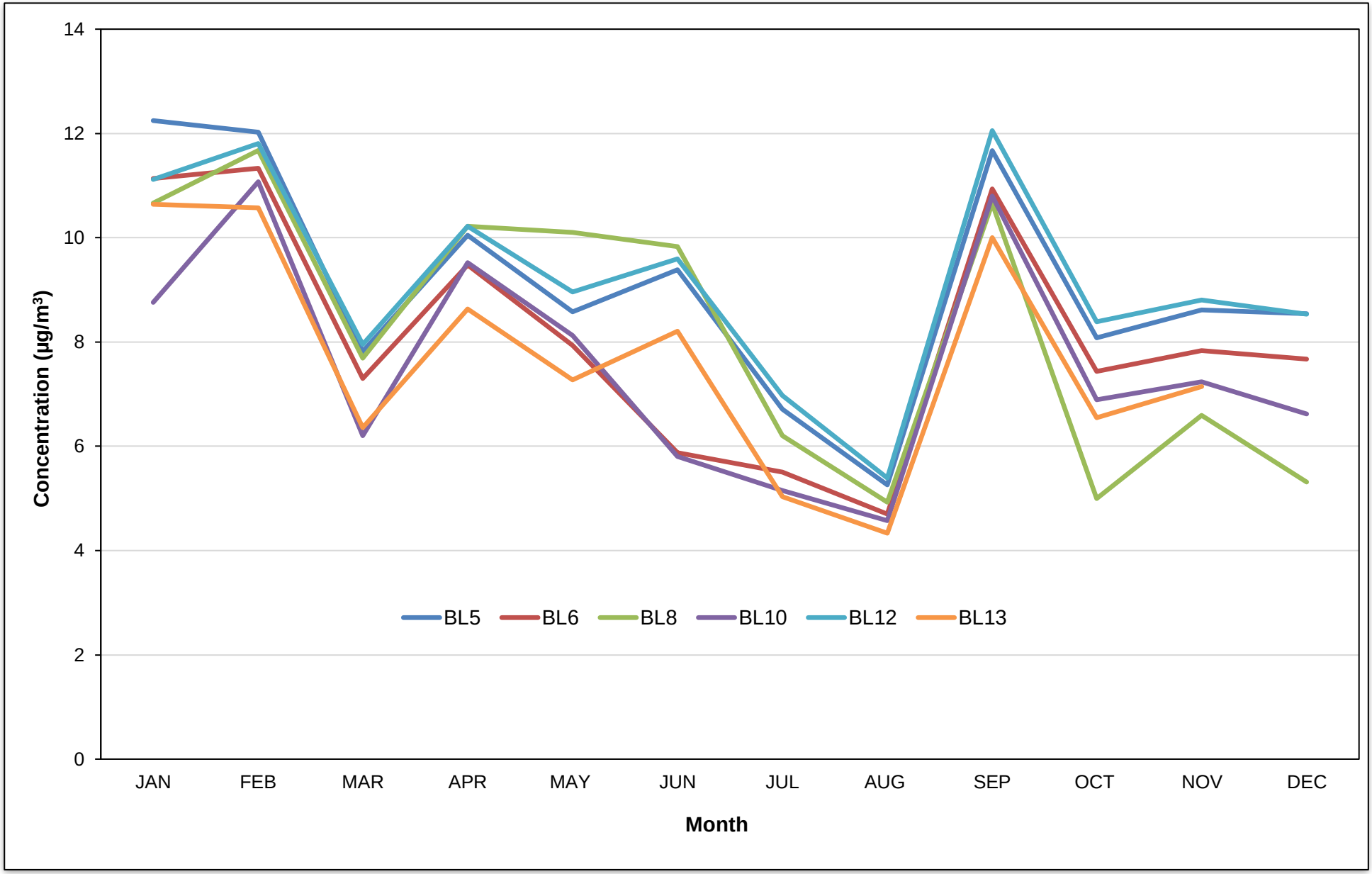

Figure 16: Monthly Average NO_2 Concentrations for Breathe London Other Sites

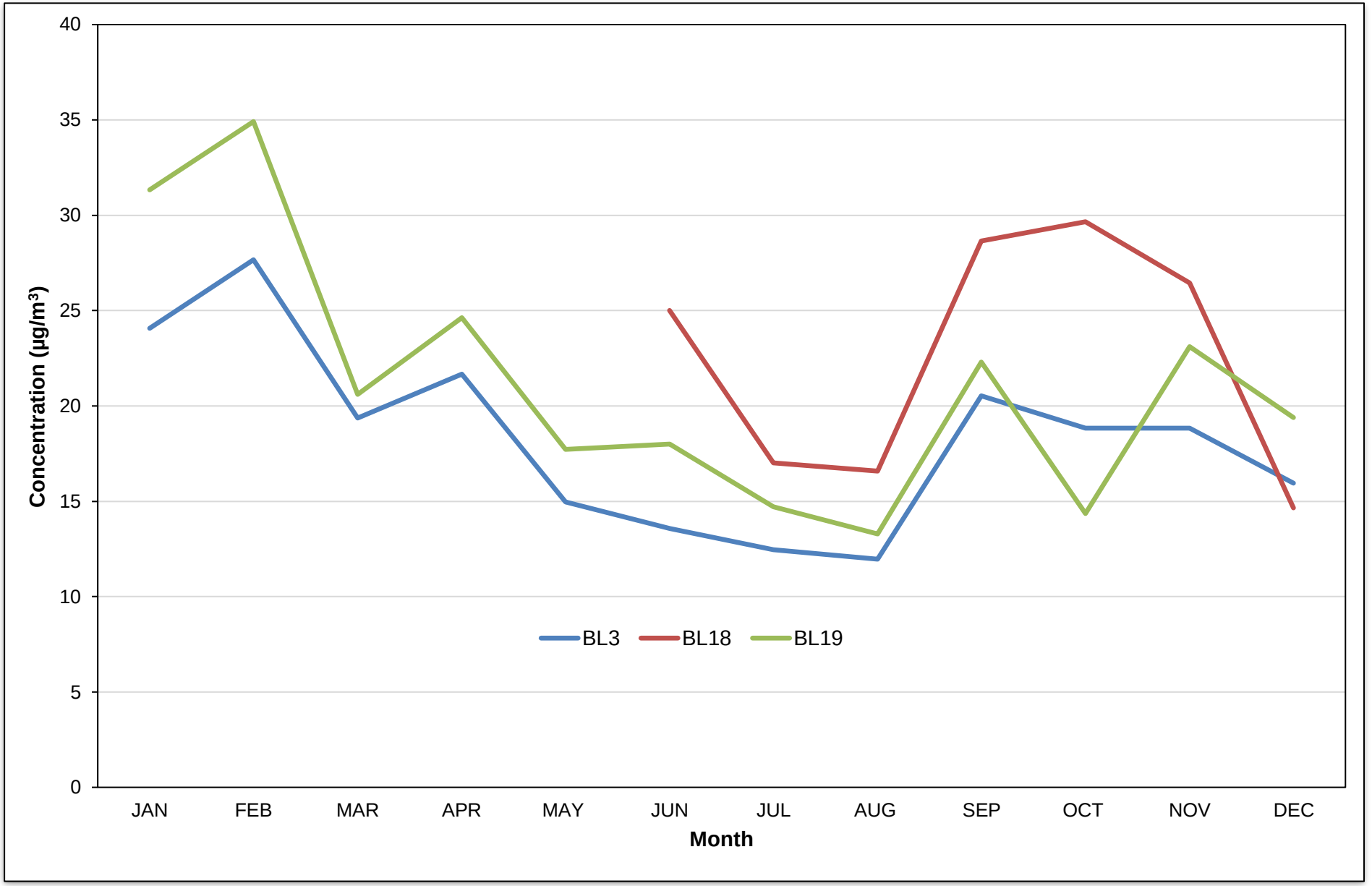

Figure 17: Monthly Average $PM_{2.5}$ Concentrations for Breathe London Other Sites

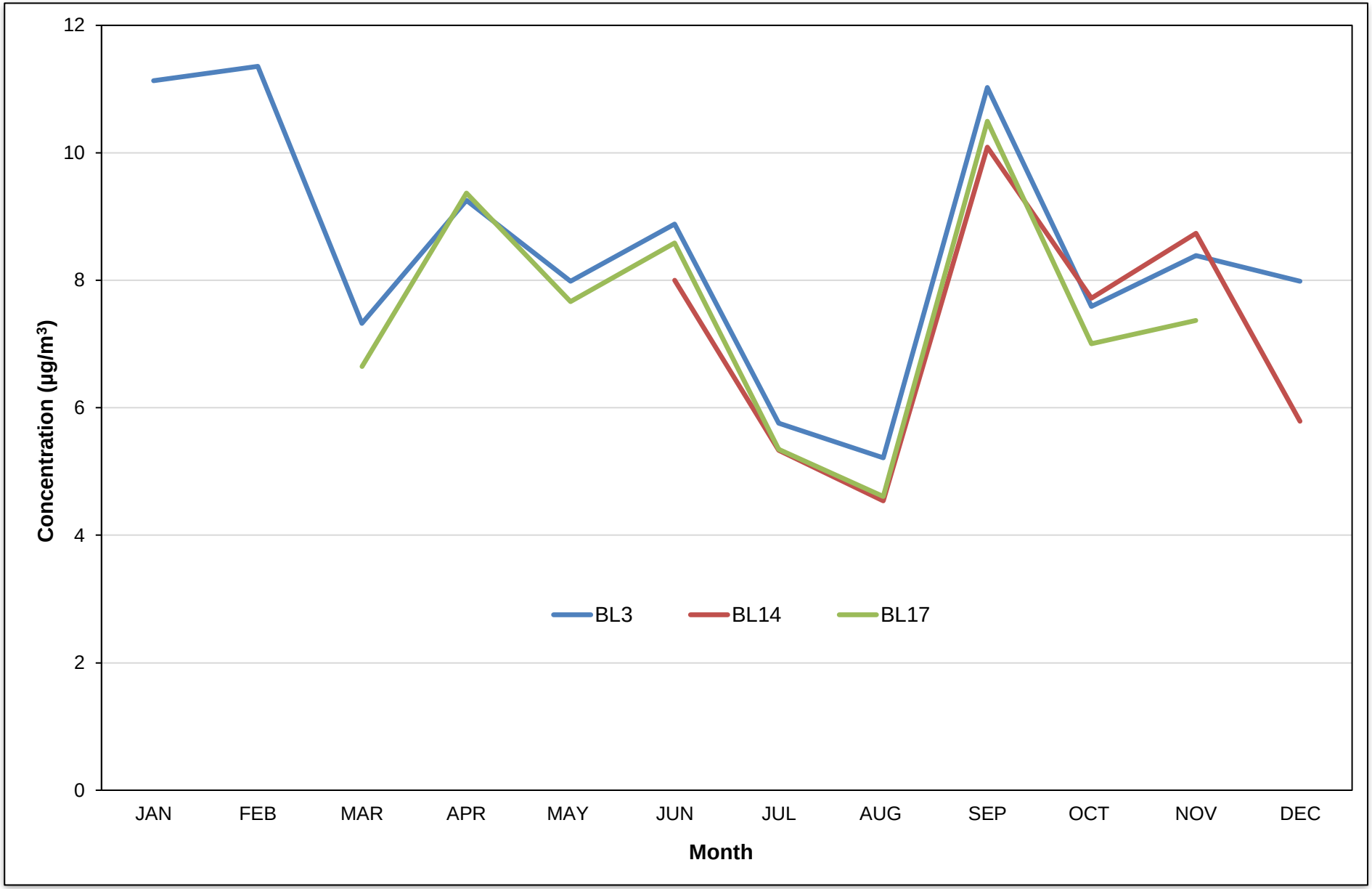

Figure 18: Monthly Average NO_2, PM_{10} & $PM_{2.5}$ Concentrations for KCM01

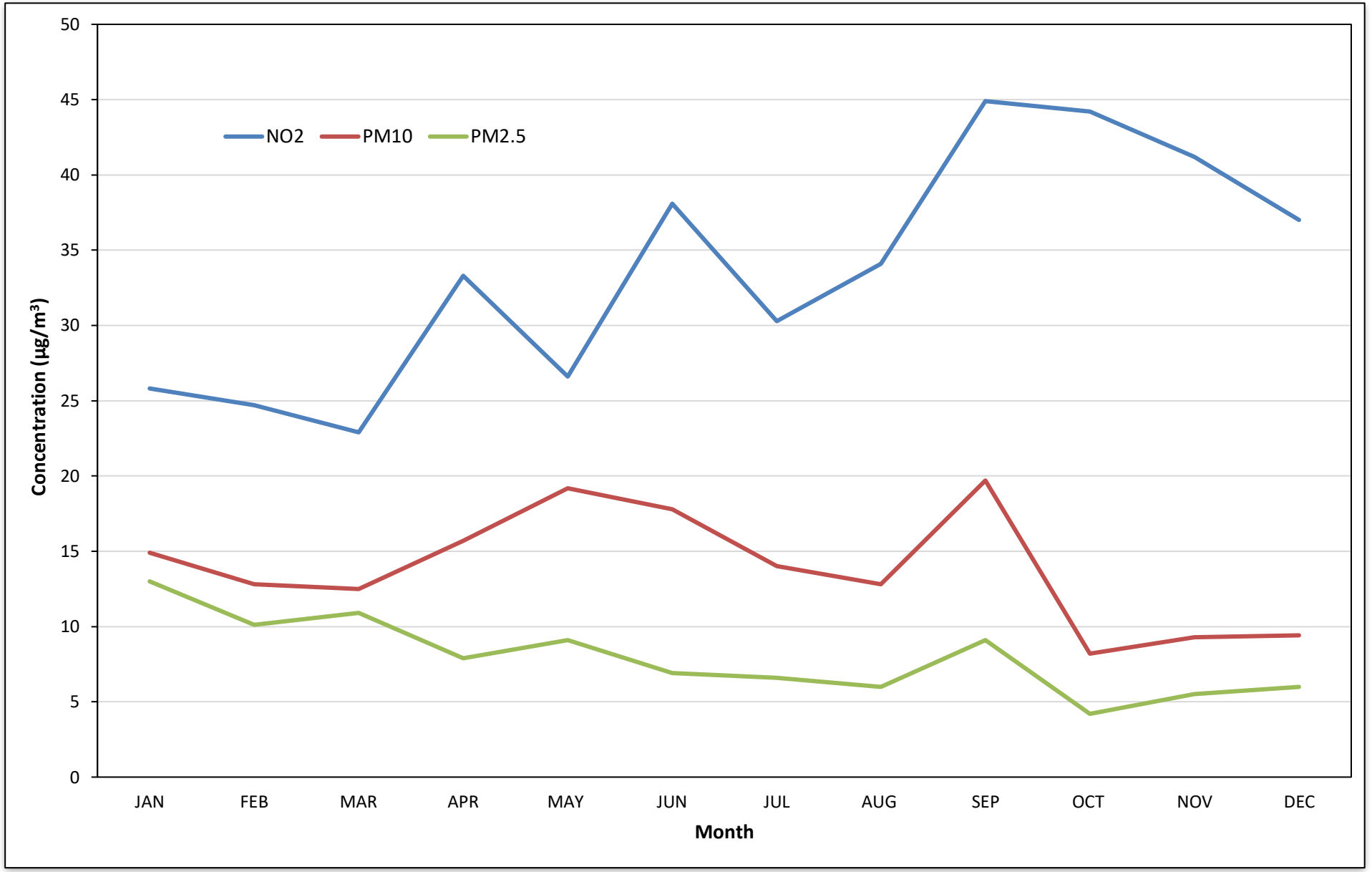

Figure 19: Monthly Average NO_2, PM_{10} & $PM_{2.5}$ Concentrations for KCM02

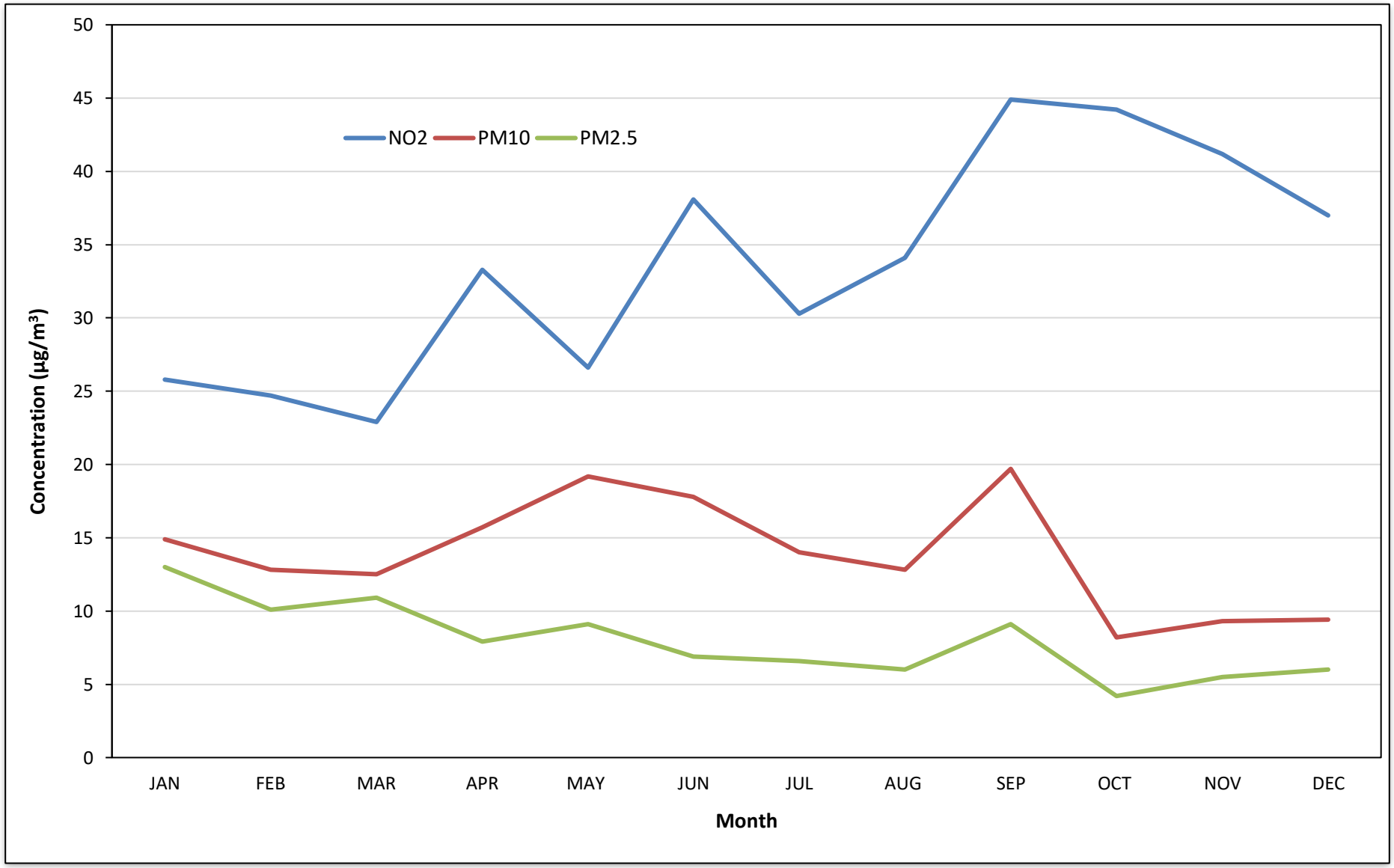

Figure 20: Monthly Average NO_2, PM_{10} & $PM_{2.5}$ Concentrations for KCM03

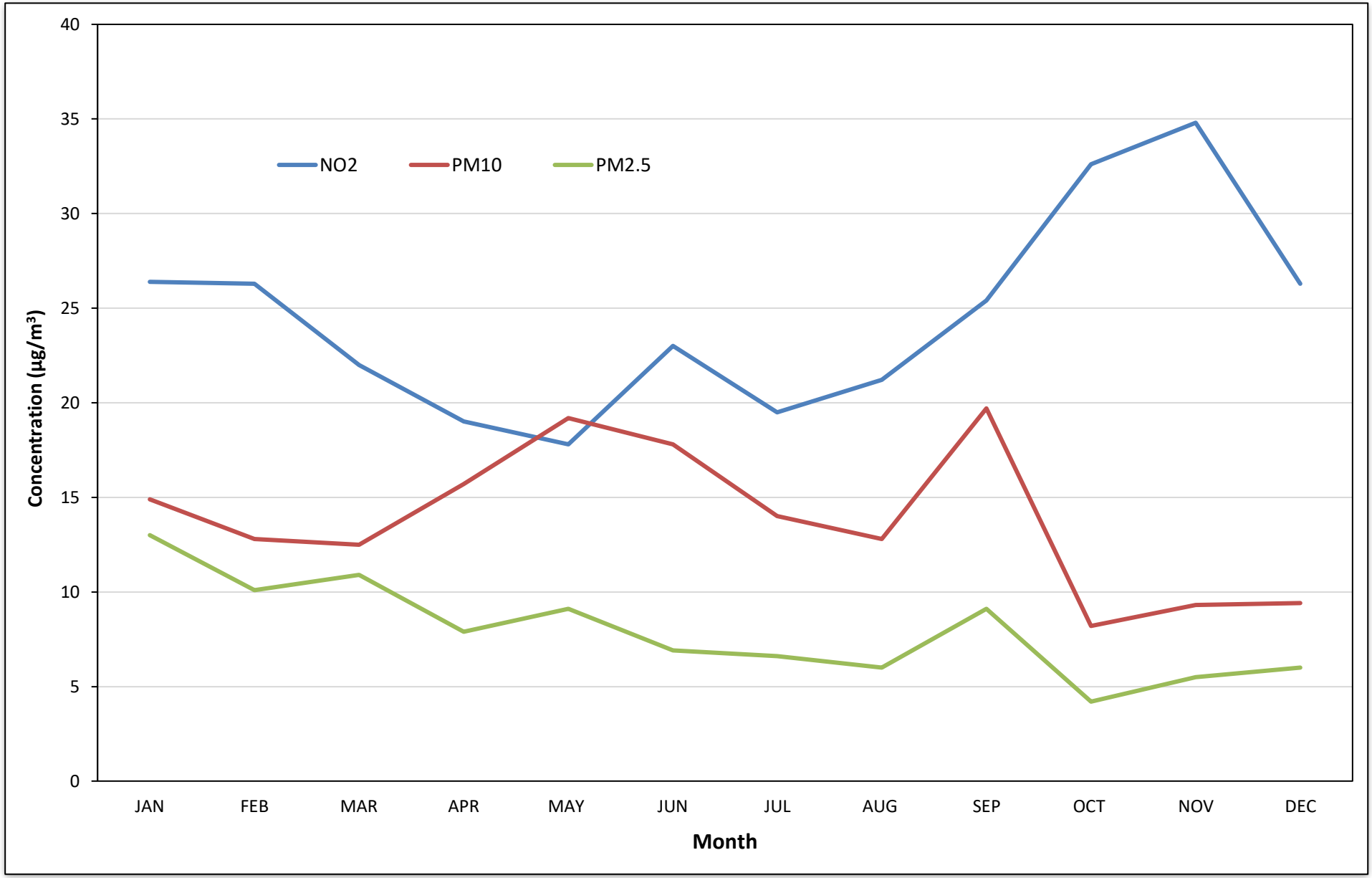

Figure 21: Monthly Average NO_2, PM_{10} & $PM_{2.5}$ Concentrations for KCM04

3. Action to Improve Air Quality

3.1 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 Kensington and Chelsea Council can be found in Table 18. The table presents a description of the AQMA that is currently designated within Kensington and Chelsea. Appendix C contains a map of the AQMA and also the air quality monitoring locations in relation to the AQMA. The air quality objectives pertinent to the current AQMA designation are as follows:

- Nitrogen Dioxide (NO_2) – 1 Hour and Annual Mean
- Particulate Matter (PM_{10}) – 24-Hour and Annual Mean

Table 18. Declared Air Quality Management Areas

AQMA Name:	RBKC AQMA		
Declaration Date:	2000		
Pollutants & AQO's:	Nitrogen Dioxide (NO_2) – 1 Hour and Annual Mean Particulate Matter (PM_{10}) – 24-Hour and Annual Mean		
Description:	Entire Borough		
Is the AQ in the AQMA influenced by roads controlled by Highways England?	No		
Level of NO_2 Exceedance: Declaration	**Level of NO_2 Exceedance: Current Year**	**Level of PM_{10} Exceedance: Declaration**	**Level of PM_{10} Exceedance: Current Year**
KC1: 40 µg/m^3 KC2: 88 µg/m^3 KC3: 75 µg/m^3 KC4: 86 µg/m^3 KC5: N/A	KC1: 17 µg/m^3 KC2: 30 µg/m^3 KC3: 33 µg/m^3 KC4: 34 µg/m^3 KC5: 37 µg/m^3	KC1: 26 µg/m^3 KC2: 35 µg/m^3 KC5: N/A	KC1: 12 µg/m^3 KC2: 15 µg/m^3 KC5: 18 µg/m^3

Number of Years Compliant with NO_2 Air Quality Objectives	Number of Years Compliant with PM_{10} Air Quality Objectives
KC1: 5+ Years KC2: 4 Years KC3: 4 Years KC4: 3 Years KC5: 1 Year	KC1: 5+ Years KC2: 5+ Years KC3: 5 Years
Name & Date of AQAP Publication	Air Quality Action Plan 2022-2027, April 2022
Web Link to AQAP	https://www.rbkc.gov.uk/environment/air-quality/air-quality-action-plan-2022-2027

☒ Kensington and Chelsea confirm the information on UK-Air regarding their AQMA(s) is up to date.

☒ Kensington and Chelsea confirm that all current AQAPs have been submitted to GLA.

3.2 Air Quality Action Plan Progress

Table 19 provides a brief summary of Kensington and Chelsea progress against the Air Quality Action Plan, showing progress made this year.

Table 19: Delivery of Air Quality Action Plan Measures

Theme	ID	Action Name	Action Description	
Monitoring & Statutory Duties	M1	Maintain automatic monitoring network	Continue to provide air quality pollutant monitoring across the borough via our five reference automatic monitoring stations and additional mobile sensors.	Retained 100% of automatic monitor network. KC1 achieved an average data capture rate of 97% across all pollutants monitored. KC2 achieved an average data capture rate of 91% across all pollutants monitored. KC3 achieved an average data capture rate of 80% across all pollutants monitored. KC4 achieved an average data capture rate of 93% across all pollutants monitored. KC5 achieved an average data capture rate of 86% across all pollutants monitored.
	M2	Maintain passive diffusion tube network	Continue to review and provide passive monitoring network of nitrogen dioxide and BTEX diffusion tubes.	Retained 100% of NO_2 Diffusion Tube network. Diffusion tube sites achieved between 40% - 100% data capture rate across the 2023 monitoring period. Retained 100% BTEX diffusion tube network. 4 BTEX sites achieved a 100% data capture rate across the 2023 monitoring period, whilst one site achieved an 83.33% data capture rate.
	M3	Review opportunities for expanding the monitoring network	Consider installation of additional fixed and mobile sensors, and work with community groups, residents, and	6 further Breathe London Nodes were installed across the borough, taking the total to 18. Data from these can be viewed on the Breathe London website:

Theme	ID	Action Name	Action Description	Progress
			schools to encourage undertaking their own monitoring. Offer residents and community groups a chance to 'adopt a tube' to monitor nitrogen dioxide for a period of 12 months.	www.breathelondon.org We have not yet been able to progress the adopt a tube scheme but still intend to do so in 2024/25.
	M4	Improve dissemination of data	Update Council's website to provide overview and links to all air quality data, including Air Quality England and Breathe London.	A review of Council air quality web pages has been undertaken. Air quality monitoring and smoke control pages have been updated https://www.rbkc.gov.uk/environment/air-quality/air-quality-monitoring, https://www.rbkc.gov.uk/environment/air-quality/smoke-control. Further amendments will be completed as required. Four Breathe London sensors were installed within the grounds of schools; we provide quarterly update reports to them, and one other school with a pre-existing sensor, summarising the data.
	M5	Statutory reporting	Produce an Annual Status Report for approval by DEFRA and the GLA and update on implementation of actions within this plan.	The 2022 ASR was produced and submitted to the GLA in May 2023. This can be viewed on the Council's website: https://www.rbkc.gov.uk/environment/air-quality/air-quality-reports-and-documents
Public Health & Awareness Raising	P1	Promotion of existing air quality messaging services	The Council subscribes to the AirTEXT messaging service. It will continue to subscribe and promote this and other schemes that are available, including CityAir, until such time that a more streamlined, tailored system can be implemented.	At the end of 2023, RBKC had 432 active airTEXT subscribers, a net increase of 16. There were 34 alert days and 7,619 alert messages were sent by text, email or voicemail. It is understood that further improvements to the AirTEXT scheme are expected and will be presented to the consortium in 2024. The Council is also considering other alternatives.

Theme	ID	Action Name	Action Description	Progress
	P2	Develop air quality messaging service	Review existing awareness services and identify cost-effective options for reaching out to vulnerable groups and delivering appropriate action-orientated messages.	It has not yet been possible to commence this review. Linked with action M4, the Council is currently considering whether to proceed with a new online data platform to amalgamate all of its air quality information to reduce the number of different websites that residents, students and consultants currently have to visit to obtain air quality data for the borough. If this goes ahead, it may be possible to incorporate an alert system into this.
	P3	Develop and embed alert service	Ensure air quality alerts are disseminated to schools, NHS colleagues, and other interested parties.	The NHS and Mayor of London has now expanded its alert system and is automatically notifying healthcare professionals when air pollution is predicted to be high. Alerts from the Mayor of London continue to be sent to schools.
	P4	Increase awareness among NHS colleagues about impact of air pollution on health	Consult GPs to determine knowledge and data gaps and tailor information to support advice that can be provided to vulnerable patients and visitors to GPs and hospitals.	Further to the update reported last year, one of the students who the Council worked with had their work published https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-17462-1. Information about the Mayor of London's new cascade system to healthcare professionals has been shared with public health colleagues who have also cascaded the information within their channels to raise awareness.
	P5	Sense check	Review of public health actions to identify progress and issues that have arisen – update to be published on Council website.	To be published once air quality audits and other PH projects have progressed further, towards the conclusion of this Plan.

Theme	ID	Action Name	Action Description	Progress
	P6	Promotion of clean air walking and cycling routes	Reduce the need for cars by promoting and making active travel such as walking, cycling, and public transport accessible and enjoyable. Update Council website and carry out more frequent promotion of schemes like Walk-It, CRPs, Clean Air Walking Routes, https://footways.london/and RBKC's own walking tourist map.	We are continuing to promote clean air route mapping for walking and cycling routes to schools and will work with Global Action Plan next year to raise further awareness about this when we expand the air quality audit programme in our schools and nurseries.
	P7	Cycleways Map	Production of an online Cycleways map.	Action Completed. Map is available at: https://www.rbkc.gov.uk/parking-transport-and-streets/cycling-and-walking/cycle-routes. This action will be removed from future reporting of the Plan.
	P8	Promotion of smoking cessation to reduce smoking at home and the impact on indoor air quality	Delivery of smoking cessation sessions in schools. One You in the Community to reduce domestic smoking in the home, including the collection of smoke-free home pledges.	1159 smoke free home pledges were signed in 2023, against a target of 1200.
	P9	Support initiatives to improve indoor air quality	Update web page to incorporate new NICE guidelines and produce new leaflet on indoor air quality.	The information about indoor air quality on the Council's website has been updated https://www.rbkc.gov.uk/environment/air-quality/indoor-air-quality. A new leaflet will be designed in 2024.
			Ensure health visitors and other Council officers are aware so information can be shared with those they visit.	Indoor air quality is being addressed in a number of ways. The Lancaster West Team now offers residents the opportunity to borrow an indoor air quality sensor for a period of one month to help residents see how air quality changes within their homes.

Theme	ID	Action Name	Action Description	Progress
				A new pilot project called Warm and Well commenced in the Golborne Ward of the Borough where a team (including a surveyor and community nurse) visits properties who have issues with damp and mould and tackle the source of the problem and also provide heath advice and referral pathway. Next year, we plan to tackle indoor air quality in schools as part of Phase 3 of the Council's and GLA's Future Neighbourhoods Programme.
	P10	Discourage burning of logs and house coal	Launch an initial publicity drive backed up by yearly campaigns to highlight pollution caused by burning non-smokeless fuels in household fireplaces, with enforcement for persistent offenders. Engage GPs and other health visitors so they are also equipped to provide advice.	The Council remains a member of the London Wood Burning Group and has attended regular steering group meetings. A1 and A3 posters of 'Burnie' were displayed outside Kensington Library, and in parks throughout the borough including Holland Park and Little Wormwood Scrubs. Postcards were also deposited for collection at libraries in the borough. A poster also featured digitally at Notting Hill Gate Tube station In November 2023.
	P11	Engagement with Canal and Rivers Trust and canal boat owners	Evidence of wood burning in canal boats, so there is a need for engagement to see if there is scope to convert to electric.	Moored vessels are present on both the Grand Union canal and from the River Thames in the borough. We have identified the locations and numbers of moorings. The Council will soon be taking part in the Mayor of London funded Healthy Waterways Delivery Programme so will be engaging with boat owners through this, which commences in May 2024.

Theme	ID	Action Name	Action Description	Progress
	P12	Support NHS colleagues with audits in hospitals	Provide guidance to hospitals on completing audits and developing action plans to reduce their own emissions and exposure to air pollution.	The Council is currently focussed on progressing air quality audits in its nurseries and schools but intends to move on to hospitals once these are further ahead.
	P13	Combined sustainability leaflet	Production of combined sustainability leaflet/booklet centred on key information and actions around the five priorities of Green Plan (air quality, climate change, biodiversity, fuel poverty, and waste) for residents and businesses. Ensure Council website on different areas of sustainability is more joined up and becomes an information hub for residents, students, businesses, and other organisations.	There are delays with publishing the sustainability booklet. An Environmental Charter for businesses, together with the technical support pack, has been produced but still waiting internal approval before publishing. A soft engagement with several businesses and SMEs across the borough was carried out in 2023 to assess what type of support they need. All the feedback has been analysed and has informed the environmental charter. We will link this with Phase 3 Future Neighbourhoods 2030 project which aims to support SMEs and local businesses in Notting Dale with grants to improve their carbon footprint, which will have air quality benefits. Aiming to learn from the lessons learned of the GLA's Business Challenge programme and the work carried out with Bloomberg Associates.
	P14	Training for Council staff	Deliver training to Council staff so there is a baseline of knowledge about monitoring, what powers the Council has to improve air quality, and what actions individuals can take.	In 2023, the Pollution Regulatory Team started to produce training materials to facilitate delivery of training sessions to Planning Officers about how to ensure air quality is considered as part of a development's application. However, the team was not able to complete this due to lack of resources due to recruitment challenges. Two more officers in the Council's Trading Standards Team have completed the Air Quality Domestic Fuel Regulation Training.

Theme	ID	Action Name	Action Description	Progress
Cleaner Transport & Active Travel	T1	Reduction in Council fleet operation emissions and for fleets of Council contractors	Subject to operational requirements, work towards 100 per cent of owned or leased Council vehicles being electric or hybrid by 2027 and ensure infrastructure (charging points) is in place to support this (see also action T14a and T14b). Reduce the size and number of vehicles in the Council fleet. Reduce fuel consumption and miles by assessing service delivery and operations. Replace car journeys with bike journeys where possible. Continue to deliver eco driving training for all Council staff and contracted drivers on a regular basis and embed the anti-idling advice. Ensure all Council contractors use electric or hybrid vehicles by 2027.	Following the development of the Carbon Neutral Pathways Report in 2021, the Council has been working with the same consultants – Aether - to bring the carbon inventories for the Council and for borough up to date, including all years since the baseline 2018/2019 to the most recent year available 2022/2023. The Carbon Performance Reports will be published in 2024 and these will contain a review of the mileage of the Council's fleet. A full review of the Council fleet carried was carried out as part of the lease re-procurement in May 2023. Six small waste collection EVs were rolled out. Re-design of building infrastructure to support future EV roll-out is underway with new depot locations being investigated. Eco driving training is still on hold.
	T2	Implementation of travel hierarchy across the Council to encourage active travel	Implement the Council's travel hierarchy and avoid business travel/journeys where possible (digital-by-default). Develop costed proposals to establish a Council-wide pool bike service, including electric bikes (or use of existing e-bike hire schemes).	This is closely linked to P14. A pool bike scheme (with electrical assisted bikes) is under development and is to be launched in 2024, with a focus on the Waste, Street Enforcement and Housing Teams, in the first instance.

Theme	ID	Action Name	Action Description	Progress
	T3	Grey Fleet Review	Review grey fleet and encourage staff members using personal vehicles (grey fleet) to switch towards using electric vehicles and public transport.	This is closely linked to P14. A grey fleet policy is under development.
	T4	Cleaner Transport provision within Procurement	Ensure cleaner transport provisions become standard in any Council procurement and lease process. All departments to comply with the vehicle procurement process chart and adopt the travel hierarchy outlined in the Council's Green Fleet Strategy and Action Plan.	An 'environmental' section has been introduced in the Sourcing Strategy template which has to be completed for all new contracts. The Climate Change Team is now one of the consultees of the Commercial Assurance Panel where all major contracts and papers are discussed.
	T5	Bike by Default	Require zero emission, electric, or hybrid vehicles as a default for any courier or taxi bookings for people or deliveries. Promotion of services such as 'Pedal Me'.	The Environmental Charter for Businesses has been drafted and remains under internal review, with delays in publishing. Soft engagement has been carried out with local businesses and SMEs to understand their appetite for signing up and assessing their needs.
	T6a	Cycle Training	Cycling lessons for children and adults to learn to ride safely and increase confidence.	1,217 lessons were provided to adults and children in 2023.
	T6b		Re-start the Council's award-winning Social Cycling programme for two days per week, focusing on the harder to reach communities.	191 community cycling sessions were held, with 576 participants. This included beginner, improver, all ability sessions, ride leader courses and cycling for well-being. 978 participants took part in 'inclusive' cycling events to support anyone wanting to cycle including people with a mobility issue, disability or of an older age by cycling 'side by side' with someone else.

Theme	ID	Action Name	Action Description	Progress
	T7	Dr Bike Surgeries	Maintain our popular monthly public 'Dr Bike' surgeries once a month at three locations across the borough.	36 Dr Bike sessions were held, servicing 212 bikes. This included 10 pop up sessions at Leisure Centres and community events, along with basic and intermediate cycle maintenance courses and 3 City and Guilds Level 1 and 2 courses.
	T8	Increase bike parking and tree planting	Remove parking bays and replace with cycle hangars and trees.	In 23/24 we converted 114 parking bays to on-street parking for rental ebikes.
	T9	Install additional cycle parking	Provision of secure visitor cycle parking	47 new secure cycle hangars were installed.
	T10	Build on existing programme of school streets	Continue to work with existing school streets and identify future streets	St. Mark's Road school street became active in April 2023, taking the total number of school streets operating to 9. Kensington Aldridge Academy has applied to become the tenth operator of a school street in 24/25
	T11	Promotion of STARS school travel plans	Continue to work with schools to promote and implement school travel plans.	(Accreditation is awarded in September) Since Sept 2023, 9 schools achieved Gold accreditation, 2 at Silver and 4 at Bronze. These figures apply to the 2022-23 school year. Further schools are working towards an accreditation.

Theme	ID	Action Name	Action Description	Progress
	T12	20 mph borough	Review experimental 20 mph scheme to decide whether it will become permanent.	As reported last year, this action is now complete. It will be removed from the Plan.
	T13	Work towards no diesel cars parked on our roads by 2030	April 2021 saw the introduction of new fees with the lowest charges applied to zero and low emission vehicles. We now wish to consider and consult on taking this further by potentially phasing out diesel permits and on street visitor parking for diesel cars by 2030.	This action will not be implemented as it is no longer supported by the Council.
	T14a	Review the provision of electric charging across the borough	Investigate the most cost-effective method to enable expansion of rapid charging points across the borough by encouraging TfL to make timely progress on securing a new procurement framework through Crown Commercial Services, from which boroughs will be able to call off contracts.	Resourcing challenges have delayed the installation of rapid chargers. A new EV officer was recruited in September to address this. Procurement strategy has changed after market research undertaken – now intending to use Oxford DPS instead of Crown Commercial Services. Submitted a bid for LEVI funding in November, part of which is intended to cover costs associated with installing rapid chargers.
	T14b		Expand network of slow and fast chargers to meet increasing demand.	192 slow and fast chargers installed in 2023 for a total of 891, with installations continuing under existing contracts.
	T15	Participation in the e-scooter trial and review of success	Expand network of e-scooter parking bays.	This action was completed in 2022 with the implementation of 15 new rental e-scooter bays, bringing the total capacity to 33 bays.

Theme	ID	Action Name	Action Description	Progress
	T16	Continue to take action to reduce idling engines	• Contribute to the pan-London Idling Action London campaign. • Respond to complaints, erect signs, and take enforcement action when appropriate. • Engage with schools and fleets to incite behavioural change. • Community events to target idling hotspots. • Record the number of interactions the enforcement teams have with idling drivers. • Ensure all frontline enforcement teams tackle idling drivers.	• In 2023, Parking enforcement officers issued 216 leaflets to drivers about idling. • The Street Enforcement Team recorded 224 idling engine service requests and of these there were 173 interventions with drivers who were asked to cease idling. No FPNs were issued as all drivers ceased to idle. Officers received and responded to 34 requests for signage. • A new Mayor's air quality funded idling action project will commence in 2024; the Royal Borough of Kensington and Chelsea will be a partner in this.
	T17	Continue to support the Mayor of London with the implementation of the extension of the Ultra-Low Emission Zone	Monitor the impact of the ULEZ and assist with signage.	This action was completed in August 2023.
	T18	Protection of bus services	Seek to protect all bus services in the borough and work with TfL to support their programme of upgrades for buses and rapid electrification of the fleet.	No relevant action required during 2023.
	T19	Assess impact on air quality of any major transport and public realm scheme implemented	Consider impacts prior to implementation and monitoring while in place before making further decisions about whether they should be continued. Incorporate greening and planting where possible.	The designs of Chelsea Green, Bute Street and Hollywood Road public realm schemes (all completed in 2023/24) were informed by air quality considerations.

Theme	ID	Action Name	Action Description	Progress
	T20a	Ensure assessment of new developments	Ensure Local Plan Review contains suitable policies to enable delivery of car-free developments and appropriate cycle parking, for example new developments have secure parking facilities for non-standard cycles, cargo bikes, hand carts, and visitor cycle bays and rapid charging points where possible.	Planning applications reviewed and recommendations provided to planning department. The public examination of the Local Plan took place in Summer 2023. The plan which includes policies on Active Travel and Parking is expected to be adopted in mid-2024. Cycle parking is required in line with London Plan standards.
	T20b		Require developments to increase the use of the river for movements of construction and waste. Require car-free developments in accordance with the London Plan.	Use of canal to remove materials from the Kensal Canalside Opportunity Area is being investigated.
	T21	Support businesses to reduce their emissions from deliveries	Develop Environmental Charter for businesses. Support businesses to combine and rationalise deliveries using low/zero emission vehicles and e-cargo bikes and local distribution hubs for final stage deliveries.	The Environmental Charter for Businesses is currently on hold. Several drafts and reiterations have been produced but currently under internal review. A soft engagement with local businesses and SMEs carried out in 2023 to better understand their appetite for signing up and assess their needs.
	T22	Carry out study into post Covid-19 travel patterns	We have commissioned the Centre for London to work with academic partners to investigate likely post Covid travel patterns and how we can best support active travel on our streets, including Kensington High Street.	Completed in 2022, and Citizens' Panel survey on findings completed in 2023. Forty-three per cent of Panel members supported painted line only cycle lanes on Kensington High Street and a report was presented to the Council's Environment Select Committee in April 2023. https://www.rbkc.gov.uk/parking-transport-and-streets/cycling-and-walking/kensington-high-street-cycle-scheme

Theme	ID	Action Name	Action Description	Progress
	T23	Upgrade existing cycle routes	Upgrade existing routes to provide higher levels of service and improved public realm.	Consultation on a new parallel crossing on Old Brompton Road (junction with Kempsford Gardens and Brompton Cemetery) took place in March/April 2023. A consultation on converting two mini-roundabouts on Ashburn Place to priority junctions took place in March – May 2023. Detailed design is currently taking place. Implementation expected to take place in late 2024/early 2025
	T24	Modal filters for traffic segregation	Consider installation of modal filters to facilitate traffic restrictions or segregation where research or evidence suggests benefits.	A modal filter has been introduced at the eastern end of Basil Street.
	T25	Removal of parking bays to facilitate al fresco dining	In 2020–2021, 100 parking bays have been removed to make way for al fresco dining. The Council intends to continue with this measure.	There were c. 90 summertime terraces licensed during daylight savings time 2023. Several of the sites originally licensed in 2020 have since been converted to footway/ pedestrian realm.
Localised Solutions	L1	Improve walking and cycling access to White City	New pedestrian and cycle link under West London line at Latimer Road, which would connect to existing Q2 on Latimer Road in RBKC.	Development work on this project continues with Imperial College and LB Hammersmith and Fulham.
	L2	Shepherd's Bush to Notting Hill Cycleway	A new cycle route serving communities in Shepherd's Bush, Holland Park and Notting Hill Gate.	This action will not be implemented as it is no longer supported by the Council.

Theme	ID	Action Name	Action Description	Progress
	L3	Active travel schemes at Kensal Canalside Opportunity Area	Implement a high-quality cycle route within the Kensal Canalside Opportunity Area, as set out in the Kensal SPD. Other schemes include new walking route over the canal to the cemetery and bridge over the railway line.	Developers' proposals are being assessed. Proposed integration to the existing street network at Ladbroke Grove is not considered satisfactory.
	L4	Two-way cycling schemes	Delivering two-way cycling streets in one-way streets to form key links enabling cyclists to access existing Quietway/Cycleway routes.	New schemes implemented/in progress at Victoria Grove and Powis Terrace, with schemes at Queen's Gate Gardens, Holland Street and Gilston Road at detailed design stage. A feasibility study was undertaken for schemes in Kensington Place, Hillgate Street, Earl's Court Gardens, Radnor Walk and Jubilee Place.
	L5	Provide green man facilities at all signalised junctions	Ensure there are green man facilities at: • Fulham Road and Beaufort Street • King's Road, Beaufort Street, Drayton Gardens junction with Old Brompton Rd • Chelsea Bridge Road/Lower Sloane Street • Fulham Road/Old Church Street	Fulham Road / Beaufort Street and Drayton Gardens/Old Brompton Road schemes were implemented in 2023.
	L6a	Reduction in museum delivery and servicing trips	Feasibility study of locations within the borough for a consolidation hub.	The CAV4 project working with the museums came to an end and it was not possible to take this further as part of this project. Since then, the Pollution Team has not had the resources to pursue this separately. It hopes, if vacant posts are filled in 2024 it may be possible to pick this up and explore further.
	L6b		Feasibility study into the conversion of one coach parking space or delivery bay to include an EV charge point for museum deliveries.	As above

Theme	ID	Action Name	Action Description	Progress
	L6c		Review into the consolidation of waste, delivery, and servicing trips.	As above
	L7	Work with schools on installing green screens and green infrastructure	Carry out site walkovers at schools to identify opportunities to install green infrastructure.	In 2023, one green screen was installed at Thomas Jones Primary School and a planning application has been submitted for installation of another at Bousfield Primary School. At the end of 2023, a tender exercise was completed to appoint a consultant to speed this process up and this should commence in 2024.
	L8	Work with landowners on large streetscape improvements which include significant greening	Work with landowners such as Cadogan Estates and the Westway Trust to implement localised measures to improve air quality and reduce carbon emissions.	The scheme funded by Cadogan Estates to improve Sloane Street and is currently under construction incorporates significant greening.
	L9	Develop new place-making public realm projects to reduce traffic dominance	Build on success of temporary road closure schemes in some streets and consider new similar schemes.	Consultation on streetscape proposals for the pedestrian and cycle zone in Kensington Park Road (section between Elgin Crescent and Blenheim Crescent took place in October and November 2023. Delivery is expected to take place in late 2024.
	L10	Implement road closures on Portobello Road during market operating times to improve conditions for pedestrians and shoppers.	Make permanent the experimental scheme traffic order.	Camera enforcement introduced January 2024 on one section of the closed route.

Theme	ID	Action Name	Action Description	Progress
	L11	Future Neighbourhoods programme	Develop an eco-neighbourhood in Notting Dale through the GLA's 2030 Future Neighbourhoods programme.	To complement the air quality and climate change audits completed at schools as part of the Future Neighbourhoods Programme in 2022, four Breathe London Sensors were deployed in February 2023. The Council shares quarterly reports with each school so they are clearly able to see what air quality is like at their school. Please see action E6 for further updates on progress with these. In 2024, Phase 3 of the programme will commence. This will focus on indoor air quality.
Emissions from Developments & Buildings	E1	Continue to assess all planning applications for air quality impact and ensure that emissions from energy and heat sources in new developments are minimised	Review all applications and make recommendations for conditions. Make informed decisions on planning applications about decentralised energy (DE) networks, combined heating power (CHP), biomass, and biofuel, by considering the balance between air quality and carbon reduction benefits.	For period 01/01/2023 – 31/12/2023 the following have been reviewed for their impact on air quality and where appropriate comments and recommendations have been provided. • 12 Major Applications • 206 Minor Applications • 35 Discharge of Condition Applications • 11 Pre-Application Advice Notes
	E2	Ensure emissions from construction are minimised and the cumulative effects of numerous nearby developments are taken into consideration	Implement the Council's Code of Construction Practice and review dust management impact assessments.	For period 01/01/2023 – 31/12/2023 the following have been reviewed for their impact on local air quality during the construction and development phases. • 13 Major Application Dust Risk Assessments reviewed • 23 Discharge of Condition Applications reviewed regarding Environmental Management Plans • 22 Minor Applications requested via condition to provide a Dust Risk Assessment via a Dust Management Plan

Theme	ID	Action Name	Action Description	Progress
				• 14 Applications requested via condition to provide demolition / construction air quality monitoring.
	E3a	Non-Road Mobile Machinery (NRMM)	Ensure that development sites NRMM requirements are understood and enforced through the planning system.	For period 01/01/2023 – 31/12/2023 the following have been undertaken with regards to NRMM. • 13 NRMM Conditions recommended. • Every relevant application provided with an NRMM informative.
	E3b		Pan-London NRMM project.	For period 01/01/2023 – 31/12/2023 there were a total of 15 audits undertaken by the NRMM team. • 3 Self-Compliant Sites • 1 Compliant Site • 1 Non-Compliant Site • 4 No NRMM Sites • 6 Site Complete
	E4	Air quality supplementary planning guidance	Update the Council's supplementary planning guidance for air quality to reflect new policies and requirements of the Local and London Plan.	Following examination hearings in June/July 2023, a number of proposed Main Modifications were identified by the Inspector to make the NLPR sound. A 6-week consultation was held. The Council is awaiting the outcome of the consultation. The SPG has been drafted but cannot go out for consultation until the new Local Plan has been adopted.
	E5	Air Quality Neutral and Air Quality Positive	Implementation and enforcement of Air Quality Neutral and Air Quality Positive policies.	For period 01/01/2023 – 31/12/2023 a total of 13 Air Quality Neutral Assessments were reviewed. No Air Quality Positive Assessments received.

Theme	ID	Action Name	Action Description	Progress
	E6	Completion of school audits	Undertake air quality audits for schools located in the worst areas of air quality. Identify and implement measures to improve air quality. Engage schools on issues relating to the climate emergency and air pollution and develop an Environmental Charter that schools can sign up to.	In 2022, air quality audits were undertaken in seven schools. In 2023, we were able to submit planning applications and applications for listed building consent (where required) to install green screens at two schools, shelters and bike and scooter storage at five schools. At the end of 2023, we carried out a tender exercise to appoint a consultant who will begin auditing all of the Council's schools and nurseries in the borough over the next three years (and review those audits already undertaken). Council officers will work alongside the consultant and lead on the process of securing any necessary planning permissions. This should expediate the rate of audits completed. The School Environmental Charter draft is under review internally. Six local schools included in the Retrofit Accelerator Programme Phase 1 – Thomas Jones, Bevington, Colville, St Francis of Assisi and All Saints, where the boilers have been replaced with heat pumps.
	E7	New development green space and infrastructure	Ensure adequate, appropriate, and well-located green space and infrastructure is included in new developments.	All Major Applications reviewed for green space and infrastructure in conjunction with Climate Change and Biodiversity Teams.
	E8	Smoke control zones (SCZ's)	Ensure that borough-wide smoke control zones (SCZ's) are promoted and enforced.	Council Smoke Control webpages updated with the latest legislation and requirements. New Smoke Control Planning Informative created for fireplace / wood burner installation for use in 2024.

Theme	ID	Action Name	Action Description	Progress
	E9	Emissions from chimneys	Issue authorisations for chimney heights for new appliances.	No new chimney height applications received in 2023.
	E10	Prescribed processes emission controls	Carry out regular risk-based inspection processes and ensure authorisations are up to date.	Inspections of Part B permitted premises completed in accordance with requirements based on Risk Rating. Permits were updated and re-issued in 2023 and these have been published on the Council's website https://www.rbkc.gov.uk/environment/air-quality/public-register
	E11	Implementation of the Council's Climate Emergency Action Plan	Implementation of the new Climate Emergency Action Plan, which sets out how the Council will become net zero by 2030 and the borough by 2040.	Implementation of the Plan continues. The Climate Emergency Action Plan can be found here https://www.rbkc.gov.uk/environment/climate-change/climate-change-strategies-and-action-plans
	E12	Council Housing Action Plan development to implement the Housing Sustainability and Fuel Poverty Strategy	Develop an action plan that outlines how the Council's housing stock will achieve net zero by 2030 and reduce air pollution and ensure these are incorporated in the capital programme of refurbishment.	The Council has now published its Housing Management Sustainability and Fuel Poverty Strategy https://www.rbkc.gov.uk/media/document/hm-sustainability-and-fuel-poverty-strategy. Air quality is one of nine areas of sustainability incorporated within the strategy, which includes focussing on boiler replacements and installing electric charging points.
	E13	A new renewable heat network will secure Lancaster West Estate in becoming net zero carbon	Replace two existing communal networks powered by gas with the Notting Dale heat network, which is an integral part of the Lancaster West Estate's refurbishment programme.	In 2023, contractors were appointed to design, build and maintain the infrastructure and a planning application was submitted. The build will take place in 2024 and it is anticipated that commercial customers will be able to link up to the network by the end of 2024 and housing blocks will be able to join in 2025.

Theme	ID	Action Name	Action Description	Progress
	E14	Waste management sites	Any new consents for waste management sites will address potentially dusty operations and require them to be enclosed within a building.	None received.
Working in Partnership	WP1	Collaboration with GLA and TfL to support working groups and policies that will improve air quality	Implementing actions from working groups such as the Wood-Burning Working Group.	The Council was a partner in the London Wood Burning Work Group and attended meetings and took part in the campaign to raise awareness about the impacts of wood burning (see action P10).
	WP2	Collaborative partnerships to take action to improve air quality	Continue to work with other local authorities, London Councils, LEDNET and other organisations (e.g., Crossriver Partnership) to take action to improve air quality. Explore opportunities for trials of innovative measures/technologies and projects.	The Council continues to work with other local authorities and organisations to improve air quality. In 2024, collaborations across London are planned for work on Idling Engines, Wood burning and Healthy Waterways.
	WP3	Work with universities	To support research and to aid our own understanding of sources and potential mitigation.	The Council continues to work with academics/universities where opportunities arise (see action P4)

Theme	ID	Action Name	Action Description	Progress
	WP4	Develop Environmental Steering Group of residents, businesses, and academic institutions.	To assist with delivery of Air Quality and Climate Emergency action plans and set up an air quality resource.	A Community Steering Group was created as part of the Future Neighbourhoods 2030 Programme, with 10 active residents involved.

4. Planning Update and Other New Sources of Emissions

Table 20: Planning requirements met by planning applications in Kensington & Chelsea in 2023

Condition	Number
Number of planning applications where an air quality impact assessment was reviewed for air quality impacts	14
Number of planning applications required to monitor for construction dust	10
Number of CHPs/Biomass boilers refused on air quality grounds	0 (None Received)
Number of CHPs/Biomass boilers subject to GLA emissions limits and/or other restrictions to reduce emissions	0 (None Received)
Number of developments required to install Ultra-Low NO_X boilers	12
Number of developments where an AQ Neutral building and/or transport assessments undertaken	10
Number of developments where the AQ Neutral building and/or transport assessments not meeting the benchmark and so required to include additional mitigation	0
Number of planning applications with S106 agreements including other requirements to improve air quality	Payment received for 1 application. Legal agreements secured for further 3.
Number of planning applications with CIL payments that include a contribution to improve air quality	CIL is not collected for specific categories.
NRMM: Central Activity Zone, Canary Wharf and Opportunity Areas Number of conditions related to NRMM included. Number of developments registered and compliant.	0 (A very small area of the borough is located within the Central Activity Zone)

Condition	Number
Number of audits % of sites unregistered prior to audit Please include confirmation that you have checked that the development has been registered with the GLA through the relevant NRMM website and that all NRMM used on-site is compliant with Stage IV of the Directive and/or exemptions to the policy.	
NRMM: Greater London (excluding Central Activity Zone, Canary Wharf and Opportunity Areas) Number of conditions related to NRMM included. Number of developments registered and compliant. Number of audits % of sites unregistered prior to audit Please include confirmation that you have checked that the development has been registered at www.nrmm.london and that all NRMM used on-site is compliant with Stage IIIB of the Directive and/or exemptions to the policy.	32 conditions included (every application has an NRMM informative) 1 registered and compliant 1 unregistered/uncompliant and being chased. 15 audits 37% sites unregistered prior to audit

Planning Applications requiring air quality comments are either forwarded directly to the Pollution Regulatory Team or through to the EH Plan inbox which is checked on a regular basis. Kensington and Chelsea participate in the Pan-London NRMM project which sees NRMM Officers visit construction sites to ensure their compliance.

4.1 New or significantly changed industrial or other sources

No new or significantly changed industrial / other sources identified.

5. Additional Activities to Improve Air Quality

5.1 London Borough of Kensington and Chelsea Fleet

There are currently 130 vehicles in total within the RBKC fleet (including Housing), out of which 16 are fully electric and 22 are hybrid vehicles. In total electric and hybrid vehicles represent 29% of the total fleet, compared with 19% in 2021.

5.2 NRMM Enforcement Project

RBKC is continuing to support the NRMM Enforcement project in 2024-2025.

Q1. What is the standard wording you use for NRMM conditions on construction/demolition sites?

A1. Prior to the commencement of the development, details shall be submitted to and approved in writing by the Local Planning Authority of all Non-Road Mobile Machinery (NRMM) to be used on the development site. All NRMM should meet as minimum the Stage IV emission criteria of Directive 97/68/EC and its subsequent amendments unless it can be demonstrated that Stage IV equipment is not available. An inventory of all NRMM must be registered on the NRMM register https://nrmm.london/user-nrmm/register. All NRMM should be regularly serviced, and service logs kept on site for inspection. Records should be kept on site which details proof of emission limits for all equipment'.

Reason: To ensure any impact on air quality is both minimised and managed and to comply with the NPPF (2021), development plan policies and Air Quality policies of the Local Plan.

Q2. Where is the wording applied?

A2. Wording is applied to the decision notice.

Q3. What sites is this condition applied to?

A3. The condition is applied to all planning applications.

4.3 Air Quality Alerts

RBKC supports *air*TEXT and the Mayor's Air Quality Alert Messaging, which are now sent directly to schools and healthcare professionals.

Appendix A Details of Monitoring Site Quality QA/QC

A.1 Automatic Monitoring Sites

Data Management and Local Site Operator (LSO) duties for RBKC's Automatic Monitoring Station Network for the period of 2021 was undertaken by Ricardo Energy and Environment, who have been employed by RBKC since November 2017. All real-time data from the monitoring stations were independently collected and validated on a daily basis. A combination of automatic and manual checks were utilised to assess data, identify, and diagnose potential equipment faults and adjust data to take account of calibration tests. Automatic overnight calibrations were supplemented with regular manual calibrations of analysers. The procedures used conform to EU standards that are a requirement of the AURN.

All data is also formally ratified and available online by accessing the Air Quality England Website and selecting Kensington & Chelsea within the menu bar. During this process, the validation decisions can be ratified with the benefit of hindsight and using greater information, such as service records, calibration records and the results of station audits. Station audits are carried out by Ricardo Energy and Environment's in house audit team.

In addition, due to the PM_{10} / $PM_{2.5}$ monitoring undertaken at the North Kensington monitoring site being affiliated to the AURN/LAQN monitoring network, independent calibration and audits are completed for the FIDAS monitors by Defra appointed contractors.

A.1.1 PM_{10} Monitoring Adjustment

PM_{10} monitoring is completed within the borough at three monitoring sites: KC1 with a FIDAS, KC2 with a BAM, and KC5 with a 1020 heated BAM. As per LLAQM guidance[1], through independent data validation completed by Ricardo Energy and Environment, the BAM data is corrected by dividing the raw data by 1.035. Monitoring data from the FDMS and FIDAS monitors do not require correction during their data validation stage.

All fully validated monitoring PM_{10} data is available through the Air Quality England Website.

A.2 Diffusion Tubes

The NO_2 diffusion tubes for 2023 were supplied and analysed by Gradko with the 50% Triethanolamine (TEA) in acetone preparation method utilised. Gradko is a UKAS accredited laboratory that follows the procedures set out by Defra within Diffusion Tubes for Ambient NO2 Monitoring: Practical Guidance for Laboratories and Users, and strict internal QA/QC procedures to ensure that concentrations reported are as

accurate as possible. In addition, Gradko participate in two independent QA/QC schemes to ensure their performance is constantly independently reviewed.

A.2.2 AIR-PT

AIR is an independent proficiency-testing (PT) scheme that is operated by LGC standards and supported by the Health and Safety Laboratory (HSL). AIR-PT began in April 2014 and combined two long running PT schemes: LGC Standards STACKS PT scheme, and the HSL WASP PT scheme. AIR is a recognised performance-testing programme for labs undertaking NO_2 diffusion tube analysis as part of a wider UK NO_2 monitoring network. The AIR-PT results for Gradko during 2021 are presented in Table A.1 below.

Further information on proficiency testing can be found at Defra's Local Air Quality Management webpages under QA/QC framework for NO_2 diffusion tube monitoring.

Table A.1: Gradko Performance within AIR-PT for NO2 Diffusion Tubes – 2023

AIR PT AR049	AIR PT AR050	AIR PT AR052	AIR PT AR053
January – February 2023	**May – June 2023**	**July – August 2023**	**September – October 2023**
100%	100%	100%	100%

A.2.3 Network Field Inter-Comparison Exercise

Gradko International also takes part in the NO_2 Network Field Inter-Comparison Exercise, operated by the National Physical Laboratory (NPL), which complements the AIR-PT scheme in assessing sampling and analytical performance of diffusion tubes under normal operating conditions. This involves the regular exposure of a triplicate set of tubes at an Automatic Urban Network site (AURN) site where continuous chemiluminescent analysers measure NO_2 concentrations.

The inter-comparison exercise is completed at the Marylebone AURN monitoring station. Of particular interest is the bias of the diffusion tube measurement relative to the automatic analyser that gives an indication of accuracy. Performance criterion have been established for participating laboratories in line with the Air Quality Directive 2008/50/EC requirement for indicative monitoring techniques, as the 95% confidence interval of the annual mean bias which should not exceed ±25%.

In conjunction with this, a measure of precision is determined by comparing the triplicate co-located tube measurements, commonly referred to as the coefficient of variation (CoV). This value is useful for assessing the uncertainty of results due to sampling and analytical techniques. The NPL performance criterion for precision is

that the mean coefficient of variation for the full year should not exceed 10%, should this be achieved the precision is given a score of ‘good’.

Gradko operates well within the required level of performance in terms of accuracy and precision, as shown by the results presented in Table A.2.

Table A.2: Precision Results for 2023

2023 Good	2023 Bad
21	0

A.2.4 Benzene Diffusion Tubes

All Benzene tubes were analysed by a Gradko International a UKAS accredited laboratory using desorption scanning gas chromatography/mass spectrometry (GC/MS). This method of analysis gives unequivocal identification of BTEX peaks. The analysis is carried out in accordance with the Gradko International Laboratory Quality Procedure GLM 4.

The accuracy of the Laboratory measurements was monitored by participation in the Laboratory Measurement Proficiency Scheme.

The measurement method used in the Benzene survey were consistent with the sampling, analysis, and QA/QC requirements of EN 14662-4: 2005 Ambient Air Quality – Standard Method for Measurement of Benzene Concentrations – Part 4: Diffusive Sampling followed by Thermal Desorption and Gas.

A.2.5 Factor from Local Co-location Studies

RBKC for 2023 part of the London Wide Environmental Programme (LWEP) for which a number of co-location studies are completed across seven London Boroughs. During 2023 triplicate diffusion tube monitoring was completed at two Automatic Monitoring sites within the borough: North Kensington – KC47 and Cromwell Road – KC54. The bias adjustment factor calculated for the North Kensington and Cromwell Road Monitoring Stations are presented in Figure A.1.

The co-location study result was included within the LWEP bias adjustment calculations as presented in Table A.3 due to passing both data capture and diffusion tube precision checks.

Figure A. 1: North Kensington Triplicate Tubes Precision & Accuracy

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	04/01/2023	01/02/2023	28.8	29.3	27.7	29	0.9	3	2.1
2	01/02/2023	01/03/2023	23.3	24.1	28.7	25	2.9	12	7.3
3	01/03/2023	05/04/2023	18.0	16.7	18.7	18	1.0	6	2.5
4	05/04/2023	03/05/2023	20.8	21.5	22.8	22	1.0	5	2.5
5	03/05/2023	31/05/2023	16.2	14.2	14.4	15	1.1	7	2.7
6	31/05/2023	05/07/2023	14.0	14.8	13.5	14	0.7	5	1.7
7	05/07/2023	02/08/2023	12.7	14.3	11.9	13	1.2	9	3.0
8	02/08/2023	06/09/2023	16.5	15.4	15.2	16	0.7	5	1.8
9	06/09/2023	04/10/2023	18.8	18.9	18.9	19	0.1	0	0.1
10	04/10/2023	01/11/2023	23.5	23.9	23.9	24	0.2	1	0.5
11	01/11/2023	06/12/2023	26.4	26.0	24.4	26	1.1	4	2.7
12	06/12/2023	03/01/2024	18.6	19.7	19.3	19	0.6	3	1.4
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method	
Period Mean	Data Capture (% DC)
27.7	100
28.1	100
16.3	100
17.3	100
12	100
13	100
10	100
12	100
18	100
22	100
25.1	100
18.6	100

Data Quality Check	
Tubes Precision Check	Automatic Monitor Data
Good	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good precision	Good Overall

Overall survey -->

(Check average CV & DC from Accuracy calculations)

Site Name/ ID: KC1 Sion Manning

Precision 12 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval)
without periods with CV larger than 20%
Bias calculated using 12 periods of data
Bias factor A 0.92 (0.85 - 1)
Bias B 9% (0% - 18%)
Diffusion Tubes Mean: 20 µgm^{-3}
Mean CV (Precision): 5
Automatic Mean: 18 µgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 18 (17 - 20) µgm^{-3}

Accuracy (with 95% confidence interval)
WITH ALL DATA
Bias calculated using 12 periods of data
Bias factor A 0.92 (0.85 - 1)
Bias B 9% (0% - 18%)
Diffusion Tubes Mean: 20 µgm^{-3}
Mean CV (Precision): 5
Automatic Mean: 18 µgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 18 (17 - 20) µgm^{-3}

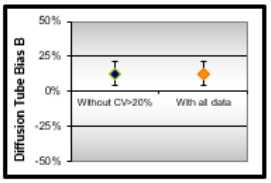

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Figure A.2: Cromwell Road Triplicate Tubes Precision & Accuracy

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm^{-3}	Tube 2 µgm^{-3}	Tube 3 µgm^{-3}	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	04/01/2023	01/02/2023	48.1	46.9	49.0	48	1.0	2	2.5
2	01/02/2023	01/03/2023	50.2	52.6	47.8	50	2.4	5	6.0
3	01/03/2023	05/04/2023	41.8	38.8	39.9	40	1.5	4	3.7
4	05/04/2023	03/05/2023	43.1	40.4	41.5	42	1.4	3	3.5
5	03/05/2023	31/05/2023							
6	31/05/2023	05/07/2023	37.9	34.7	37.4	37	1.7	5	4.3
7	05/07/2023	02/08/2023	31.6	33.9	32.0	32	1.2	4	3.0
8	02/08/2023	06/09/2023	33.6	34.1	33.9	34	0.2	1	0.6
9	06/09/2023	04/10/2023	39.6	41.5	42.7	41	1.5	4	3.8
10	04/10/2023	01/11/2023	40.1	43.6	36.3	40	3.7	9	9.1
11	01/11/2023	06/12/2023	41.5	37.2	40.5	40	2.3	6	5.7
12	06/12/2023	03/01/2024	35.7	36.8	34.7	36	1.0	3	2.6
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method	
Period Mean	Data Capture (% DC)
43.7	100
41.7	100
31.1	100
30.2	100
24	100
26	100
20	100
21	100
30	100
33	100
32.3	100
27.6	100

Data Quality Check	
Tubes Precision Check	Automatic Monitor Data
Good	Good
Good	Good
Good	Good
Good	Good
	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good	Good
Good precision	Good Overall

Overall survey -->

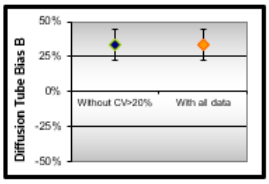
(Check average CV & DC from Accuracy calculations)

Site Name/ ID: KC2 Cromwell Road

Precision 11 out of 11 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval)
without periods with CV larger than 20%
Bias calculated using 11 periods of data
Bias factor A 0.77 (0.71 - 0.84)
Bias B 30% (20% - 41%)
Diffusion Tubes Mean: 40 µgm^{-3}
Mean CV (Precision): 4
Automatic Mean: 31 µgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 31 (28 - 34) µgm^{-3}

Accuracy (with 95% confidence interval)
WITH ALL DATA
Bias calculated using 11 periods of data
Bias factor A 0.77 (0.71 - 0.84)
Bias B 30% (20% - 41%)
Diffusion Tubes Mean: 40 µgm^{-3}
Mean CV (Precision): 4
Automatic Mean: 31 µgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 31 (28 - 34) µgm^{-3}



Jaume Targa, for AEA

Version 04 - February 2011

Figure A.3: National Bias Adjustment Factor

National Diffusion Tube Bias Adjustment Factor Spreadsheet

Spreadsheet Version Number: 03/24

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies

Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods

Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet

This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2024

LAQM Helpdesk Website

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

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

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List

If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List

If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List

If a year is not shown, we have no data[2]

Step 4:

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

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

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[5] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[6]	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**

A.2.6 Discussion of Choice of Factor to Use

Historically a single BAF derived from the North Kensington Monitoring Station (NKMS) Urban Background co-location site, was used to correct raw Diffusion Tube data. The NKMS BAF is considered to represent the best local BAF for Urban Background Diffusion Tube monitoring locations and monitoring locations away from busy roads in the borough.

Table A.3: Bias Adjustment Factor History

Year	Local or National	Version of National Spreadsheet	Adjustment Factor
2023	Local	03/24	0.82
2022	Local	03/23	0.80
2021	Local	03/22	0.83
2020	Local	06/21	March 0.88 May 0.89 Jan, Feb, Apr, Jun-Dec 0.95
2019	Local	09/20	Non-Urban Background: 0.87 Urban Background: 1.01
2018	Local	06/19	0.98
2017	Local	03/18	1.15
2016	Local	-	1.15

A.3 Adjustments to the Ratified Monitoring Data

A.3.1 Short-term to Long-term Data Adjustment

In regard to the 2023 diffusion tube data set, five monitoring locations (KC49, KC68, KC69, KC85 and KC96) had data capture below 75%.

Annualisation of the monitoring sites has been completed in line with Box 4.8 and 4.9 within LLAQM.TG(16)1 and full working details are presented in Table A.4 and Table A.5. In completing the annualisation process, data has been taken from a number of automatic monitoring sites that are part of the LAQN/AURN. In line with LLAQM.TG(16)1 the monitoring sites that have been used lie within a radius of approximately 50 miles of the sites to be annualised and have a data capture of 85% or above.

A.3.2 Distance Adjustment

In line with LLAQM.TG(22) distance correction has been applied to NO_2 monitoring sites that are not sited at locations of relevant exposure as detailed within the LLAQM Guidance documents. The Diffusion Tube Data Processing Tool V4.0 has been used to predict the NO_2 concentration at a location of relevant exposure; the calculations are presented below.

To complete the NO_2 fall off with distance calculations a background value for each monitoring location is required. Background NO_2 concentrations for 2023 have been derived from the Defra Background Map database that has a current baseline of 2018.

Distance correction has been completed for all Roadside and Kerbside monitoring locations and not the Urban Background and Urban Centre locations.

Table 21. Short-Term to Long-Term Monitoring Data Adjustment

Site ID	Annualisation Factor Sion Manning	Annualisation Factor Westminster	Annualisation Factor Haringey Priory Park South	Annualisation Factor Bloomsbury	Average Annualisation Factor	Raw Data Annual Mean (µg m^{-3})	Annualised Annual Mean (µg m^{-3})	Comments
KC49	0.9603	0.9814	0.9580	0.9645	0.9660	53.0	-	
KC68	0.8245	0.8696	0.8313	0.8670	0.8481	32.1	27.2	
KC69	0.9977	0.9957	1.0263	1.0051	1.0062	23.0	23.2	
KC85	0.8408	0.8790	0.8353	0.8539	0.8522	36.5	31.1	
KC96	0.9555	0.9931	0.9690	0.9727	0.9726	44.0	42.8	

Table 22. NO_2 Fall off With Distance Calculations

Site ID	Distance (m)		NO_2 Annual Mean Concentration (µg/m^3)			Comments
	Monitoring Site to Kerb	Receptor to Kerb	Monitored Concentration (Annualised & Bias Adjusted)	Background Concentration	Concentration Predicted at Receptor	
KC33	1.1	2.1	40.6	28.9	*39.1*	*Predicted concentration at Receptor within 10% the AQS objective.*
KC49	4.0	5.0	43.4	28.8	**42.5**	*Predicted concentration at Receptor above AQS objective.*
KC89	0.5	1.0	37.1	28.9	*36.1*	*Predicted concentration at Receptor within 10% the AQS objective.*
KC90	5.0	5.5	38.0	28.9	*37.7*	*Predicted concentration at Receptor within 10% the AQS objective.*
KC91	0.5	1.0	40.3	28.9	*38.9*	*Predicted concentration at Receptor within 10% the AQS objective.*

Site ID	Distance (m)		NO_2 Annual Mean Concentration (µg/m^3)			Comments
	Monitoring Site to Kerb	Receptor to Kerb	Monitored Concentration (Annualised & Bias Adjusted)	Background Concentration	Concentration Predicted at Receptor	
KC93	0.5	1.0	41.0	28.9	*39.5*	*Predicted concentration at Receptor within 10% the AQS objective.*
KC94	1.0	1.5	41.3	28.9	**40.3**	*Predicted concentration at Receptor above AQS objective.*
KC95	0.3	0.8	42.6	28.9	**40.4**	*Predicted concentration at Receptor above AQS objective.*
KC97	0.5	0.8	41.0	28.9	**40.0**	*Predicted concentration at Receptor above AQS objective.*
KC98	0.5	1.0	42.4	28.9	**40.8**	*Predicted concentration at Receptor above AQS objective.*
KC99	0.5	1.0	38.2	28.9	*37.1*	*Predicted concentration at Receptor within 10% the AQS objective.*
KC100	0.5	1.0	37.7	28.9	*36.6*	*Predicted concentration at Receptor within 10% the AQS objective.*
KC101	0.5	1.0	38.1	28.9	*37.0*	*Predicted concentration at Receptor within 10% the AQS objective.*
KC102	1.0	1.5	38.2	28.9	*37.5*	*Predicted concentration at Receptor within 10% the AQS objective.*

Appendix B Full Monthly Diffusion Tube Results for 2023

Table 233. NO_2 2023 Diffusion Tube Results ($\mu g/m^3$)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO_2 Mean Concentrations ($\mu g/m^3$)												Simple Annual Mean (µg/m3)		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.82) and Annualised	Distance Corrected to Nearest Exposure
KC31	524342	181271	36.8	40.7	30.1	34.3	31.8	29.8	19.7	24.2	31.6	32.2	35.3	27.0	31.1	25.5	-
KC32	524784	179599	24.7	23.6	15.4	15.7	12.5	12.0	10.8	13.8	17.2	18.0	21.9	15.9	16.8	13.8	-
KC33	525355	178841	62.5	54.0	44.4	51.1	39.1	47.2	44.4	44.1	52.1	52.9	54.2	48.8	49.6	**40.6**	39.1
KC34	527164	178103	32.6	34.2	26.6	23.3	21.1	20.0	15.6	18.9	26.1	27.5	30.1	21.8	24.8	20.3	-
KC35	527192	179185	47.2	49.7	38.3	43.9	44.1	41.6	44.4	36.9	45.1	40.8	42.1	37.5	42.6	35.0	-
KC38	525548	178556	45.2	50.6	43.4	43.8	34.8	42.3	41.9	40.8	46.5	53.1	45.4	37.8	43.8	35.9	-
KC39	526317	177022	28.2	28.0	18.1	16.5	16.3	16.1	12.8	15.5	20.7	21.3	24.2	14.7	19.4	15.9	-
KC41	524294	181200	35.4		19.6	23.4	20.5	18.8			21.3	26.7	27.8	19.6	23.7	19.4	-
KC42	525191	180705	30.8	25.8	22.6	20.7	15.9	16.5	15.9	17.2	23.8	26.6	26.8	20.6	21.9	18.0	-
KC43	525950	177487	31.5	26.8	21.5	20.7	18.4	17.9	11.8	15.5	21.5	24.0	27.1	18.5	21.3	17.4	-
KC44	527335	178810	31.7	32.5	22.2	22.8	16.4	15.2	14.5	17.6	18.4	25.4	32.8	21.4	22.6	18.5	-
KC45	525263	178936	36.8	32.5	25.4	30.8	22.0	22.8			27.5	32.6	30.7	21.8	28.3	23.2	-
KC47	524046	181758	28.8	23.3	18.0	20.8	16.2	14.0	12.7	16.5	18.8	23.5	26.4	18.6	19.8	16.2	-
KC47	524046	181758	28.8	23.3	18.0	20.8	16.2	14.0	12.7	16.5	18.8	23.5	26.4	18.6	19.8	16.2	-
KC47	524046	181758	28.8	23.3	18.0	20.8	16.2	14.0	12.7	16.5	18.8	23.5	26.4	18.6	19.8	16.2	-
KC48	528011	178675	44.0	45.8	35.3	39.4	37.8	34.3	33.0	35.5	40.2		39.5	35.0	38.2	31.3	-
KC49	527516	179395	50.2	50.8	51.8	65.7	66.4		41.2		57.9	55.9		37.2	53.0	**43.4**	**42.5**

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO_2 Mean Concentrations (µg/m^3)												Simple Annual Mean (µg/m3)		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.82) and Annualised	Distance Corrected to Nearest Exposure
KC50	527726	177727	33.8	35.7	24.2	17.1	23.5	25.5	23.0	24.7	31.9	29.0	29.8	25.6	27.0	22.1	-
KC51	527690	177800	23.1	23.9	17.9	27.5	14.5	15.2	12.0	15.1	19.4	21.6	24.1		19.5	16.0	-
KC52	527411	178659	40.7	35.6	29.6	32.0	30.6	29.4	24.1	28.0	31.4	33.9	31.5	21.4	30.7	25.1	-
KC53	523792	181189	35.4	34.9	20.8	23.3	19.3	19.3	20.2	21.3	26.4	30.6	31.7	24.2	25.6	21.0	-
KC54	526522	178968	48.1	50.2	41.8	43.1		37.9	31.6	33.6	39.6	40.1	41.5	35.7	40.3	33.0	-
KC54	526522	178968	48.1	50.2	41.8	43.1		37.9	31.6	33.6	39.6	40.1	41.5	35.7	40.3	33.0	-
KC54	526522	178968	48.1	50.2	41.8	43.1		37.9	31.6	33.6	39.6	40.1	41.5	35.7	40.3	33.0	-
KC55	526608	177429	39.5	30.9	25.9	26.4	20.5	19.9	13.6	18.3	24.2	24.7	27.1	22.8	24.5	20.1	-
KC56	527268	178089	42.8	43.7	34.7	39.0	33.6	38.5	33.5	35.0	46.1	43.5	39.2	32.9	38.5	31.6	-
KC57	527889	179145	35.4	35.4	24.7	27.0	23.6	21.4	11.9	23.3	21.6	27.8	34.3	22.2	25.7	21.1	-
KC58	525630	179674	38.0	3.9	32.2	33.0	30.0	27.4	24.0	27.1	34.9	32.7	30.2	27.5	28.4	23.3	-
KC59	525342	179464	48.7	49.4	39.7	39.3	35.7	39.2	33.6	32.4	42.1	42.9	44.5	32.1	40.0	32.7	-
KC60	526231	178425	42.1	38.6	32.1	33.6	28.8	27.9	28.6	27.8	35.8	37.2	37.3	29.9	33.3	27.3	-
KC61	526377	177867	44.0	42.6	32.4	34.1	32.9	32.6	23.8	29.0	32.5	35.7	38.1	27.5	33.8	27.7	-
KC64	524825	178902	32.5	35.6	30.4	32.3	28.6	25.9	22.5	28.0	33.0	34.3	35.1	24.8	30.2	24.8	-
KC65	523899	182113	32.4	28.0	19.1	24.7	17.2	17.4	17.2	21.1	24.0	27.9	24.5	21.2	22.9	18.8	-
KC66	524541	181893	29.7	28.3	20.8	22.2	15.4	15.6	15.3	17.4	21.9	29.4	29.6	19.1	22.1	18.1	-
KC67	524056	182148	37.3	36.3	21.3	22.0	15.9	15.0	19.5	21.1	24.5	28.9	32.5	26.1	25.0	20.5	-
KC68	526863	179060		33.8		28.1					30.2	35.5	32.8		32.1	22.3	-

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO_2 Mean Concentrations (µg/m^3)												Simple Annual Mean (µg/m3)		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.82) and Annualised	Distance Corrected to Nearest Exposure
KC69	523587	180893			19.2					20.4	21.4	26.0	28.0		23.0	19.0	-
KC70	527170	177985	41.6	45.3	32.6	33.9		29.8	33.9	34.2	40.2	40.2		27.9	35.9	29.5	-
KC71	527267	177812	38.8	39.8	29.7	32.5	26.3	23.9	21.3	26.1	32.9	32.7	35.4	25.1	30.4	24.9	-
KC72	527330	177716	39.5	42.8	32.1	35.5	34.0	31.9	28.9	30.7	40.0	36.2	32.8	26.2	34.2	28.0	-
KC73	527227,	177918	37.3	40.8	26.9	27.9	28.2	24.9	18.4	26.9	32.2	31.0		23.8	28.9	23.7	-
KC74	527600	179325	34.2	41.6	28.5	33.2	30.9	25.6	20.6	25.9	25.7	32.3	34.9	28.5	30.2	24.7	-
KC75	527675	179325	40.0	43.0	30.9	37.4	30.7	32.2		29.5	27.6	32.8	36.2	28.3	33.5	27.5	-
KC76	527691	179390	35.0	40.6	31.8	34.0	32.2	29.0	25.0	29.7	30.1	29.3	37.9	28.6	31.9	26.2	-
KC77	524820	181065	28.5	31.7	21.9	21.7	15.7	17.1	14.1	16.4	22.4			20.1	20.9	17.2	-
KC78	524762	181049	35.3	26.8	25.3	24.0	21.0	20.5	16.2	21.3	24.5			19.7	23.5	19.2	-
KC79	527892	178731	33.5	34.0	23.9	22.4	19.7	20.9	18.2	19.8	23.9	27.8	27.8	22.4	24.5	20.1	-
KC80	527917	178755	35.4	32.4	22.1	21.9	19.0	18.2	15.8	19.7	22.4	26.4	30.3	21.0	23.7	19.4	-
KC81	527214	179153	29.5	30.3	22.3	21.1	15.9	16.8	12.5	16.1	20.3	24.6	24.3	21.0	21.2	17.4	-
KC82	524764	179139	46.6	37.7	45.9	40.7	35.1	37.3	34.9	34.9	34.2	39.1	43.0	32.7	38.5	31.6	-
KC83	524919	179229	44.1	45.1	31.6	34.2	32.7	31.6	23.2	29.7	30.6	34.8	22.7	41.3	33.5	27.4	-
KC84	525002	179275	60.9	52.0	35.7	39.9	39.8	42.3	37.0	40.6	44.6	46.5	52.5	27.3	43.3	35.5	-
KC85	525002	179277	45.8	46.9	30.4	33.2						37.1		25.6	36.5	25.5	-
KC86	525165	179355	43.2	50.5	41.2	43.9	38.8	37.3	28.7	34.6	40.0	50.5	43.5	30.8	40.2	33.0	-
KC87	525187	179369	45.7	47.3	35.7	37.6	37.6	37.2	31.1	34.2			40.2	32.2	37.9	31.0	-

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	NO_2 Mean Concentrations (µg/m^3)												Simple Annual Mean (µg/m3)		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.82) and Annualised	Distance Corrected to Nearest Exposure
KC88	525219	179387	52.0	55.2	48.3	49.3	42.8	37.6	30.9	34.2	37.6	47.3	47.4	39.2	43.5	35.6	-
KC89	525291	179432	65.3	60.2		41.9	44.1	40.0	33.6	37.1	44.4	44.7	53.5	32.6	45.2	37.1	36.1
KC90	525317	179448	69.5	57.3	40.7	44.1	40.4	45.0	35.0	35.8	48.2	57.5	46.1	36.2	46.3	38.0	37.7
KC91	525520	179571		62.0	46.2	48.9	47.0	52.0	54.7	45.4	41.4	46.9	58.5	38.2	49.2	**40.3**	38.9
KC92	525520	179573	49.0	50.4	37.8	44.1	43.1	46.7	32.2	37.8	48.0	40.4	41.3	30.4	41.8	34.2	-
KC93	525597	179623	61.0	60.8	50.6	47.8	48.5	50.9	44.4	46.7	54.8	46.7	52.2	35.9	50.0	**41.0**	39.5
KC94	525719	179694	46.7	58.3	45.9	54.5	47.7	52.9	47.1	49.4	53.3	52.0	55.8	41.5	50.4	**41.3**	**40.3**
KC95	525786	179717	61.4	66.8	49.8		50.0	53.7	45.6	46.3	50.1		50.9	45.3	52.0	**42.6**	**40.4**
KC96	525860	179707	50.8	41.9		37.6			42.4	45.1		48.6		41.5	44.0	35.1	-
KC97	525810	179710	56.8	56.1	43.5	49.5	41.8	58.6	47.0	50.3	56.4	49.0		42.0	50.1	**41.0**	**40.0**
KC98	525755	179687	62.1	60.3	49.3	55.1	49.3	61.7		17.9	47.7	63.0	55.2	47.6	51.7	**42.4**	**40.8**
KC99	525644	179639	49.3	51.6		54.5	40.1	46.2	36.7	43.5	50.4	50.2	43.8		46.6	38.2	37.1
KC100	525550	179572	48.5	53.6	45.9	49.3	37.6	43.2	42.1	43.3	54.1	51.3	42.4	39.9	45.9	37.7	36.6
KC101	525523	179552	56.8	50.8	36.4	46.5	42.9	50.1	41.2	43.7	48.9	50.6	49.4	40.4	46.5	38.1	37.0
KC102	525486	179529	61.3	51.3	42.3	48.5	41.0	48.5	44.5	43.0	42.6	48.0	49.5	39.1	46.6	38.2	37.5
KC103	525411	179478	43.8	44.0	31.1	33.7	30.1		59.9	31.0	37.7	38.2	37.6	29.5	37.9	31.0	-
KC104	525327	179434	48.4	45.6	35.7	38.2	30.5	40.0	32.1	33.8	42.0	44.3	42.0	31.7	38.7	31.7	-
KC105	525239	179379	49.6	47.4	36.3	41.7	35.2	36.1	30.2	35.8	42.0	45.1	41.9		40.1	32.9	-
KC106	525197	179353	49.1	41.2	39.6	25.5	32.4	38.9	32.5	34.6	42.2	45.4		36.7	38.0	31.1	-

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			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.82) and Annualised	Distance Corrected to Nearest Exposure
KC107	525132	179314	42.1		34.5	36.3	31.1	38.5	28.2	33.9	26.4		30.4	30.0	33.1	27.2	-
KC108	525034	179273	40.0	42.6	32.3	33.6	29.5	33.1	22.8	29.0	33.8	32.9	33.3	25.1	32.3	26.5	-
KC109	524957	179233	36.5	46.9	34.7	37.6	32.4	38.1	31.3	35.0	38.9	36.7	25.7	36.1	35.8	29.4	-
KC110	524888	179186	42.6	35.5	31.4	36.2	28.1	31.3	26.2	31.4	36.1	36.1	38.4	30.3	33.6	27.6	-
KC111	524797	179132	45.5	39.6	29.8	29.5	25.4	27.1	25.0	27.4	31.3	35.0	35.1	27.9	31.6	25.9	-

☒ **All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table 2323.**

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

☒ **Local bias adjustment factor used.**

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

☒ **RBKC confirms that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**.

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

Appendix C Map(s) of Monitoring Locations and AQMAs

Figure 22: Map of Automatic Monitoring Site(s)

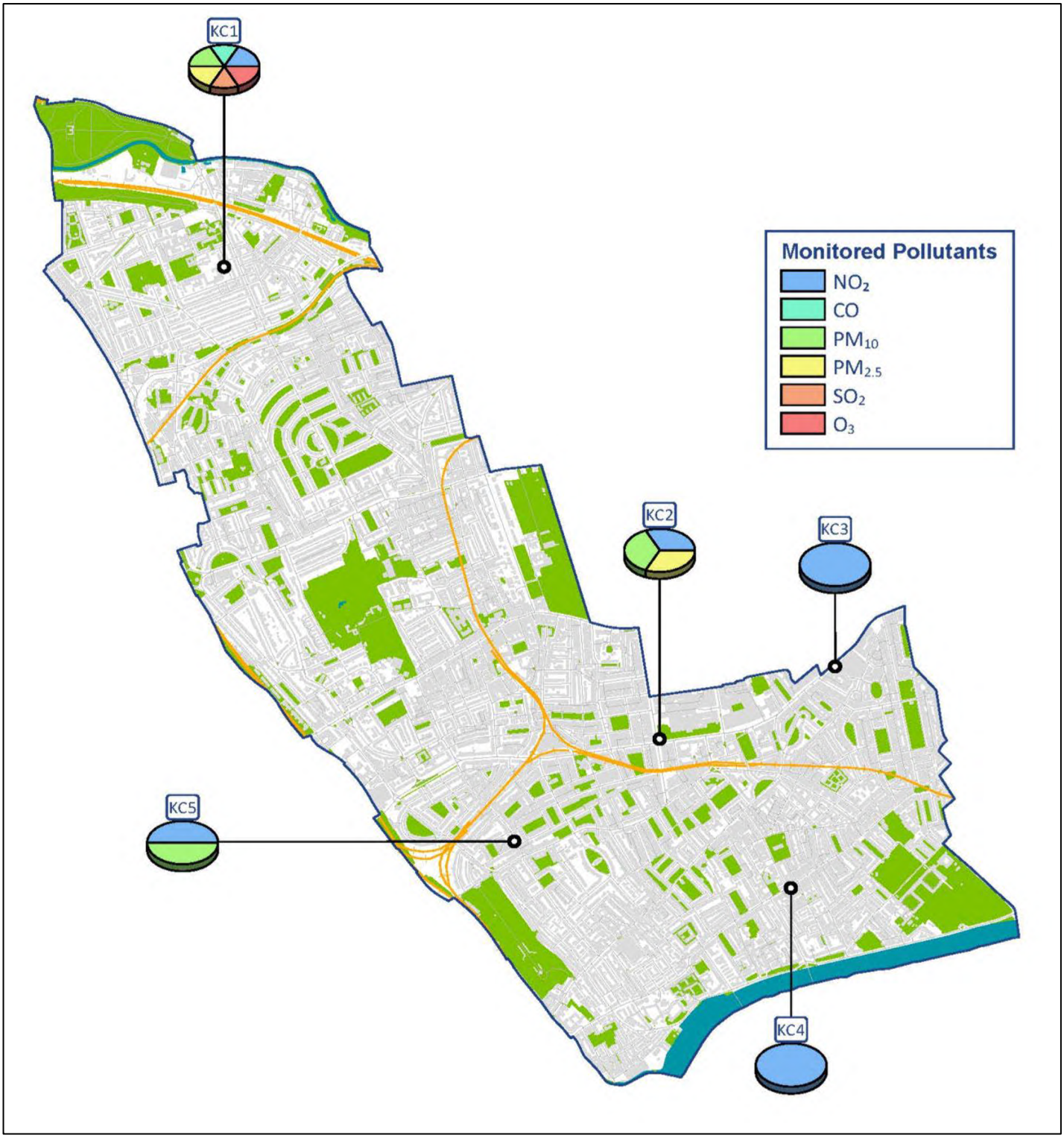

Figure 23: Map of NO_2 Diffusion Tubes

Figure 24: Map of BTEX Tubes

Figure 25: Map of Mobile Sensors

Figure 26: Monitoring within GLA Focus Areas