Royal Borough of Kingston Upon Thames Air Quality Annual Status Report for 2019
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This report provides a detailed overview of air quality in the Royal Borough of Kingston during 2019. It has been produced to meet the requirements of the London Local Air Quality Management statutory process[1].

Contact details

Peter Bond – Air Quality Officer
Regulatory Services
Guildhall 2, High Street, Kingston Upon Thames KT1 1EU
077 1439 6467
Peter.bond@kingston.gov.uk

[1] LLAQM Policy and Technical Guidance 2019 (LLAQM.TG(19)). https://www.london.gov.uk/what-we-do/environment/pollution-and-air-quality/working-boroughs

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Abbreviations

AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AQO	Air Quality Objective
BEB	Buildings Emission Benchmark
CAB	Cleaner Air Borough
CAZ	Central Activity Zone
EV	Electric Vehicle
GLA	Greater London Authority
LAEI	London Atmospheric Emissions Inventory
LAQM	Local Air Quality Management
LLAQM	London Local Air Quality Management
NRMM	Non-Road Mobile Machinery
PM_{10}	Particulate matter less than 10 micron in diameter
$PM_{2.5}$	Particulate matter less than 2.5 micron in diameter
TEB	Transport Emissions Benchmark
TfL	Transport for London

Table A. Summary of National Air Quality Standards and Objectives

Pollutant	**Objective (UK)**	**Averaging Period**	**Date[1]**
Nitrogen dioxide - NO_2	200 μg m^{-3} not to be exceeded more than 18 times a year	1-hour mean	31 Dec 2005
	40 μg m^{-3}	Annual mean	31 Dec 2005
Particles - PM_{10}	50 μg m^{-3} not to be exceeded more than 35 times a year	24-hour mean	31 Dec 2004
	40 μg m^{-3}	Annual mean	31 Dec 2004
Particles - $PM_{2.5}$	25 μg m^{-3}	Annual mean	2020
	Target of 15% reduction in concentration at urban background locations	3 year mean	Between 2010 and 2020
Sulphur Dioxide (SO_2)	266 μg m^{-3} not to be exceeded more than 35 times a year	15 minute mean	31 Dec 2005
	350 μg m^{-3} not to be exceeded more than 24 times a year	1 hour mean	31 Dec 2004
	125 μg m^{-3} mot to be exceeded more than 3 times a year	24 hour mean	31 Dec 2004

Note: [1] by which to be achieved by and maintained thereafter

1. Air Quality Monitoring

1.1 Locations

The Royal Borough of Kingston upon Thames (RBK) operated three automatic monitoring stations in 2019. All were roadside sites measuring NO_2 and PM_{10}.

- KT4-Tolworth Broadway
- KT5- Cromwell Road
- KT6- Kingston Vale

In addition, RBK undertook non-automatic monitoring of nitrogen dioxide at 40 locations in 2019.

Table B. Details of Automatic Monitoring Sites for 2019

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA?	Distance from monitoring site to relevant exposure (m)	Distance to kerb of nearest road (N/A if not applicable) (m)	Inlet height (m)	Pollutants monitored	Monitoring technique
KT4	Tolworth Broadway	519706	165885	Roadside	Y	7	4.2	1.6	NO2, PM10	Chemiluminescent; BAM
KT5	Cromwell Road	518562	169519	Roadside	Y	3	2.7	1.6	NO2, PM10	Chemiluminescent; BAM
KT6	Kingston Vale	521251	172166	Roadside	Y	10	3	1.6	NO2, PM10	Chemiluminescent; BAM

Table C. Details of Non-Automatic Monitoring Sites for 2019

Site ID	Site Name	X (m)	Y (m)	Site Type	In AQMA?	Distance from monitoring site to relevant exposure (m)	Distance to kerb of nearest road (N/A if not applicable) (m)	Inlet height (m)	Pollutants monitored	Tube co-located with an automatic monitor? (Y/N)
1	Guildhall Complex	517951	169029	Kerbside	Y	15	1	2.5	NO2	N
2	17-19 Penrhyn Road	518067	168672	Roadside	Y	3	2	2.5	NO2	N
3	52 Portsmouth Road	517565	167715	Roadside	Y	5	2	2.5	NO2	N

4	88 Brighton Road	517532	167296	Kerbside	Y	4	0.5	2.5	NO2	N
5	Victoria Road/Brighton Road	517765	167143	Kerbside	Y	1	3	2.5	NO2	N
6	St. Mark's Hill/Ewell Road	518424	167604	Roadside	Y	2.5	5	2.5	NO2	N
7	Victoria Road near Surbiton Station	518039	167346	Kerbside	Y	2	0.5	2.5	NO2	N
8	Upper Brighton Road/Langley Road	518336	166655	Roadside	Y	2.5	2	2.5	NO2	N
9	199 Douglas Road/Thornhill Road	518737	165768	Kerbside	Y	3	0.5	2.5	NO2	N
10	Ewell Road near jct Elgar Avenue	519365	166230	Kerbside	Y	4	0.5	2.5	NO2	N
11	53 Elgar Avenue	519664	166505	Kerbside	Y	6	0.5	2.5	NO2	N
12	136 Tolworth Broadway/Service Road	519714	165886	Roadside	Y	3	2	2.5	NO2	N
13	Tolworth Roundabout (Sundial Court)	519808	165873	Kerbside	Y	1.5	1	2.5	NO2	N
14	Kingston Road (near station)	519872	165692	Kerbside	Y	14	0.5	2.5	NO2	N
15	A240 Kingston Road/Old Kingston Road	520192	165264	Kerbside	Y	30	0.5	2.5	NO2	N
16	Hook Road South/Hunters Road	518087	165096	Kerbside	Y	6	1	2.5	NO2	N
17	Hook Road (St Paul's Primary)	518026	164785	Roadside	Y	2.5	2	2.5	NO2	N
18	Hook Centre	517991	164532	Kerbside	Y	4	0.5	2.5	NO2	N
19	Garrison Lane/Reynolds Avenue	518155	163395	Kerbside	Y	5	0.5	2.5	NO2	N
20	353 Malden Rushett Crossroads	517256	161578	Roadside	Y	2	2.5	2.5	NO2	N

21	Opposite 148 Leatherhead Road	517683	163465	Roadside	Y	2	3	2.5	NO2	N
22	Hook Rise North/Tolworth Rec Centre	518601	165270	Roadside	Y	3	1.5	2.5	NO2	N
23	40 Fife Road	518147	169455	Kerbside	Y	4	0.5	2.5	NO2	N
24	14-16 Cromwell Road	518467	169509	Roadside	Y	2	2	2.5	NO2	N
25	Queen Elizabeth Road/London Road	518533	169348	Kerbside	Y	4	0.5	2.5	NO2	N
26	Richmond Road/Kings Road	518199	170056	Roadside	Y	4	1.5	2.5	NO2	N
27	Fire Station, Richmond Road	517800	171423	Roadside	Y	12	1	2.5	NO2	N
28	41 Kingston Hill	519353	169895	Kerbside	Y	3	1	2.5	NO2	N
29	240 Kingston Vale near Robin Hood Lane	521107	172055	Kerbside	Y	6	0.5	2.5	NO2	N
30	Coombe Hill School	520611	169889	Roadside	Y	10	2.5	2.5	NO2	N
31	248 Malden Road near A3	521651	167397	Kerbside	Y	8	0.5	2.5	NO2	N
32	South Lane	521252	166877	Kerbside	Y	7	0.5	2.5	NO2	N
33	96 Burlingston Road	521873	168117	Roadside	Y	3	1.5	2.5	NO2	N
34	66 New Malden High Street	521416	168373	Roadside	Y	7	1.5	2.5	NO2	N
35	113-115 Clarence Avenue	520708	169258	Roadside	Y	4	1	2.5	NO2	N
36	38 Coombe Lane West near A3 junction	520047	169651	Roadside	Y	3	2	2.5	NO2	N
37	51 Elm Road	520764	169525	Kerbside	Y	6	0.5	2.5	NO2	N
38	Kingston Road (Carpet Right)	520503	168388	Roadside	Y	15	2	2.5	NO2	N
39	Cambridge Road/Gloucester Road	519372	169098	Kerbside	Y	1	8	2.5	NO2	N

40	Cambridge Road/Hawks Road	519064	169244	Roadside	Y	1.5	1.5	2.5	NO2	N

1.2 Comparison of Monitoring Results with AQOs

The results presented in table D1 are after adjustments for bias adjustment and "annualisation". Results presented in table D2 are after adjustment for distance to a location of relevant public exposure. Details of adjustment processes are described in Appendix A.

Table D1. Annual Mean NO_2 Ratified and Bias-adjusted Monitoring Results (μg m^{-3})

Site ID	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2019 % [b]	Annual Mean Concentration (μg m^{-3})						
				2013[c]	2014[c]	2015[c]	2016[c]	2017[c]	2018[c]	2019[c]
KT4	Roadside	N/A	98			**48.5(*c)**	**50.7(*c)**	**48.9**	**44**	**41.41**
KT5	Roadside	N/A	99						57(*c)	**57.22**
KT6	Roadside	N/A	99						36	33.18
1	Kerbside	N/A	100	28.9	22.92	25.17	25.03	21.61	21.6	20.64
2	Roadside	N/A	92	**43.8**	**41.95**	**44.48**	**46.48**	**40.27**	**44.03**	39.88
3	Roadside	N/A	100	38.8	32.21	35.09	38.65	34.55	30.72	31.23
4	Kerbside	N/A	100	34.6	27.7	28.56	32.9	26.46	27.55	26.04
5	Kerbside	N/A	100	**40.6**	37.6	**40.59**	**40.4**	35.82	36.93	35.26
6	Roadside	N/A	100	**42.8**	39.2	**40.75**	**42.99**	37.46	36.4	33.97
7	Kerbside	N/A	100	**49**	**43.9**	**49.92**	**48.97**	**44.25**	**43.53**	39.89

Site ID	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2019 % [b]	Annual Mean Concentration (µg m^{-3})						
				2013[c]	2014[c]	2015[c]	2016[c]	2017[c]	2018[c]	2019[c]
8	Roadside	N/A	100	36	**40.7**	**42.44**	**41.96**	38.14	37.62	34.81
9	Kerbside	N/A	100	29.8	22.7	25.67	26.99	24.7	22.15	23.44
10	Kerbside	N/A	100	**52.8**	**47.1**	**48.61**	**48.61**	**45.72**	38.06	37.67
11	Kerbside	N/A	100	32.6	27.5	28.82	30.74	26.71	26.08	24.19
12	Roadside	N/A	100	**64.3**	**58.7**	**67.18**	**55.22**	**51.28**	**43.75**	**42.99**
13	Kerbside	N/A	100	**77.4**	**75.3**	**72.22**	**76.96**	**72.24**	**65.06**	**60.36**
14	Kerbside	N/A	100	**41.8**	**56.3**	**62.4**	**59.73**	**54.34**	**41.55**	38.04
15	Kerbside	N/A	83	28.1	**45.8**	**42.78**	**46.32**	**46.4**	**41**	**48.51**
16	Kerbside	N/A	100	**41.7**	**40.3**	**43.41**	**45.57**	**40.57**	38.45	37.40
17	Roadside	N/A	92	**40.5**	36	38.18	39.66	35.98	36.98	31.87
18	Kerbside	N/A	92	**44.9**	**44.6**	**48.54**	**47.96**	**46.41**	**42.7**	37.52
19	Kerbside	N/A	100	30.8	26.2	27.43	28.89	27.35	29.48	24.73
20	Roadside	N/A	100	**49.3**	32.5	36.89	38.43	36.42	34.94	30.46
21	Roadside	N/A	100	**57.1**	34.7	37.94	38.51	35.07	36.05	31.46
22	Roadside	N/A	100	**42.1**	**50.4**	**52.57**	**50.12**	**54.57**	**44.8**	**44.94**
23	Kerbside	N/A	83	38.8	33.4	35.5	34.73	31.13	39.55	27.68

Site ID	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2019 % [b]	Annual Mean Concentration (µg m^{-3})						
				2013[c]	2014[c]	2015[c]	2016[c]	2017[c]	2018[c]	2019[c]
24	Roadside	N/A	100	**118**	**94**	**93.97**	**90.62**	**84.52**	**75.91**	**79.12**
25	Kerbside	N/A	100	**48.2**	36.3	**46.3**	**45.61**	**43.12**	**40.04**	36.50
26	Roadside	N/A	100	**42.5**	35.9	34.59	38.56	35.54	34.68	33.17
27	Roadside	N/A	92	33.6	32.1	35.07	36.04	31.61	34.84	19.14
28	Kerbside	N/A	92	**52.6**	**54.4**	**57.38**	**53.65**	**50.95**	**49.58**	**52.98**
29	Kerbside	N/A	100	34.1	34.5	39.19	**41.39**	34.73	31.53	29.78
30	Roadside	N/A	100	37.8	37.9	**40.65**	**40.56**	39.03	38.93	38.16
31	Kerbside	N/A	100	36.7	37.8	**45.22**	**45.63**	**41.95**	38.6	38.17
32	Kerbside	N/A	100	29.6	22.5	24.51	27.62	24.98	27.06	20.10
33	Roadside	N/A	100	**45**	35	**41.88**	**42.88**	**40.34**	38.92	39.15
34	Roadside	N/A	100	**42.6**	36	30.95	**40.15**	35.67	37.75	35.31
35	Roadside	N/A	100	35.4	28.4	31.13	32.65	29.93	30.65	29.05
36	Roadside	N/A	100	38.5	34	39.08	36.35	34.97	32.22	32.26
37	Kerbside	N/A	100	30.8	23.3	27.07	28.39	28.31	25.96	24.50
38	Roadside	N/A	92	32	30.5	31.43	38.16	32.94	36.08	37.49
39	Kerbside	N/A	83	**44.3**	**48.4**	**49.84**	**51.9**	**48.29**	**46.75**	**40.79**

Site ID	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2019 % [b]	Annual Mean Concentration (µg m^{-3})						
				2013[c]	2014 [c]	2015[c]	2016 [c]	2017 [c]	2018 [c]	2019 [c]
40	Roadside	N/A	100	**47.5**	**40.9**	**43.79**	**45.63**	**43.56**	**42.3**	37.92

Notes: Exceedance 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.

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

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

[c] Means should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

Table D1 provides NO_2 monitoring results for the 2019 calendar year at three continuous monitoring stations and 40 diffusion tube monitoring sites after bias adjustment and annualisation where necessary. The Tolworth Roundabout (KT4) and Cromwell Road (KT5) AQMSs both show an exceedance of the annual mean AQO. Seven diffusion tubes have shown an exceedance of the same AQO, two of which are above the threshold at which an exceedance of the short-term limit is possible. The most serious exceedance measured by a diffusion tube was found at Cromwell Road, where the worst exceedance at an AQMS was also found. The diffusion tube at Cromwell Road is much closer to the Cromwell Road Bus Station where bus idling is likely to have more of an impact.

This data shows a significant reduction in the number of sites at which the AQO was exceeded when compared with 2018. During 2018 the same to continuous monitoring stations showed exceedances in addition to 13 out of the 40 diffusion tubes.

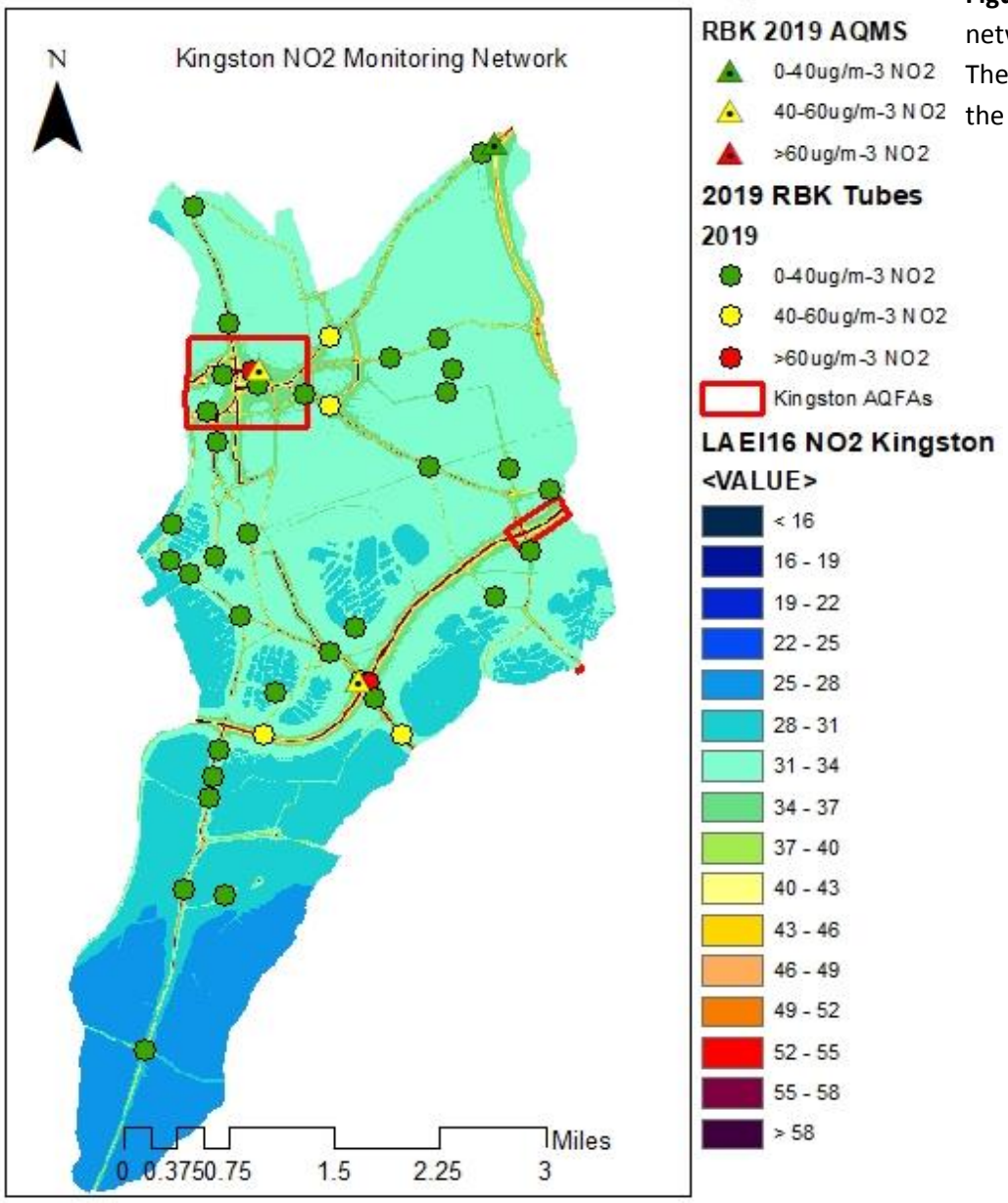

Figure 1: This map shows the nitrogen dioxide monitoring network overlaid on the LAEI16 NO2 concentration raster. The air quality monitoring sites are colour coded to indicate the concentration of NO_2 at a given site for 2019.

Table D2. Calculation of NO_2 at relevant exposure (ug/m^3)

The results presented in the table below are after adjustments for bias adjustment, annualisation and distance to a location of relevant public exposure. To estimate the concentration at the nearest receptor, the procedure specified in LLAQM.TG(16) has been applied to all monitoring locations that record an annual mean concentration above the NO_2 annual mean objective of 40ug/m^3. The calculation has also been applied to monitoring locations that record an annual mean concentration that is within 10% of the NO_2 annual mean objective (i.e. above 36ug/m^3), to account for the inherent uncertainty in diffusion tube monitoring data.

Site ID	Site Name	X (m)	Y (m)	Site Type	Distance to kerb of nearest road (N/A if not applicable) (m)	Distance from kerb to relevant exposure (m)	Annual mean NO_2 2019 (ug/m^3)	Background NO_2 (ug/m^3)	NO_2 at relevant exposure (ug/m^3)
KT4	Tolworth Broadway	519706	165885	Roadside	4.2	11.2	**41.41**	23.10	36.3
KT5	Cromwell Road	518562	169519	Roadside	2.7	5.7	**57.22**	23.60	**50.9**
2	17-19 Penrhyn Road	518067	168672	Roadside	2	5	39.88	18.98	36.20
7	Victoria Road near Surbiton Station	518039	167346	Kerbside	0.5	2.5	39.89	19.45	34.50
10	Ewell Road near jct Elgar Avenue	519365	166230	Kerbside	0.5	4.5	37.67	20.63	29.70
12	136 Tolworth Broadway/Service Road	519714	165886	Roadside	2	5	**42.99**	23.12	36.90
13	Tolworth Roundabout (Sundial Court)	519808	165873	Kerbside	1	2.5	**60.36**	23.12	**53.60**
14	Kingston Road (near station)	519872	165692	Kerbside	0.5	14.5	38.04	18.49	26.60
15	A240 Kingston Road/Old Kingston Road	520192	165264	Kerbside	0.5	30.5	**48.51**	22.68	26.90
16	Hook Road South/Hunters Road	518087	165096	Kerbside	1	7	37.40	17.59	28.60
18	Hook Centre	517991	164532	Kerbside	0.5	4.5	37.52	15.01	30.10
22	Hook Rise North/Tolworth Rec Centre	518601	165270	Roadside	1.5	4.5	**44.94**	23.62	37.30
24	14-16 Cromwell Road	518467	169509	Roadside	2	4	**79.12**	23.62	**63.00**
25	Queen Elizabeth Road/London Road	518533	169348	Kerbside	0.5	4.5	36.50	20.13	30.60
28	41 Kingston Hill	519353	169895	Kerbside	1	4	**52.98**	23.21	39.70
30	Coombe Hill School	520611	169889	Roadside	2.5	12.5	38.16	21.36	30.30

31	248 Malden Road near A3	521651	167397	Kerbside	0.5	8.5	38.17	21.36	28.60
33	96 Burlington Road	521873	168117	Roadside	1.5	4.5	39.15	19.26	32.10
38	Kingston Road (Carpet Right)	520503	168388	Roadside	2	17	37.49	20.15	26.80
39	Cambridge Road/Gloucester Road	519372	169098	Kerbside	8	9	**40.79**	20.13	**42.50**
40	Cambridge Road/Hawks Road	519064	169244	Roadside	1.5	3	37.92	19.26	36.30

The calculations have been carried out in accordance with LLAQM Technical Guidance in order to provide information on the concentrations at which relevant exposure occurs. The data shows that there are still four exceedances of the annual mean objective at areas of relevant exposure and these are primarily at locations adjacent to busy roads in and around Kingston town centre and Tolworth. These sites have been identified in the previous ASR. The most serious exceedance occurred at the Cromwell Road diffusion tube (24) where the concentration of NO_2 exceeded the threshold at which an exceedance of the short-term exposure limit is possible.

Table E. NO_2 Automatic Monitor Results: Comparison with 1-hour Mean Objective

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2019 % [b]	Number of Hourly Means > 200 µg m^{-3}						
			2013[c]	2014[c]	2015[c]	2016[c]	2017[c]	2018[c]	2019[c]
KT4 Tolworth Broadway	N/A	98	N/A	N/A	0	5	8	0	0
KT5 Cromwell Road	N/A	99	N/A	N/A	N/A	N/A	N/A	1	5
KT6 Kingston Vale	N/A	99	N/A	N/A	N/A	N/A	N/A	0	0

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

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

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

[c] Means should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

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

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2019 % [b]	Annual Mean Concentration (µg m^{-3})						
			2013[c]	2014[c]	2015[c]	2016[c]	2017[c]	2018[c]	2019[c]
KT4 Tolworth Broadway	N/A	96	N/A	N/A	20	24	23	23	22
KT5 Cromwell Road	N/A	99	N/A	N/A	N/A	N/A	N/A	30	26
KT6 Kingston Vale	N/A	99	N/A	N/A	N/A	N/A	N/A	22	20

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

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

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

[c] Means should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

Table G. PM_{10} Automatic Monitor Results: Comparison with 24-Hour Mean Objective

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2019 % [b]	Number of Daily Means > 50 µg m^{-3}						
			2013[c]	2014[c]	2015[c]	2016[c]	2017[c]	2018[c]	2019[c]
KT4 Tolworth Broadway	N/A	96	N/A	N/A	1	9	6	2	7
KT5 Cromwell Road	N/A	99	N/A	N/A	N/A	N/A	N/A	15 (50)	15

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2019 % [b]	Number of Daily Means > 50 µg m^{-3}						
			2013[c]	2014[c]	2015[c]	2016[c]	2017[c]	2018[c]	2019[c]
KT6 Kingston Vale	N/A	99	N/A	N/A	N/A	N/A	N/A	2 (35)	4

Notes: Exceedance of the PM_{10} short term AQO of 50 µg m^{-3} over the permitted 35 days per year or where the 90.4th percentile exceeds 50 µg m^{-3} are shown in **bold**.
Where the period of valid data is less than 85% of a full year, the 90.4th percentile is shown in brackets after the number of exceedances.
[a] data capture for the monitoring period, in cases where monitoring was only carried out for part of the year
[b] data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%)
[c] Means should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%

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

N/A

Table I. SO_2 Automatic Monitor Results: Comparison with Objectives

N/A

2. Action to Improve Air Quality

2.1 Air Quality Action Plan Progress

Table J provides a brief summary of the Royal Borough of Kingston's progress against the Air Quality Action Plan, showing progress made this year. New projects which commenced in 2019 are shown at the bottom of the table.

Table J. Delivery of Air Quality Action Plan Measures

Measure	Action	Progress • Emissions/Concentration data • Benefits • Negative impacts / Complaints	Further information
Bus priority measures	The Council will review those bus routes for which it is responsible to identify opportunities to implement bus priority measures, with priority given to those routes that suffer from excessive delays.	No update provided	The COVID-19 pandemic has put certain Council departments under additional pressure which has meant that some were unable to provide updates for this report.
Low emission buses and taxis	The Council will work with partners including TfL and London Mayor's Office to lobby for the introduction of low emission vehicles and feul in hotspots of poorest air quality, including Cromwell Road.	No update provided	The COVID-19 pandemic has put certain Council departments under additional pressure which has meant that some were unable to provide updates for this report.
Support and encourage public transport use	Work with TfL and other bus/rail operators to identify opportunities and secure improvements to bus/rail services.	No update provided	The COVID-19 pandemic has put certain Council departments under additional pressure which has meant that some were unable to provide updates for this report.
Kingston one-way system	Review the design of the one-way system around Kingston Town Centre and/or introduce a lower speed limit and retime the traffic signals	No update provided	The COVID-19 pandemic has put certain Council departments under additional pressure which has meant that some were unable to provide updates for this report.

London LEZ	Discuss with TfL the extension of the Low Emissions Zone to cover more/all of Kingston	The London Low Emission Zone covers most, but not all, of the borough. Officers have provided responses to TfL consultations on the Ultra-Low Emission Zone raising the issue that the borough is not completely covered by the existing LEZ. A bid for funding was submitted to DEFRA at the end of 2017 to allow an assessment of the air quality impacts on the areas of the borough outside of the LEZ and to carry out a study into ways of implementing a self-funding low emission zone within one area. However, the bid was unsuccessful. Work has begun on researching the feasibility of a ULEZ for Kingston Town Centre, to be implemented and managed by the Council. An outline business case has been created which will be used to request funding for a feasibility study.	
Road works	Investigate options to further reduce the impact of road works on traffic flow, including working with utilities companies to coordinate street works, use of variable message signes, advanced notice, CCTV at road works to monitor the layout of works, traffic queues and signal timings. Introduce a scheme to issue fixed penalty notices where roadworks overrun	No update provided	The COVID-19 pandemic has put certain Council departments under additional pressure which has meant that some were unable to provide updates for this report.

	timescales detailed in Permit to Work.		
Air quality in Council policies	Ensure that relevant Council policies such as vehicle hire, parking and planning give consideration to air quality and that appropriate measures are included.	Agreed that, from April 2017, all committee reports will include details of the Air Quality implications of any proposed policy changes and the means by which negative impacts will be mitigated. It has been agreed that from the start of 2020, the Air Quality Officer will be invited to meetings regarding the renewal of the Council's Parking Strategy. This is with the aim of using this opportunity to put in place measures to control emissions from driving.	
Low emission vehicles	Promote the benefits of low emission vehicles to residents and businesses; increase awareness of available infrastructure, in particular existing EV charging infrastructure.	The Council webpage links to www.zapmap.co.uk the interactive map to find existing charging points. Contract with Source London was varried in 2019 to allow growth of the Source London fast charger network with installations planned for late May 2020. Secured RBK capital to match fund GULCS funding for lamp column charging to be delivered in 2020. Worked with TfL to plan installation of 4 more rapid chargers in 2020.	
Engine idling	Deter engine idling while waiting with initial focus on signage at schools and stations.	In 2020, 10 anti-idling banners have been purchased for use at schools. As part of the pan-London Anti-Idling project, two schools have so far been visited. There are now approximately 52 no idling signs	

		in RBK. Capital funding has been secured to further promote this work.	
Car clubs	Promote car clubs	Zipcar remains the borough provider with 11 bays. A new corporate car club contract was being developed prior to Covid 19 lockdown. It has been agreed that a 12 month contract will resume after lockdown.	
Freight improvements	Improve freight access, loading, and servicing arrangements at key locations in the borough by: (i) Road space allocation to reduce congestion during vehicles loading/unloading; (ii) Promotion of delivery and servicing plans to businesses; (iii) Develop a signage strategy to improve navigation in areas of the borough	No update provided	The COVID-19 pandemic has put certain Council departments under additional pressure which has meant that some were unable to provide updates for this report.
Cycle parking	Improve cycle parking provision throughout the Borough: (i) By working with train and bus operators to provide fully secure and sheltered cycle parking at major public transportg hubs; (ii) Provide cycle parking at all Council operated buildings; (iii) Encourage and support other public organisations to provide secure cycle parking, including schooles, Kingston University, Kingston College and Kingston	Local Authority Estates hangars We purchased 10 hangars for local authority estates in March 2019 and six of these have so far been installed. Of the 4 outstanding; 3 are because housing has not yet installed concrete bases (because they refuse to allocate a car parking space!) and the other is a late swap of locations by housing followed by delay on the supplier's part to get it done. Six others were installed between May 2018-October 2018. So in total 12 have been installed during the current administration.	

	Hospital; (iv) Encourate and support workplace, residential, leisure, retail and other sites to providde cycle parking facilities; (v) Ensure that the council's own policies require new developments in the Borough to provide secure cycle parking in accordance with minimum standards set out in the London Plan, e.g. student accomodation 1 space per 2 beds.	We now have a total of 56 hangars on local authority estates. On-street residential hangars Using TfL CPIP funding we have purchased 20 cycle hangars for on-street locations and intend to situate them in locations of high density housing (private flats & terraces). Once installed, residents will be able to rent a space to store their cycle securely. In terms of general cycle parking, taking into account Go works and other highways works we are increasing the number of Sheffield stands by approx 40 per year so 80 over the administration so far. We await completion of the hub at Kingston Station and in 2019 we secured RBK capital funding for improvements to cycle storage at Tolworth and Berrylands stations.	
Support and encourage cycling	Implement other measures to support and encourage cycling; including dled commuter rides, Dr Bike sessions, and bicycle maintenance cources	Dr Bike and Bike Maintenance Courses continued during 2019 with lead rides organised for car free day in September 2019. In 2019 we assesed oportunities to increase active travel using TfL Healthy Streets Officer money. This resulted in us entering into contract in March 2020 with Peddle My Wheels, providing hire purchase bikes particularly for the low	

		paid, focusing on key workers at first from April 2020. In 2018/19 the council delivered cycle training to 323 adults and 3,470 children (surpassing Transport for London (TfL) targets of 300 adults and 1,400 children). A total of 74 cycle events were held across the borough, at which 556 bikes were checked by Dr Bike. 51 bike loans were made to Kingston residents for 1 month under the Go Cycle Bike Loan scheme. During 2019 the sustainable transport team made use of a Go Cycle parklet, a mobile asset which occupies a parking space and was used across the borough to promote conversations around air quality and sustainable travel. Addiditional value was achieved by using the asset at Let's Talk engagement and consultation events, Canbury Gardens for a space evaluation exercise, and at the Lovelace school street. The contract for using this asset has now expired and the asset is in RBK storage. It can be used in future by Sustainable Transport officers with training on assembly.	
Cycle network	Review the cycle network to address obstacles to continued cycle movement and increase the number of cycle routes that are segregated from motor vehicles	RBK's Cycle Network Plan forms part of LIP3. Go Cycle routes completed in 2019 include C31 New Malden to Raynes Park link.	

Cycle hire	Expand existing cycle-hire schemes	Throughout 2019 we were in conversation with potential suppliers and TfL and London Councils regarding the possibility of introducing dockless ebike hire into the borough. We now expect a trial to go live in Kingston in summer 2020 having learnt lessons from a trial we ran in Sutton with Lime in 2019. Kingston has a Brompton bike hire dock outside Surbiton station. In 2018/19, 843 bikes were hired. In 2019/20, to September, 464 bikes were hired.	
Walking network	The Council will prioritise improvements to the strategic walking network and will give high priority to improving pedestrian connectivity across barriers such as major junctions, busy roads, rivers, and rail lines	Go-Cycle programme delivered C31 link between New Malden and Raynes Park. Opening in July 2019 it is an enormously popular off-road walking and cycling route. Reimagining Kingston Town Centre project developed plans for improving and promoting walking routes to and across the town centre. This work is due to be built upon by Arup in 2020. Street Tag is hoped to deliver the same benefits envisaged for Beat the Streets last year.	
School travel plans	Work with schools to better implement their travel plans to promote road safety and sustainable travel, prioritising schools for support that have the most significant transport problems and the greatest potential for mode shift.	The focus for last years (18-19 school year) travel plans was to work more closely with the schools to progress their travel plans. We achieved 6 gold schools and 3 silver schools. This means we had a drop in accreditation numbers, but success in our aim to increase the level of accreditation. We have been working with Lovelace Primary School on the first School Street in the borough and this has	

		been running since October 2019. This scheme aims to reduce congestion outside the school gates. Further schemes are being planned and we are currently working with 2 other schools.	
Workplace travel plans	Require businesses allocated parking permits to develop travel plans to encourage employees to use sustainable travel modes	Lack of response from businesses for Workplace Scorecard. Not deemed high enough on priorities for workplaces. Larger employers such as hospitals continue to consider further cycle parking and implement cycling facilities.	
Using planning condition to mitigate poor air quality	Conditions will be imposed on any major new development within the AQMA to mitigate the impact of poor air quality	Quantitative assessment of the number of AQ conditions applied to planning applications during 2019 can be found in Table K of this report. New guidance has been writen for our website regarding controlling emissions through the planning approval process. This will be published in line with the Council's full web-revamp - on hold at the time of writing due to the pandemic. This guidance clarifies to developers which sites will be reviewed for air quality, it stipulates compliance with the SPGs for Control of Dust and Emissions during Construction and Demolition, and Sustainable Design and Construction Practice, it recommends the structure of a standard air quality assessment and recommends compliance with relevant IAQM guidance on assessment of risk.	
Increase tree planting and	Increase planting of trees and plant species by roadsides to	During winter of 2019/20 a further 891 semi mature trees were planted on	

use of green barriers	createto create green barriers. Work with planners to change policy to require green initiatives such as green roofs, walls, trees and pocket parks.	highways verges and within parks to remain well on track to hit the target of 2000 new tree's to be planted by 2022. In addition 1000 small whips were planted by community groups and schools in public places.	
Reduce emissions from buildings' energy use	Reduce emissions from buildings through implementation of improved energy efficiency and technological solutions during renovations	The Development Management team continue to secure improvements by the imposition of suitable conditions and the collection of monies to support air quality initiatives, as and when appropriate. See table K for further details.	
Partnership working with Public Health	Work jointly with Public Health on relevant campaigns	Officers from the Pollution Control team continue to collaborate with those from Public Health on matters of air quality. In 2019 the two collaborated RBK's Citizens' Assembly on Air Quality, during which 44 demographically representative residents were presented with academic-level information on the issues involved over two weekends. They were then asked to create a series of recommendations of how air quality in the borough might be improved. These recommendations are currently being worked into actions that will form part of the basis of our new air quality action plan.	
Partnership working with neighbouring boroughs	Work with neighbouring boroughs (Sutton, Richmond, Merton, Wandsworth, Croydon) to bid for funds and deliver	RBK shares an Environment Service and Highways and Transport with LB Sutton. We actively participate in the South London Cluster. RBK is participating in the pan-London NRMM and Anti-idling	

	coordinated schemes over a wider area	projects, funded by the MAQF. We are part of the consortium that operates the LoveCleanAir website and are a member of the AirTEXT consortium. In 2019 we submitted a BLEN bid as part of the extension of the MAQF3. This was a joint bit with Sutton that was unfortunately unsuccessful. Additionally, Kingston has worked jointly with neighbouring boroughs including Richmond in submitting bids for Liveable Neighbourhoods.	
Air quality monitoring and awareness raising	Monitor air quality and provide information to residents to raise awarenes and alert them on days when air pollution is higher. Offer support to schools on air quality promotions	RBK has continued to maintain and operate our extensive network of continuous and passive air quality monitors. This consists of 3 monitoring stations measuring NO2 and PM10, and 40 diffusion tubes. In addition to our network, in 2019 we added two hyperlocal air quality studies around specific highways improvements - 9 diffusion tubes to monitor the effect of cycle lane construction in moving traffic further from road-adjacent properties, and 7 low-cost monitors to monitor the impact of speed limit reductions to 20mph on all local roads. In respect of schools, the Coucnil is participating in the pan-London anti-idling project. We are providing schools with leaflets and a number of banners to promote sustainable travel behaviours.	

Citizens' Assembly on Air Quality	Host London's first Citizens' Assembly on Air Quality	In recognition of the importance of stakeholder engagement and participatory democracy in matters of local environmental protection, the Royal Borough of Kingston held London's first Citizens' Assembly on Air Quality during the months of November and December of 2019. Letters of invitation were sent to a large number of randomly selected residents. A demographically representative subsection of respondents was chosen to form the Assembly. These individuals were then presented with detailed information on the subject of air quality over the course of two consecutive weekends. Information was checked for accuracy and bias by a panel of experts in the field. The Assembly was then asked to provide a list of recommendations and specific actions to answer the question, "How can we collectively improve air quality in the Royal Borough of Kingston Upon Thames?"	The full report is available on the Council's website at: https://www.kingston.gov.uk/info/200284/tackling_the_climate_emergency_1635/news_and_events/2

3. Planning Update and Other New Sources of Emissions

Table K. Planning requirements met by planning applications in the Royal Borough of Kingston in 2019

Condition	Number
Number of planning applications where an air quality impact assessment was reviewed for air quality impacts	8
Number of planning applications required to monitor for construction dust	9
Number of CHPs/Biomass boilers refused on air quality grounds	0
Number of CHPs/Biomass boilers subject to GLA emissions limits and/or other restrictions to reduce emissions	0
Number of developments required to install Ultra-Low NOx boilers	4
Number of developments where an AQ Neutral building and/or transport assessments undertaken	7
Number of developments where the AQ Neutral building and/or transport assessments not meeting the benchmark and so required to include additional mitigation	2
Number of planning applications with S106 agreements including other requirements to improve air quality	2
Number of planning applications with CIL payments that include a contribution to improve air quality	0
NRMM: Central Activity Zone and Canary Wharf Number of conditions related to NRMM included. Number of developments registered and compliant. 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.	N/A
NRMM: Greater London (excluding Central Activity Zone and Canary Wharf) Number of conditions related to NRMM included. Number of developments registered and compliant. 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 IIIA of the Directive and/or exemptions to the policy. *Number not in brackets – Applications reviewed in 2019* *Number in brackets – Decision notices in 2019*	9 conditions recommended 4 confirmed compliant upon inspection 2 confirmed non-compliant upon inspection

The Royal Borough of Kingston Planning Department consults the Environmental Protection Team on all major planning applications as well as some non-major applications that are likely to be of interest. Applications are reviewed by officers within the team in respect of contaminated land, noise and air quality. Typically, one officer coordinates the team's response and records data such as the air quality conditions that were recommended.

The enforcement of air quality conditions is largely the responsibility of the Planning Enforcement Team unless environmental nuisance issues arise. However, NRMM enforcement is carried out by the LB Merton-led pan-London NRMM enforcement project, funded by the Mayor's Air Quality Fund.

3.1 New or significantly changed industrial or other sources

For 2019 no new sources have been identified.

Appendix A Details of Monitoring Site QA/QC

A.1 Automatic Monitoring Sites

The Council's monitoring stations form part of the London Air Quality Network and QA/QC standards are delivered accordingly. These are considered close, if not equivalent to, the AURN standards. QA/QC is carried out by contractors

PM_{10} Monitoring Adjustment

The monitoring stations in the Royal Borough of Kingston are part of the London Air Quality Network and the data is collected and managed (including ratification) by ERG (Environmental Research Group).

A.2 Diffusion Tube Quality Assurance / Quality Control

The diffusion tubes used by the Royal Borough of Kingston are supplied and analysed by Gradko utilising the 20% triethanolamine (TEA) in water preparation method. A bias adjustment factor of 0.93 for the year 2019 has been derived from the nation bias adjustment calculator dated March 2020.

Royal Borough of Kingston did not conduct any co-location studies in 2018, so it was not possible to calculate a local adjustment factor. As a result, the national adjustment factor of 0.93 is applied to diffusion tube monitoring results in this report.

National Diffusion Tube Bias Adjustment Factor Spreadsheet

Spreadsheet Version Number: 03/20

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

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

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

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

This spreadsheet will be updated at the end of June 2020

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@uk.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	20% TEA in water	2019	R	Borough Council of King's Lynn and West Nc	9	27	21	28.4%	G	**0.78**
Gradko	20% TEA in water	2019	R	Lancaster City Council	13	40	34	16.4%	G	**0.86**
Gradko	20% TEA in water	2019	R	Lancaster City Council	12	31	31	1.6%	G	**0.98**
Gradko	20% TEA in Water	2019	R	Monmouthshire County Council	12	39	39	1.3%	G	**0.99**
Gradko	20% TEA in water	2019	UC	Belfast City Council	10	29	24	21.8%	G	**0.82**
Gradko	20% TEA in water	2019	R	Dudley MBC	12	33	32	4.5%	G	**0.96**
Gradko	20% TEA in water	2019	R	Dudley MBC	12	44	42	3.9%	G	**0.96**
Gradko	20% TEA in water	2019	UB	Dudley MBC	12	23	19	19.8%	G	**0.83**
Gradko	20% TEA in water	2019	UB	Eastleigh Borough Council	12	24	26	-7.1%	G	**1.08**
Gradko	20% TEA in water	2019	R	Gateshead Council	12	34	27	23.7%	P	**0.81**
Gradko	20% TEA in water	2019	R	Gateshead Council	11	40	44	-10.5%	G	**1.12**
Gradko	20% TEA in water	2019	R	Gateshead Council	10	32	34	-7.2%	G	**1.08**
Gradko	20% TEA in water	2019	R	Gateshead Council	12	30	25	18.1%	G	**0.85**
Gradko	20% TEA in water	2019	R	Thurrock Borough Council	12	29	24	21.6%	G	**0.82**
Gradko	20% TEA in water	2019	R	Brighton & Hove City Council	11	45	50	-9.3%	G	**1.10**
Gradko	20% TEA in water	2019		**Overall Factor[3] (27 studies)**				**Use**		**0.93**

Gradko International Ltd is a UKAS accredited laboratory and participates in laboratory performance and proficiency testing schemes. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO2 concentrations reported are of a high calibre. The lab follows the procedures set out in the Harmonisation Practical Guidance. Gradko previously participated in the Workplace Analysis Scheme for Proficiency (WASP) for NO2 diffusion tube analysis Page 38 and the Annual Field Inter Comparison Exercise. In April 2014, a new scheme, AIR PT13, was introduced. This is an independent analytical proficiency-testing (PT) scheme, operated by LGC Standards and supported by the Health and Safety Laboratory (HSL). AIR PT combines two long running PT schemes: LGC Standards STACKS PT scheme and HSL WASP PT scheme.

Laboratory performance in AIR PT is also assessed by the National Physical Laboratory (NPL) alongside laboratory data from the monthly NPL Field Intercomparison Exercise carried out at Marylebone Road, central London. A laboratory is assessed and given a 'z' score. A score of 2 or less indicates satisfactory laboratory performance.

Gradko International Ltd's performance for 2019 for 100% of samples submitted by Gradko were deemed satisfactory.

The laboratory has also achieved a "good" precision result for 2019. Tubes are considered to have "good" precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more periods during the year is less than 20%, and the average CV of all monitoring periods is less than 10%.

A.3 Adjustments to the Ratified Monitoring Data

Short-term to Long-term Data Adjustment

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

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

Site	Site Type	Annual Mean (µg/m^3)	Period Mean (µg/m^3)	Ratio
N/A	N/A	N/A	N/A	N/A
			Average	N/A

Appendix B Full Monthly Diffusion Tube Results for 2019

Table M. NO_2 Diffusion Tube Results

Site ID	Site Name	Valid data capture for monitoring period % [a]	Valid data capture 2019 % [b]	Annual Mean NO_2													
				Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual mean – raw data [c]	Annual mean – bias adjusted [c]
1	Guildhall Complex	100	100	34.09	30.28	21.96	26.86	17.31	17.67	14.57	13.7	18.05	18.9	33.21	19.67	22.19	20.64
2	17-19 Penrhyn Road	92	92	62.5	53.51	39.61	35.77		38.88	40.49	38.71	37.82	35.67	51.3	37.39	42.88	39.88
3	52 Portsmouth Road	100	100	51.09	38.56	32.79	33.25	28.02	30.53	27.27	24.4	31.59	28.8	44.65	32.02	33.58	31.23
4	88 Brighton Road	100	100	42.99	30.76	27.25	38.51	23.34	24.08	20.42	17.78	25.53	14.8	44.47	26.02	28.00	26.04
5	Victoria Road/Brighton Road	100	100	54.7	37.27	37.51	50.58	36.66	36.03	32.61	25.8	31.85	27.99	52.02	31.95	37.91	35.26
6	St. Mark's Hill/Ewell Road	100	100	53.02	44.01	35.71	40.52	32.05	35.5	31.78	18.2	34.26	31.47	46.68	35.16	36.53	33.97
7	Victoria Road near Surbiton Station	100	100	59.19	57.18	45.77	45.78	42.04	41.19	37.64	30.37	35.62	32.28	50.77	36.82	42.89	39.89
8	Upper Brighton Road/Langley Road	100	100	51.31	42.72	35	34.83	37.68	37.01	36.13	33.87	37.2	31.02	44.85	27.56	37.43	34.81
9	199 Douglas Road/Thornhill Road	100	100	39.09	30.76	25.63	27.29	19.53	19.68	18.32	17.39	22.33	25.14	31.91	25.35	25.20	23.44
10	Ewell Road near jct Elgar Avenue	100	100	53.66	48.5	42.2	44.66	37.44	35.78	34.81	29.92	38.17	28.86	57.13	34.98	40.51	37.67
11	53 Elgar Avenue	100	100	40.34	33.55	26.07	28.91	18.97	20.45	17.76	17.01	22.89	22.7	37.09	26.4	26.01	24.19
12	136 Tolworth Broadway/Service Road	100	100	57.78	57.51	45.14	50.22	43.25	46.44	47.19	39.84	36.33	39.08	48.76	43.18	46.23	42.99
13	Tolworth Roundabout (Sundial Court)	100	100	82.79	73.46	65.89	67.2	58.32	65.56	68.95	51.19	60.64	55.52	75.9	53.44	64.91	60.36
14	Kingston Road (near station)	100	100	55.79	42.99	32.21	50.72	35.26	42.09	37.6	26.36	39.51	32.67	62.25	33.34	40.90	38.04

Site ID	Site Name	Valid data capture for monitoring period % [a]	Valid data capture 2019 % [b]	Annual Mean NO_2													
				Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual mean – raw data [c]	Annual mean – bias adjusted [c]
15	A240 Kingston Road/Old Kingston Road	83	83	64.55		55.89	55.25		49.2	46.83	43.52	46.6	42.83	63.45	53.53	52.17	48.51
16	Hook Road South/Hunters Road	100	100	59.27	46.41	35.09	46.33	35.94	36.83	38.33	28.73	36.92	31.39	50.38	36.92	40.21	37.40
17	Hook Road (St Paul's Primary)	92	92		41.74	31.36	30.84	34.04	31.31	34.1	28.78	36.03	27.67	46.04	35.09	34.27	31.87
18	Hook Centre	92	92	64.41		38.91	42.7	36.03	37.05	38.94	30.37	38.2	35.22	45.65	36.25	40.34	37.52
19	Garrison Lane/Reynolds Avenue	100	100	42.04	27.47	27.82	23.31	24.02	23.75	23.25	21.81	26.73	24.65	31.2	23	26.59	24.73
20	353 Malden Rushett Crossroads	100	100	44.33	37.5	31.53	34.82	31.18	30.55	32.27	26.46	32.1	26	41.52	24.8	32.76	30.46
21	Opposite 148 Leatherhead Road	100	100	42.73	40.31	30.07	33.26	31.15	33.46	32.54	29.73	31.41	29.16	42.48	29.65	33.83	31.46
22	Hook Rise North/Tolworth Rec Centre	100	100	72.08	65.88	58.74	36.91	40.78	39.34	45.55	41.33	44.48	36.27	54.35	44.12	48.32	44.94
23	40 Fife Road	83	83		40.19	30.85	36.23	27.22	27.66		20.55	26.5	23.78	36.69	27.99	29.77	27.68
24	14-16 Cromwell Road	100	100	110.75	92.41	91.09	78.44	86.93	77.12	79.01	82.3	77.99	73.72	91.85	79.33	85.08	79.12
25	Queen Elizabeth Road/London Road	100	100	48.67	46.8	38.78	42.96	36.95	38.71	33.33	28.01	38.13	33.75	50.31	34.6	39.25	36.50
26	Richmond Road/Kings Road	100	100	53.74	47.07	32.77	40.35	27.82	31.86	26.71	20.11	33.72	30.06	49.2	34.6	35.67	33.17
27	Fire Station, Richmond Road	92	92	45.76		17.98	17.11	15.37	15.36	13.63	12.02	18.26	18.83	30.92	21.18	20.58	19.14
28	41 Kingston Hill	92	92	72.16	67.47	60.67	50.97	44.97		64.81	41.26	57.92	43.64	67.22	55.61	56.97	52.98
29	240 Kingston Vale near Robin Hood Lane	100	100	40.2	38.71	31.68	36.59	29.63	26.8	25.17	24.72	31.72	29.32	41.75	28.03	32.03	29.78
30	Coombe Hill School	100	100	57.05	48.15	40.58	33.82	36.96	40.2	37.12	33	40.86	37.44	53.19	34.07	41.04	38.16

Site ID	Site Name	Valid data capture for monitoring period % [a]	Valid data capture 2019 % [b]	Annual Mean NO_2													
				Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual mean – raw data [c]	Annual mean – bias adjusted [c]
31	248 Malden Road near A3	100	100	60.59	48.25	38.23	47.2	37.42	36.38	36.36	27.5	39.42	33.39	44.45	43.36	41.05	38.17
32	South Lane	100	100	1.04	29.78	24.74	27.09	19.9	19.59	16.16	17.05	23.27	21.47	35.11	24.1	21.61	20.10
33	96 Burlingston Road	100	100	54.9	46.22	39.66	44.95	36.42	35.79	35.78	31.15	41.49	36.07	59.01	43.67	42.09	39.15
34	66 New Malden High Street	100	100	53.2	45.38	36.62	44.72	32.43	34.83	32.01	25.65	36.34	33.84	42.42	38.23	37.97	35.31
35	113-115 Clarence Avenue	100	100	44.56	39.12	31.55	34.7	22.34	21.4	24.17	23.57	29.45	27.82	49	27.17	31.24	29.05
36	38 Coombe Lane West near A3 junction	100	100	49.66	39.1	36.74	41.34	29.83	14.41	30.47	23.25	34.2	31.83	48.46	37	34.69	32.26
37	51 Elm Road	100	100	37.39	32.34	26.26	26.19	20.47	20.8	19.26	18.88	23.89	23.7	40.89	26	26.34	24.50
38	Kingston Road (Carpet Right)	92	92	43.84		45.09	39.62	42.46	38.8	38.24	29.37	37.14	34.26	57.35	37.23	40.31	37.49
39	Cambridge Road/Gloucester Road	83	83		46.58	48.48	47.29	43.48	45.52		30.84	40.08	38.23	58.48	39.61	43.86	40.79
40	Cambridge Road/Hawks Road	100	100	50.49	49.05	42.98	42.53	37.97	35.51	37.55	36.42	29.09	35.37	49.61	42.74	40.78	37.92

Exceedance of the NO_2 annual mean AQO of 40 µg m^{-3} are shown in **bold**.

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

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

[c] Means should be "annualised" in accordance with LLAQM Technical Guidance, if valid data capture is less than 75%