The Royal Borough of Kingston upon Thames
Air Quality Annual Status Report for 2017

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This report provides a detailed overview of air quality in Royal Borough of Kingston upon Thames during 2017. It has been produced to meet the requirements of the London Local Air Quality Management statutory process[1].

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[1] LLAQM Policy and Technical Guidance 2016 (LLAQM.TG(16)). 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 one automatic monitoring stations in 2017.

  ➢ The site was kerbside site: KT4 Tolworth Broadway, measuring NO_2 and PM_{10};

In addition, RBK undertook non-automatic monitoring at forty locations in 2017.

Table B.   Details of Automatic Monitoring Sites for 2017

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	Road side	Y	7	4.2	1.6	NO_2, PM_{10}	Chemiluminescent; BAM

Table C.   Details of Non-Automatic Monitoring Sites for 2017

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	NO_2	N
2	17-19 Penrhyn Road	518067	168672	Roadside	Y	3	2	2.5	NO_2	N

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)
3	52 Portsmouth Road	517565	167715	Roadside	Y	5	2	2.5	NO_2	N
4	88 Brighton Road	517532	167296	Kerbside	Y	4	0.5	2.5	NO_2	N
5	Victoria Rd/Brighton Rd	517765	167143	Kerbside	Y	1	3	2.5	NO_2	N
6	St. Mark's Hill/Ewell Rd	518424	167604	Roadside	Y	2.5	5	2.5	NO_2	N
7	Victoria Road near Surbiton Station	518039	167346	Kerbside	Y	2	0.5	2.5	NO_2	N
8	Upper Brighton Rd/Langley Rd	518336	166655	Roadside	Y	2.5	2	2.5	NO_2	N
9	199 Douglas Road / Thornhill Road	518737	165768	Kerbside	Y	3	0.5	2.5	NO_2	N
10	Ewell Road near jct Elgar Avenue	519365	166230	Kerbside	Y	4	0.5	2.5	NO_2	N
11	53 Elgar Avenue	519664	166505	Kerbside	Y	6	0.5	2.5	NO_2	N

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)
12	136 Tolworth Broadway / Service Road	519714	165886	Roadside	Y	3	2	2.5	NO_2	N
13	Tolworth Roundabout (Sundial Court)	519808	165873	Kerbside	Y	1.5	1	2.5	NO_2	N
14	Kingston Rd (near station)	519872	165692	Kerbside	Y	14	0.5	2.5	NO_2	N
15	A240 Kingston Rd/Old Kingston Rd	520192	165264	Kerbside	Y	30	0.5	2.5	NO_2	N
16	Hook Road South / Hunters Road	518087	165096	Kerbside	Y	6	1	2.5	NO_2	N
17	Hook Rd (St Paul's Primary)	518026	164785	Roadside	Y	2.5	2	2.5	NO_2	N
18	Hook Centre	517991	164532	Kerbside	Y	4	0.5	2.5	NO_2	N
19	Garrison Lane / Reynolds Ave	518155	163395	Kerbside	Y	5	0.5	2.5	NO_2	N

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)
20	353 Malden Rushett Crossroads	517256	161578	Roadside	Y	2	2.5	2.5	NO_2	N
21	Opposite 148 Leatherhead Road	517683	163465	Roadside	Y	2	3	2.5	NO_2	N
22	Hook Rise North / Tolworth Rec Centre	518601	165270	Roadside	Y	3	1.5	2.5	NO_2	N
23	40 Fife Road	518147	169455	Kerbside	Y	4	0.5	2.5	NO_2	N
24	14-16 Cromwell Road	518467	169509	Roadside	Y	2	2	2.5	NO_2	N
25	Queen Elizabeth Rd/London Rd	518533	169348	Kerbside	Y	4	0.5	2.5	NO_2	N
26	Richmond Road / Kings Road	518199	170056	Roadside	Y	4	1.5	2.5	NO_2	N
27	Fire Station, Richmond Road	517800	171423	Roadside	Y	12	1	2.5	NO_2	N
28	41 Kingston Hill	519353	169895	Kerbside	Y	3	1	2.5	NO_2	N

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)
29	240 Kingston Vale near Robin Hood Lane	521107	172055	Kerbside	Y	6	0.5	2.5	NO_2	N
30	Coombe Hill School	520611	169889	Roadside	Y	10	2.5	2.5	NO_2	N
31	248 Malden Road near A3	521651	167397	Kerbside	Y	8	0.5	2.5	NO_2	N
32	South Lane	521252	166877	Kerbside	Y	7	0.5	2.5	NO_2	N
33	96 Burlington Road	521873	168117	Roadside	Y	3	1.5	2.5	NO_2	N
34	66 New Malden High St	521416	168373	Roadside	Y	7	1.5	2.5	NO_2	N
35	113-115 Clarence Avenue	520708	169258	Roadside	Y	4	1.0	2.5	NO_2	N
36	38 Coombe Lane West near A3 junction	520047	169651	Roadside	Y	3	2	2.5	NO_2	N
37	51 Elm Rd	520764	169525	Kerbside	Y	6	0.5	2.5	NO_2	N
38	Kingston Road (Carpet Right)	520503	168388	Roadside	Y	15	2	2.5	NO_2	N

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)
39	Cambridge Rd/Gloucester Rd	519372	169098	Kerbside	Y	1	8	2.5	NO$_2$	N
40	Cambridge Rd/Hawks Rd	519064	169244	Roadside	Y	1.5	1.5	2.5	NO$_2$	N

1.2   Comparison of Monitoring Results with AQOs

The results presented are after bias adjustments for "annualisation", the details of which are described in Appendix A.

Table D1.   Annual Mean NO₂ Ratified and Bias-adjusted Monitoring Results (µg m⁻³)

Site ID	Site Name	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean Concentration (µg m⁻³)					
					2012	2013	2014	2015	2016	2017
KT4	Tolworth Broadway	*Automatic*	*100*	*100*	*N/A*	*N/A*	*N/A*	*48.5[c]*	*50.7[c]*	*48.9*
1	Guildhall Complex	*Diffusion tube*	100	100	26.1	28.9	22.92[c]	25.2	25.0	21.6
2	17-19 Penrhyn Road	*Diffusion tube*	100	100	**41.6**	**43.8**	**41.95[c]**	**44.5**	**46.5**	**40.3**
3	Portsmouth Road	*Diffusion tube*	100	100	35.4	38.8	32.21[c]	35.1	38.6	34.6
4	Brighton Road	*Diffusion tube*	100	100	32.4	34.6	27.7[c]	28.6	32.9	26.5
5	Victoria Rd/Brighton Rd	*Diffusion tube*	100	100	27.2	**40.6**	37.6[c]	**40.6**	**40.4**	35.8
6	St. Mark's Hill/Ewell Rd	*Diffusion tube*	100	100	23.3	**42.8**	39.2[c]	**40.8**	**43.0**	37.5
7	Victoria Rd (Surbiton Station)	*Diffusion tube*	100	100	**48**	**49**	**43.9[c]**	**49.9**	**49.0**	**44.3**
8	Upper Brighton Rd/Langley Rd	*Diffusion tube*	100	100	35.6	36	**40.7[c]**	**42.4**	**42.0**	38.1
9	Douglas Rd/Thornhill Rd	*Diffusion tube*	100	100	27.4	29.8	22.7[c]	25.7	27.0	24.7
10	Ewell Rd	*Diffusion tube*	100	100	**51.9**	**52.8**	**47.1[c]**	**48.6**	**48.6**	**45.7**

Site ID	Site Name	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean Concentration (µg m^{-3})					
					2012	2013	2014	2015	2016	2017
11	Elgar Rd	*Diffusion tube*	100	100	32.8	32.6	27.5 [c]	28.8	30.7	26.7
12	136 Tolworth Broadway	*Diffusion tube*	100	100	**41.2**	**64.3**	**58.7** [c]	**67.2**	**55.2**	**51.3**
13	Tolworth Roundabout	*Diffusion tube*	100	100	**77.4**	**77.4**	**75.3** [c]	**72.2**	**77.0**	**72.2**
14	Kingston Rd (near station)	*Diffusion tube*	100	100	28.5	**41.8**	**56.3** [c]	**62.4**	**59.7**	**54.3**
15	Kingston Rd/Old Kingston Rd	*Diffusion tube*	100	100	27.2	28.1	**45.8** [c]	**42.8**	**46.3**	**46.4**
16	Hook Rd S/Hunters Rd	*Diffusion tube*	100	100	38.7	**41.7**	**40.3** [c]	**43.4**	**45.6**	**40.6**
17	Hook Rd (St Paul's Primary)	*Diffusion tube*	100	100	36	**40.5**	36.0 [c]	38.2	39.7	36.0
18	Hook Centre	*Diffusion tube*	100	100	**49.3**	**44.9**	**44.6** [c]	**48.5**	**48.0**	**46.4**
19	Garrison Ln/Reynolds Ave	*Diffusion tube*	100	100	31	30.8	26.2 [c]	27.4	28.9	27.3
20	Malden Rushett crossroads	*Diffusion tube*	100	100	**42**	**49.3**	32.5 [c]	36.9	38.4	36.4
21	Leatherhead Rd/Harrow Cl	*Diffusion tube*	100	100	38.6	**57.1**	34.7 [c]	37.9	38.5	35.1
22	Hook Rise N/Rec. Centre	*Diffusion tube*	100	100	39.9	**42.1**	**50.4** [c]	**52.6**	**50.1**	**54.6**
23	40 Fife Road	*Diffusion tube*	100	100	34.9	38.8	33.4 [c]	35.6	34.7	31.1
24	14-16 Cromwell Road	*Diffusion tube*	100	100	**89.3**	**118**	**94.0** [c]	**94.0**	**90.6**	**84.5**
25	Queen Elizabeth Rd/London Rd	*Diffusion tube*	100	100	32.1	**48.2**	36.3 [c]	**46.3**	**45.6**	**43.1**

Site ID	Site Name	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean Concentration (µg m^{-3})					
					2012	2013	2014	2015	2016	2017
26	Richmond Rd/King's Rd	*Diffusion tube*	100	100	37.2	**42.5**	35.9 [c]	34.6	38.5	35.5
27	Richmond Rd/Horsley Drive	*Diffusion tube*	100	100	38.1	33.6	32.1 [c]	35.1	36.0	31.6
28	Kingston Hill/Wolverton Ave	*Diffusion tube*	100	100	**47.6**	**52.6**	**54.4** [c]	**57.4**	**53.7**	**51.0**
29	240 Kingston Vale near Robin Hood Lane	*Diffusion tube*	100	100	34.5	34.1	34.5 [c]	39.2	**41.4**	34.7
30	Coombe Hill School	*Diffusion tube*	100	100	34.1	37.8	37.9 [c]	**40.7**	40.5	39.0
31	248 Malden Road near A3	*Diffusion tube*	100	100	34.4	36.7	37.8 [c]	**45.2**	**45.6**	**41.9**
32	South Lane	*Diffusion tube*	100	100	27.5	29.6	22.5 [c]	24.5	27.6	25.0
33	Burlington Road	*Diffusion tube*	100	100	38.9	**45**	35.0 [c]	**41.9**	**42.9**	**40.3**
34	New Malden High St	*Diffusion tube*	100	100	35.7	**42.6**	36.0 [c]	31.0	**40.2**	35.7
35	Clarence Ave	*Diffusion tube*	100	100	32.8	35.4	28.4 [c]	31.1	32.6	29.9
36	Coombe Lane West	*Diffusion tube*	100	100	38.7	38.5	34.0 [c]	39.1	36.4	35.0
37	Elm Rd	*Diffusion tube*	100	100	24.2	30.8	23.3 [c]	27.1	28.4	28.3
38	Kingston Road (Carpet Right)	*Diffusion tube*	100	100	35.5	32	30.5 [c]	31.4	38.2	32.9
39	Cambridge Rd/Gloucester Rd	*Diffusion tube*	100	100	26.9	**44.3**	**48.4** [c]	**49.9**	**51.9**	**48.3**

Site ID	Site Name	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean Concentration (μg m^{-3})					
					2012	2013	2014	2015	2016	2017
40	Cambridge Rd/Hawks Rd	*Diffusion tube*	100	100	31.1	**47.5**	**40.9**[c]	**43.8**	**41.8**	**43.6**

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 have been "annualised" in accordance with LLAQM Technical Guidance, where valid data capture is less than 75%

Table D1 provides NO$_2$ monitoring results for 2017 measured at 1 continuous monitoring station and at 40 diffusion tube locations. The results from the continuous monitoring site exceeded the annual mean NO$_2$ objective of 40μg m^{-3}. The annual mean objective for NO$_2$ was also exceeded at 17 out of 40 of the diffusion tube locations and these are highlighted in bold in the table. In 2017 the number of exceedances recorded were 23.

The 2 results that exceeded 60μg m^{-3} are also underlined to indicate that the hourly objective is potentially exceeded at these locations (Cromwell Road and Tolworth Roundabout).

The highest concentration was 84.5μg m^{-3} that was recorded at a site on the A307 Cromwell Road, one of the busiest roads in the borough. Also all results from diffusion tubes located along A240 Kingston Road and the A3 exceeded the objective at the roadside. In 2017, overall, levels of NO$_2$ have decreased in the borough between 3 and 5 μg m^{-3}.

Figure 1: Map of NO$_2$ diffusion tubes monitoring sites in the *Royal Borough of Kingston upon Thames* showing annual mean results from 2017.

Legend

On this map, the squares represent NO$_2$ diffusion tubes. The EU limit value for annual mean NO$_2$ is 40µg m^{-3}. All monitoring sites that recorded NO$_2$ concentrations above this level are coloured in red and all that are below this level are coloured in green. The numbers adjacent to each square are the annual mean NO$_2$ concentrations for 2017.

Diffusion tubes (<40µg m^{-3})

Diffusion tubes (>40µg m^{-3})

Table D2. Calculation of NO$_2$ at relevant exposure receptors (μg m^{-3})

The results presented in the table below are after adjustments for 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 NO2 annual objective of 40µg/m3 . The calculation has been applied also to monitoring locations that record an annual mean concentration that is within 10% of the NO2 annual objective of 40µg/m3 (i.e. above 36µg/m3), to account for the inherent uncertainty in diffusion tube monitoring concentration data.

Site ID	Site Name	X (m)	Y (m)	Site Type	Distance from monitoring site to relevant exposure	Distance to kerb of nearest road (N/A if not applicable)	Distance from kerb to relevant exposure	NO$_2$ Results 2017	Background NO$_2$	NO$_2$ at relevant exposure receptor
KT4	Tolworth Broadway	519706	165885	Roadside	7	4.2	11.2	**48.9**	23.54061	**41.8**
2	17-19 Penrhyn Road	518067	168672	Roadside	3	2	5	**40.3**	18.94649	35.7
6	St. Mark's Hill/Ewell Rd	518424	167604	Roadside	2.5	5	7.5	37.5	19.58265	35.3
7	Victoria Road nr Surbiton Station	518039	167346	Kerbside	2	0.5	2.5	**44.3**	17.68247	36.7
8	Upper Brighton Rd/Langley Rd	518336	166655	Roadside	2.5	2	4.5	38.1	17.68247	34.2
10	Ewell Road nr jct Elgar Avenue	519365	166230	Kerbside	4	0.5	4.5	**45.7**	23.00989	36.9
12	136 Tolworth Broadway / Service Road	519714	165886	Roadside	3	2	5	**51.3**	23.54061	**45.3**

Site ID	Site Name	X (m)	Y (m)	Site Type	Distance from monitoring site to relevant exposure	Distance to kerb of nearest road (N/A if not applicable)	Distance from kerb to relevant exposure	NO$_2$ Results 2017	Background NO$_2$	NO$_2$ at relevant exposure receptor
13	Sundial Ct. Roundabout, Tolworth	519808	165873	Kerbside	1.5	1	2.5	**72.2**	23.54061	**63.2**
14	Kingston Rd near Station	519872	165692	Kerbside	14	0.5	14.5	**54.3**	23.54061	36.0
15	A240 Kingston Rd/Old Kingston Rd	520192	165264	Kerbside	30	0.5	30.5	**46.4**	16.66003	23.2
16	Hook Road South / Hunters Road	518087	165096	Kerbside	6	1	7	**40.6**	19.05428	32.2
17	Hook Rd (St Paul's Primary)	518026	164785	Roadside	2.5	2	4.5	36.0	19.05428	32.8
18	Hook Centre	517991	164532	Kerbside	4	0.5	4.5	**46.4**	19.05428	35.8
20	353 Malden Rushett Crossroads	517256	161578	Roadside	2	2.5	4.5	36.4	12.46749	32.9
22	Hook Rise North / Tolworth Rec Centre	518601	165270	Roadside	3	1.5	4.5	**54.6**	17.6624	**45.7**
24	14-16 Cromwell Road	518467	169509	Roadside	2	2	4	**84.5**	22.56915	**74.4**

Site ID	Site Name	X (m)	Y (m)	Site Type	Distance from monitoring site to relevant exposure	Distance to kerb of nearest road (N/A if not applicable)	Distance from kerb to relevant exposure	NO$_2$ Results 2017	Background NO$_2$	NO$_2$ at relevant exposure receptor
25	Queen Elizabeth Rd/London Rd	518533	169348	Kerbside	4	0.5	4.5	**43.1**	20.82381	34.4
28	41 Kingston Hill	519353	169895	Kerbside	3	1	4	**51.0**	23.8969	**43.4**
30	Coombe Hill School	520611	169889	Roadside	10	2.5	12.5	39.0	19.84686	31.4
31	248 Malden Road Near A3	521651	167397	Kerbside	8	0.5	8.5	**41.9**	19.42944	30.6
33	96 Burlington Road	521873	168117	Roadside	3	1.5	4.5	**40.3**	24.08981	36.4
39	Cambridge Rd/Gloucester Rd	519372	169098	Kerbside	1	8	9	**48.3**	20.82381	**47.2**
40	Cambridge Rd/Hawks Rd	519064	169244	Roadside	1.5	1.5	3	**43.6**	20.82381	**40.2**

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 7 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 have already been identified in the previous ASR. The KT4 Tolworth Broadway automatic monitoring site result shows an exceedance of 41.8 μg m^{-3} at the relevant exposure receptor.

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 2016 % [b]	Number of Hourly Means > 200µg m^{-3}			
			2014	2015	2016	2017
Tolworth Broadway (KT4)	100	*100*	-	*0 (137.7)*	*5 (132.6)*	*8*

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 have been "annualised" in accordance with LLAQM Technical Guidance, where 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 2016 % [b]	Annual Mean Concentration (µg m^{-3})			
			2014	2015	2016	2017
Tolworth Broadway (KT4)	*97*	*97*	-	*20.0*	24.1	23.1

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 have been "annualised" in accordance with LLAQM Technical Guidance, where 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 2016 % [b]	Number of Daily Means > 50µg m^{-3}			
			2014	2015	2016	2017
Tolworth Broadway (KT4)	97	97	-	1 (34.4)	9	6

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 have been "annualised" in accordance with LLAQM Technical Guidance, where valid data capture is less than 75%

2.   Action to Improve Air Quality

2.1   Air Quality Action Plan Progress

Table J provides a brief summary of Royal Borough of Kingston upon Thames' progress against the Air Quality Action Plan, showing progress made this year.

Table J.   Delivery of Air Quality Action Plan Measures

No.	Measure	Action	Progress	Further information
1	Bus Priority Measures	To review bus routes to identify opportunities for bus priority measures prioritising those which suffer from excessive delays	Officers from the Highways and Transport Division have attended regional meetings to raise awareness of the locations which would benefit from bus priority measures.	
2	Low Emission Busses and Taxis	Work with partners to support the introduction of low emission vehicles and supporting infrastructure prioritising areas of poorest air quality	The borough continued to lobby key partners, in particular TfL and London Buses regarding the need to support the introduction of low emission vehicles and infrastructure prioritising areas of poorest air quality. For example, through the TfL consultation on the new Mayor's Transport Strategy, we raised the issue that outer London boroughs including Kingston would benefit from the same level of investment in cleaner buses as in inner /central London so have requested an even roll out of new clean buses across the entire London area. Officers from the borough continue to raise these matters with TfL and London Buses through regular liaison meetings.	
3	Bus / Rail Service Improvements	To identify opportunities for and secure improvements to bus/rail services within the borough	Officers from the Highways and Transport Division have attended regional meetings to discuss issues with the routes and services within the borough and to identify potential improvements. In 2017, we liaised with key partners such as South Western Railway, TfL, London Buses and the train operators to lobby for	

No.	Measure	Action	Progress	Further information
			various rail/bus improvements connected with matters including rail franchise renewals. Borough officers are continuing to work with South Western Railway and other partners to bring about significant improvements to Chessington South Station. The work will be progressed throughout 2018 and is due for completion in summer 2019. The work includes improvements for disabled and elderly people, installation of new security measures, interchange arrangements improved and new landscaping etc.	
4	Kingston One-way System	To review the design of the one-way system and/or introduce a lower speed limit and retime the traffic signals	Although this is a longer term measure, the opportunities for review can arise as part of proposed redevelopments taking place around the One-Way system. In 2017, construction began on a Go Cycle scheme at Kingston station to upgrade the public space, offer better connectivity between different modes of transport, improve road safety and transform the cycle facilities. The scheme won an architecture and design award for projects that aim to improve the health and wellbeing of Londoners.	
5	London Low Emission Zone	To lobby for extension of London Low Emission Zone (LEZ) to cover more/all of the borough.	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 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.	
6	Road Works	To investigate options for reducing the impact of road works on traffic flows including use of signs, CCTV and issuing penalties where roadworks overrun.	Penalties for overrunning roadworks are being applied using Section 74 of the New Roads and Streetworks Act 1991. With all major projects, conditions are imposed to ensure information to road users is clear, and well in advance of the works starting. This includes the use of Variable Message Signs.	

No.	Measure	Action	Progress	Further information
7	Air Quality in Council Policies	Ensure that air quality is a specific consideration when adopting Council policies.	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.	
8	Low Emission Vehicles	Promote the benefits of low emission vehicles to residents and businesses and increase awareness of the availability of electric vehicle charging infrastructure.	There are 24 separate locations within the borough at which an electric vehicle charging point is installed and these form part of the Source London network which is an increase of 4 compared to the previous year. Transport for London has installed 2 rapid charging points within the borough and the local authority continues to be involved in discussions to assess additional locations.	
9	Engine Idling	Deter engine idling while waiting with initial focus on schools and stations	Agreement was reached on the design of No Engine Idling signs and a number were ordered for installation in 2018. Work began to engage schools on the issues of parents switching off their vehicle engines if waiting during school pick-up / drop-off. Advice on reducing emissions when driving is available on the Council website and this includes recommendation to avoid unnecessary engine idling.	
10	Car Clubs	To increase the availability of Car Club vehicles and to promote an uptake in membership as an alternative to car ownership.	ZipCar is the borough provider. The number Car Club bays available rose in 2017 from 10 to 15. Members of staff within the Council are encouraged to register as members for using the vehicles on work journeys so as to avoid travel to the workplace using their own motor vehicle.	
11	Freight Improvements	To improve freight access and loading / servicing arrangements at key locations in the borough	No progress – Medium term measure	
12	Cycle Parking	To improve cycle parking provision throughout the borough at: transport hubs, Council buildings, other public	168 new cycle stands have been installed in on-street locations providing parking space for 336 bikes. In addition, 16 bike hangars have been installed in RBK housing estates which can accommodate a total of 96 bikes.	

No.	Measure	Action	Progress	Further information
		sector organisation's sites, workplace, residential and leisure locations.	Requests for on-street cycle parking can be made via the Council website and the Sustainable Transport Team will assess the site's suitability. Provision of cycle parking to London Plan standards is required within new developments as part of the development control process.	
13	Support and Encourage Cycling	Implement measures to support and encourage cycling.	A cycle loan scheme allowing people who live, work or study in the borough to loan a bike for free for 1 month is available. Officers work with all 32 state-funded primary schools to deliver cycle training. In 16/17, 1322 pupils were trained to Level 1 with 1277 continuing to Level 2. In addition, there was an increase of 20% in the number of adult training sessions delivered, up to 348. The Go Cycle sustainable travel team have been working to promote an uptake in cycling including organising a series of events throughout Bike Week in June. In addition, borough officers delivered a project aimed at encouraging more women and refugees to cycle through provision of training and support. Several cycle rides were also organised for Council staff during the summer to encourage staff to cycle more and gain confidence.	
14	Cycle Network	Review the cycle network to address obstacles to continued movement and increase the number of segregated cycle lanes.	A cycle network audit and plan was drafted in 2017 and this will form part of the Third Local Implementation Plan. Go Cycle works have been completed on Portsmouth Road and in Surbiton. Construction on improvements to the network at Kingston station and the High Street are ongoing. The Go Cycle team have also worked with other borough officers and Thames Water on the creation of a new car-free cycle and pedestrian route between New Malden Station and Raynes Park Recreation Area.	
15	Cycle Hire	Expand existing cycle-hire schemes.	There are currently 140 members of the Brompton cycle hire-scheme which is an increase of 37 compared to the previous year.	

No.	Measure	Action	Progress	Further information
			In 2017, there were 2546 days usage of the Brompton bikes in the scheme, more than 3 times the number in 2016.	
16	Walking Network	Improve the Strategic Walking Network and seek to improve pedestrian connectivity across barriers such as major junctions, busy roads and railway lines.	A series of walking routes within the borough have been made available to download on the Council website. The Sustainable Transport team and Public Health have worked together on a joint initiative to encourage walking and a number of free led walks of between 30 and 60 minutes duration were held led by qualified walk leaders. The Council also worked to promote the Kingston Trails project which was developed by Kingston University as self-guided walks around the borough. In February 2017, a £2 million project was approved to improve parks and pavements across the borough which will include resurfacing, additional benches and tree planting. The Sustainable Transport team is working with Public Health and Sports and Leisure to develop a bid for funding for a Beats the Streets programme in the borough. This would be subject to securing funding from external sources.	
17	School Travel Plans	Work with schools to better implement their travel plans to promote road safety and sustainable travel.	There are 66 schools within the borough with which the local authority can work on their Travel Plans and the borough has continued to seek to engage schools. However, in 2017 there was no increase on the previous year with 20% of the schools having an active Travel Plan in place. Of these, 2 attained gold, 5 silver and 6 bronze.	
18	Workplace Travel Plans	Require businesses allocated parking permits to develop Travel Plans to support their employees in using sustainable transport modes.	Workplace Travel Plans have been secured as a planning condition where appropriate. The Council is currently piloting the Workplace Travel Scorecard which is an initiative to help businesses assess workplace travel, identify areas for improvement and implement changes.	

No.	Measure	Action	Progress	Further information
19	Using Planning Conditions to Mitigate Poor Air Quality	To require major new developments to mitigate the impact of poor air quality by securing improvements through planning conditions	Standard planning conditions have been developed and these have been applied where appropriate. The Supplementary Planning Guidance produced by the GLA on Controlling Dust and Emissions from Construction and Demolition Sites is available on the website and larger developments are required by condition to submit a Construction Management Plan that includes commitment to implement best practice measures including compliance with the Low Emission Zone for Non-Road Mobile Machinery. A school development was required to install filtration and actively monitor nitrogen dioxide levels to demonstrate that the Air Quality Objectives were being met within the building and playground. See Table K below for further details.	
20	Increase Tree Planting and Use of Green Barriers	Increase use of trees, green screens, green walls, etc where appropriate to help reduce public exposure to poor air quality.	A Tree Strategy for the borough was approved in 2015 and covers the period up to 2021. This sets out the Council's policies on tree management including street trees and trees within new developments. In 2017, there was a net gain of 195 trees. As set out under Action 16, a major project to improve parks across the borough was approved in February 2017 and this includes plans for additional tree planting.	
21	Reduce Emissions from Buildings' Energy Use	Reduce emissions of NOx and particulates by ensuring appropriate choice of energy provision in developments and promoting improvements to energy efficiency.	The emissions of NOx and particulates from energy sources in new developments is considered through the development control process and appropriate conditions are applied. See Table K below for further details.	
22	Partnership Working with Public Health	Identify opportunities for joint working with Public Health including working jointly on campaigns.	Officers from Pollution Control and Public Health collaborated on a paper which was presented to the Health Overview Panel in January 2017. Subsequently, officers have been working together on a report on Air Quality which will be published in 2018. A cross-party Working Group has been established which is also attended by officers from Environmental Health and Public Health so that a	

No.	Measure	Action	Progress	Further information
			coordinated approach can be adopted. Discussions with Public Health have taken place to identify opportunities for joint working. It was agreed to work together on implementing the recommendations from the Association of Directors of Public Health's Active Travel Manifesto and the NICE recommendations. Ways to promote AirTEXT more extensively and especially among more vulnerable groups were explored and in 2017, the number of subscribers in Kingston rose by more than 15%.	
23	Partnership Working with Neighbouring Boroughs	Identify opportunities for joint working with neighbouring boroughs and working together on joint bids.	RBK now operates a number of shared services with other London boroughs including a shared Environment Service and Highways & Transport Service with the London Borough of Sutton. RBK has secured agreement to participate in a project with other boroughs in south London to monitor construction sites and provide advice about Non-Road Mobile Machinery. RBK is now part of the consortium that operates the LoveCleanAir website and its data is now included on the site. RBK is also a member of the AirTEXT consortium which includes boroughs across London.	
24	Air Quality Monitoring and Awareness Raising	Monitor air quality and make the data publicly available. Raise awareness of air pollution including use of air pollution alerts.	Two new automatic monitoring stations which monitor both nitrogen dioxide and PM10 were purchased and installed in 2017. Data from the 2 new stations will start to be collected in early 2018. Together with a monitoring station that is on hire, automatic monitoring is now carried out at 3 separate locations. Data from the automatic monitoring sites is publicly available on the LondonAir website. In addition, the borough operates a network of 40 diffusion tubes. A review of the network was begun in 2017 and some of the diffusion tubes were relocated in order to capture data more representative of human exposure taking account of residential receptors. Data from the indicative monitors will now be included on the LoveCleanAir website.	

No.	Measure	Action	Progress	Further information
			Officers from RBK have created a working relationship with Kingston University so that collaborative projects and research can be carried out in future that can help raise awareness of the impacts of air pollution.	

3. Planning Update and Other New Sources of Emissions

Table K. Planning requirements met by planning applications in the Royal Borough of Kingston in 2017

Condition	Number
Number of planning applications where an air quality impact assessment was reviewed for air quality impacts	*18*
Number of planning applications required to monitor for construction dust	0
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	3
Number of developments required to install Ultra-Low NO$_x$ boilers	4
Number of developments where an AQ Neutral building and/or transport assessments undertaken	18
Number of developments where the AQ Neutral building and/or transport assessments not meeting the benchmark and so required to include additional mitigation	3
Number of planning applications with S106 agreements including other requirements to improve air quality	0
Number of planning applications with CIL payments that include a contribution to improve air quality	
NRMM: Greater London (excluding Central Activity Zone and Canary Wharf) Number of conditions related to NRMM included. Number of developments registered and compliant.	29 NRMM informative conditions were requested along with the construction method statement conditions

The NRMM database has been checked and 13 development sites were registered at www.nrmm.london Details of the visits to check that NRMM used on-site is compliant with Stage IIIA of the Directive and/or exemptions to the policy are provided.

Sites Audited 2017	6
Cold Engaged	2
Recommendations Made	2
Returned Compliance	6
n{visits}	6
Recs delivered Compliance	2
Non-compliant	0

3.1 New or significantly changed industrial or other sources

For 2017 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 standard.

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 are supplied and analysed by Gradko utilising the 20% triethanolamine (TEA) in water preparation method. A bias adjustment factor of 0.89 for the year 2017 (based on 34 studies) has been derived from the national bias adjustment calculator dated March 2018.

Diffusion Tube Bias Adjustment Factors 03/18 Issue of the Spreadsheet				
			New (03/18) Factor	
Laboratory	Method	Year	No. of Studies	Factor
Aberdeen Scientific Services	20% TEA in water	2017	7	0.78
Edinburgh Scientific Services	50% TEA in acetone	2017	2	0.89
ESG Didcot	20% TEA in water	2017	2	0.71
ESG Didcot	50% TEA in acetone	2017	27	0.77
ESG Glasgow	20% TEA in water	2017	1	0.80
ESG Glasgow	50% TEA in acetone	2017	1	0.78
Glasgow Scientific Services	20% TEA in water	2017	6	0.91
Gradko	20% TEA in water	2017	34	0.89
Gradko	50% TEA in acetone	2017	22	0.97
Lambeth Scientific Services	50% TEA in acetone	2017	1	0.90
Milton Keynes Council	20% TEA in water	2017	1	0.89
Somerset County Council	20% TEA in water	2017	2	0.77
South Yorkshire Air Quality Samplers	50% TEA in acetone	2017	2	0.88
Staffordshire Scientific Services	20% TEA in water	2017	14	0.89
Tayside Scientific Services	20% TEA in water	2017	5	0.72
West Yorkshire Analytical Services	50% TEA in acetone	2017	4	0.78
Number of Studies Included			131	

London Borough of Kingston did not conduct any co-location studies in 2017, so it was not possible to calculate a local adjustment factor. As a result, the national adjustment factor of 0.89 is applied to diffusion tube monitoring results in this report.

Gradko International Ltd is a UKAS accredited laboratory and participates in laboratory performance and proficiency testing schemes. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO_2 concentrations reported are of a high calibre. The lab follows the procedures set out in the Harmonisation Practical Guidance. Gradko previously participated in the Workplace Analysis Scheme for Proficiency (WASP) for NO_2 diffusion tube analysis 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 2017 for 100% of samples submitted by Gradko were deemed satisfactory.

The laboratory has also achieved a "good" precision result for 2017. 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%.

Appendix B   Full Monthly Diffusion Tube Results for 2017

Table M.   NO$_2$ Diffusion Tube Results

Site ID	Site Name	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean NO$_2$												Annual mean – raw data	Annual mean – bias adjusted
				Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec		
1	Guildhall Complex	100	100	41.76	30.83	26.08	22.09	20.57	15.16	18.21	18.85	22.89	22.24	28.51	24.19	24.28	21.6
2	Penrhyn Rd (Nr County Hall)	100	100	59.46	55.35	42.54	48.15	40.78	37.12	46.62	33.98	44.07	45.32	51.06	38.57	45.25	**40.3**
3	Portsmouth Road	100	100	59.17	45.15	37.01	35.93	39.58	30.86	33.35	30.05	39.19	38.00	40.06	37.50	38.82	34.6
4	Brighton Road	100	100	53.43	42.16	32.92	32.80	33.50	24.50	24.58	1.33	28.10	24.59	33.19	25.61	29.73	26.5
5	Victoria Rd/Brighton Rd	100	100	65.14	45.72	38.49	45.30	42.53	38.91	34.46	28.14	34.33	34.91	41.61	33.46	40.25	35.8

Site ID	Site Name	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean NO$_2$													
				Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual mean – raw data	Annual mean – bias adjusted
6	St. Mark's Hill/Ewell Rd	100	100	63.21	57.40	41.94	39.34	39.04	37.49	37.08	32.06	38.27	38.04	44.94	36.23	42.09	37.5
7	Victoria Rd (Surbiton Station)	100	100	64.06	64.32	56.21	47.33	50.04	42.99	47.75	35.02	40.67	47.04	52.35	48.87	49.72	**44.3**
8	Upper Brighton Rd/Langley Rd	100	100	53.62	53.20	41.54	42.29	41.92	38.47	39.26	38.10	38.78	40.79	46.71	39.59	42.86	38.1
9	Douglas Rd/Thornhill Rd	100	100	48.08	35.44	27.50	25.70	21.24	19.28	15.66	21.83	27.80	27.80	34.44	28.23	27.75	24.7
10	Ewell Rd	100	100	78.83	59.47	49.59	46.88	42.75	44.53	49.91	41.41	46.10	52.30	58.33	46.33	51.37	**45.7**
11	Elgar Rd	100	100	46.34	39.62	31.75	27.48	26.82	24.08	20.47	23.38	27.09	27.76	35.85	29.53	30.01	26.7
12	Hook Rise N/Service Rd	100	100	74.52	71.54	64.29	54.72	52.38	58.04	62.69	51.09	54.53	65.58	59.28	22.75	57.62	**51.3**
13	Tolworth Roundabout	100	100	112.49	97.82	75.93	72.45	92.23	74.23	78.28	69.41	68.53	65.01	69.72	97.90	81.17	**72.2**
14	Kingston Rd	100	100	92.56	70.12	49.87	67.33	55.02	51.90	57.22	52.40	59.72	64.95	62.53	49.08	61.06	**54.3**

Site ID	Site Name	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean NO$_2$												Annual mean – raw data	Annual mean – bias adjusted
				Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec		
15	Kingston Rd/Old Kingston Rd	100	100	74.42	53.00	49.31	48.60	41.79	45.37	51.10	46.01	45.91	65.03	60.13	44.93	52.13	**46.4**
16	Hook Rd S/Hunters Rd	100	100	68.55	55.78	41.45	50.81	43.64	35.47	41.40	37.23	44.17	44.46	48.91	35.11	45.58	**40.6**
17	Hook Rd (St Paul's Primary)	100	100	55.65	52.98	39.68	38.80	38.27	30.42	34.76	33.96	33.11	41.84	45.77	39.85	40.42	36.0
18	Hook Centre	100	100	70.24	67.05	50.39	54.04	46.58	42.54	47.49	49.66	46.66	43.30	59.01	48.73	52.14	**46.4**
19	Garrison Ln/Reynolds Ave	100	100	48.77	38.80	30.91	29.29	23.19	25.55	24.17	23.34	29.03	28.05	35.29	32.32	30.73	27.3
20	Malden Rushett crossroads	100	100	55.09	48.39	37.99	41.07	36.67	34.02	41.23	35.22	41.62	37.89	43.58	38.30	40.92	36.4
21	Leatherhead Rd/Harrow Cl	100	100	53.60	47.77	39.84	42.34	35.40	30.98	32.43	34.99	35.63	37.20	47.49	35.21	39.41	35.1
22	Hook Rise N/Rec. Centre	100	100	80.50	73.91	57.51	58.53	43.43	47.02	56.58	46.38	54.76	65.45	72.36	79.33	61.31	**54.6**

Site ID	Site Name	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean NO$_2$												Annual mean – raw data	Annual mean – bias adjusted
				Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec		
23	Fife Rd area	100	100	56.20	42.07	35.55	33.46	31.24	27.10	26.03	26.93	33.14	31.50	39.52	36.98	34.98	31.1
24	Cromwell Rd	100	100	132.42	106.92	100.33	112.36	82.32	89.85	85.61	76.02	80.01	65.47	97.87	110.40	94.97	**84.5**
25	Queen Elizabeth Rd/London Rd	100	100	65.24	60.94	53.08	49.35	41.48	43.35	46.70	41.63	45.51	41.22	47.30	45.53	48.44	**43.1**
26	Richmond Rd/King's Rd	100	100	67.63	49.18	37.72	43.35	37.55	28.48	29.76	29.54	37.07	36.07	43.60	39.21	39.93	35.5
27	Richmond Rd/Horsley Drive	100	100	58.77	42.21	37.90	36.77	28.71	21.72	26.91	27.79	34.00	33.88	39.93	37.55	35.51	31.6
28	Kingston Hill/Wolverton Ave	100	100	73.43	70.43	63.41	56.33	51.50	40.88	49.09	44.61	49.17	64.86	63.78	59.54	57.25	**51.0**
29	Kingston Vale nr Robin Hood Lane	100	100	64.87	44.90	40.85	41.87	34.86	27.45	33.86	30.95	33.58	36.18	40.49	38.44	39.02	34.7
30	Coombe Hill School	100	100	66.39	52.32	38.41	42.06	36.03	35.83	39.43	33.97	42.65	41.45	48.76	48.99	43.86	39.0

Site ID	Site Name	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean NO$_2$												Annual mean – raw data	Annual mean – bias adjusted
				Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec		
31	Malden Rd Nr A3	100	100	67.44	57.77	49.28	50.97	41.52	40.14	39.16	38.84	42.29	41.36	52.48	44.33	47.13	**41.9**
32	South Lane south of A3	100	100	44.95	36.46	28.51	26.80	22.26	19.82	18.34	20.24	24.50	28.14	35.67	31.13	28.07	25.0
33	Burlington Road	100	100	71.54	54.54	37.94	47.33	43.81	39.30	40.20	38.69	44.73	33.22	47.78	44.81	45.32	40.3
34	New Malden High St	100	100	63.96	52.51	42.75	38.51	35.89	31.61	29.07	29.21	38.85	37.39	43.45	37.79	40.08	35.7
35	Clarence Ave	100	100	56.18	42.51	28.92	29.79	29.35	23.78	25.53	24.23	31.14	32.27	40.33	39.56	33.63	29.9
36	Coombe Lane West	100	100	56.46	50.52	36.91	38.06	34.29	31.11	31.77	32.80	38.52	28.14	46.98	45.92	39.29	35.0
37	Elm Rd	100	100	54.85	38.39	54.95	25.55	23.12	19.40	19.01	20.23	27.54	27.15	36.56	34.91	31.81	28.3
38	Kingston Rd by Carpet Right	100	100	59.05	45.31	49.72	33.40	40.45	15.14	31.22	28.11	37.79	30.55	38.61	34.74	37.01	32.9
39	Cambridge Rd/Gloucester Rd	100	100	82.42	69.05	54.95	54.57	48.22	40.21	44.66	43.35	52.54	45.68	60.59	54.91	54.26	**48.3**

Site ID	Site Name	Valid data capture for monitoring period % [a]	Valid data capture 2017 % [b]	Annual Mean NO$_2$												Annual mean – raw data	Annual mean – bias adjusted
				Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec		
40	Cambridge Rd/Hawks Rd	100	100	70.23	61.59	49.72	50.23	44.57	40.80	44.31	43.34	50.91	44.59	48.27	38.75	48.94	**43.6**

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 have been "annualised" in accordance with LLAQM Technical Guidance, where valid data capture is less than 75%