London Air Quality Network

Summary Report 2015

March 2017

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King's College London

Title	London Air Quality Network – Summary Report 2015

Customer	London Air Quality Network

Customer Ref	

File Reference	erg\AIRQUALI\LONDON\ANNUALRE\2015\2015 LAQN Summary Report.pdf

Report Number	

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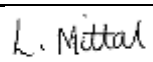
Author	Louise Mittal		March 2017
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1 Introduction

This report details the results of air pollution measurements made on the London Air Quality Network during 2015. Measurements have been presented with specific reference to the UK Air Quality Strategy (AQS) Objectives and the EU Limit Values.

The London Air Quality Network (LAQN) is a unique resource, providing robust air pollution measurements that are essential to underpin air quality management and health studies. The public face of the network, the LondonAir web site (www.londonair.org.uk), is visited by thousands of Londoners seeking hourly updated air pollution information.

The LAQN was formed in 1993 to coordinate and improve air pollution monitoring in London. The majority of London's 33 boroughs supply measurements to the network and in addition these data are increasingly being supplemented by measurements from local authorities surrounding London, thereby providing an overall perspective of air pollution in London and the Home Counties.

The LAQN is operated and managed by the Environmental Research Group (ERG) at King's College London. QA/QC audits are carried out by the National Physical Laboratory (NPL). Each borough funds air quality monitoring in its own area. The Department of Environment, Food and Rural Affairs (Defra) funds King's to operate the Marylebone Road site and to maintain several of the LAQN sites as affiliate sites to the UK Automatic Urban and Rural Network (AURN). This Defra support assists the operation of the overall LAQN. Analysis of LAQN measurements has been augmented by measurements from directly-funded Defra sites in London. Measurements from Defra sites were provided by Ricardo Energy and Environment from the National Air Quality Archive and were included within the LAQN database. Transport for London has also funded monitoring to help assess the air pollution impacts of the Congestion Charging Scheme and Low Emission Zone.

2 Air quality Strategy Objectives and EU Limit Values

There is ample evidence of the adverse health effects caused by air pollution (WHO, 2006). In response to these health impacts, the Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland (Defra, 2008) sets out the UK's way forward on air quality issues, details objectives to be achieved, and proposes measures to help reach them. These UK objectives largely reflect EU Limit Values (EC, 2008). The GLA and the London boroughs and district councils outside the capital have responsibilities for the management of air quality and must work towards the attainment of AQS objectives. The AQS Objectives and EU Limit Values are detailed in Table 1. Monitoring progress towards the attainment of these Objectives and Limit Values forms a core activity for the LAQN.

Pollutant	Air Quality Objective Concentration	Measured as	To be achieved by
Carbon Monoxide (CO)	10.0 mg m^{-3}	Maximum daily running 8-hour mean	31 December 2003
Nitrogen Dioxide (NO_2)	200 µg m^{-3} not to be exceeded more than 18 times a year	1-hour mean	31 December 2005
	40 µg m^{-3}	Annual mean	31 December 2005
Sulphur dioxide (SO_2)	350 µg m^{-3}, not to be exceeded more than 24 times a year	1-hour mean	31 December 2004
	125 µg m^{-3}, not to be exceeded more than 3 times a year	24-hour mean	31 December 2004
	266 µg m^{-3}, not to be exceeded more than 35 times a year	15-minute mean	31 December 2005
Ozone (O_3)	100 µg m^{-3} not to be exceeded more than 10 times a year	8 hourly running or hourly mean	31 December 2005
Particles (PM_{10}) (gravimetric)	50 µg m^{-3}, not to be exceeded more than 35 times a year	Daily mean	31 December 2004
	40 µg m^{-3}	Annual mean	31 December 2004
Particles ($PM_{2.5}$) (gravimetric)	25 µg m^{-3} (target)	Annual mean	2020
	20% cut in urban background exposure	Annual mean	2010 - 2020

Table 1: AQS Objectives and EU Limit Values.

3 Results

The AQS Objective results measured at LAQN sites during 2012 are detailed in Tables 2 to 8.

Key to site types:

RU = Rural
S = Suburban
U = Urban background
R = Roadside
K = Kerbside
I = Industrial

Key to network status

AA = Affiliated to UK AURN. Final data set published by DEFRA
A = AURN DEFRA funded. Final data set published by DEFRA
T = TfL funded

All other instruments are LAQN only

3.1 Carbon Monoxide

Site Name	Type	Capture Rate (%)	No occurrences of rolling 8hr mean >=10mgm^{-3} (8.6ppb)	Achieved?
Kensington and Chelsea - North Ken[AA]	U	99	0	yes
Wandsworth - Wandsworth Town Hall	U	99	0	yes
Westminster - Marylebone Road[AA]	K	97	0	yes

Table 2: AQS Objective results for CO

Summary

- All sites achieved the CO rolling 8 hourly mean objective.
- Large reductions in CO over last 20 years with the introduction of catalytic converters.
- Small number of sites still measuring CO.

3.2 Nitrogen Dioxide

Site Name	Type	Capture Rate (%)	Annual Mean < 40 ugm^{-3}	Annual Mean Achieved?	No more than 18 occurrences of hourly mean > 200ugm^{-3} (104.7ppb)	Hourly Mean Achieved?
Barking and Dagenham - Rush Green	S	92	20	yes	0	yes
Barking and Dagenham - Scrattons Farm	S	95	29	yes	0	yes
Bexley - Belvedere	S	98	24	yes	0	yes
Bexley - Belvedere West	U	85	22	n/a	0	n/a
Bexley - Slade Green[A]	S	92	26	yes	0	yes
Brentwood - Brentwood Town Hall	U	27	25	n/a	0	n/a
Camden – Bloomsbury[A]	U	98	48	no	0	yes
Camden - Euston Road	R	82	91	n/a	54	no
Camden - Holborn (inmidtown)	K	96	83	no	75	no
Camden - Swiss Cottage[AA]	K	99	61	no	11	yes
Castle Point - Hadleigh	R	96	26	yes	0	yes
City of London - Beech Street	R	98	89	no	206	no
City of London - Sir John Cass School	U	90	42	no	0	yes
City of London - Walbrook Wharf	R	95	98	no	203	no
Croydon - Norbury	K	98	54	no	2	yes
Croydon - Purley Way A23	R	84	32	n/a	0	n/a
Ealing - Hanger Lane Gyratory	R	98	85	no	98	no
Ealing - Horn Lane	I	99	48	no	3	yes
Ealing - Southall	U	96	25	yes	0	yes
Ealing - Western Avenue	R	66	62	n/a	2	n/a
Enfield - Bowes Primary School	R	93	46	no	1	yes
Enfield - Bush Hill Park	S	76	27	n/a	0	n/a
Enfield - Derby Road	R	40	46	n/a	0	n/a
Enfield - Prince of Wales School	U	98	24	yes	0	yes
Greenwich - A206 Burrage Grove	R	98	35	yes	0	yes
Greenwich - Blackheath	R	93	39	yes	0	yes
Greenwich - Eltham[AA]	S	94	19	yes	0	yes
Greenwich - Fiveways Sidcup Rd A20	R	99	44	no	1	yes
Greenwich - Millennium Village	I	59	28	n/a	0	n/a
Greenwich - Plumstead High Street	R	71	34	n/a	0	n/a
Greenwich - Trafalgar Road	R	90	36	yes	0	yes
Greenwich - Westhorne Avenue	R	98	40	yes	0	yes
Greenwich - Woolwich Flyover	R	96	66	no	6	yes
Greenwich and Bexley - Falconwood	R	99	41	no	2	yes
Hackney - Old Street	R	98	60	no	0	yes
Hammersmith and Fulham - Shepherds Bush	R	89	76	n/a	19	no
Haringey - Priory Park South[AA]	U	93	24	yes	0	yes
Haringey - Haringey Town Hall[AA]	R	96	40	yes	0	yes
Harrow - Pinner Road	R	25	46	n/a	2	n/a
Harrow - Stanmore	U	92	22	yes	0	yes
Havering - Rainham	R	99	32	yes	0	yes

Site Name	Type	Capture Rate (%)	Annual Mean < 40 ugm^{-3}	Annual Mean Achieved?	No more than 18 occurrences of hourly mean > 200ugm^{-3} (104.7ppb)	Hourly Mean Achieved?
Havering - Romford	R	75	35	n/a	0	n/a
Hounslow and Ealing - Gunnersbury Avenue	R	11	61	n/a	0	n/a
Islington - Arsenal	U	99	29	yes	0	yes
Islington - Holloway Road	R	93	61	no	0	yes
Kensington and Chelsea - Cromwell Road	R	63	55	n/a	0	n/a
Kensington and Chelsea - Earls Court Rd	K	99	91	no	135	no
Kensington and Chelsea - Kings Road	R	99	73	no	9	yes
Kensington and Chelsea - Knightsbridge	R	97	71	no	97	no
Kensington and Chelsea - North Ken[AA]	U	98	32	yes	0	yes
Kingston Upon Thames - Sopwith Way	R	67	52	n/a	0	n/a
Kingston Upon Thames - Tolworth Broadway	R	65	48	n/a	0	n/a
Lambeth - Bondway Interchange	I	98	75	no	4	yes
Lambeth - Brixton Road	K	97	129	no	883	no
Lambeth - Streatham Green	U	85	29	n/a	0	n/a
Lewisham - Catford	U	82	43	n/a	0	n/a
Lewisham - Loampit Vale	R	84	51	n/a	0	n/a
Lewisham - New Cross	R	92	47	no	7	yes
Merton - Willow Lane Industrial Estate high level	I	40	28	n/a	0	n/a
Merton - Willow Lane Industrial Estate low level	I	40	32	n/a	0	n/a
Redbridge - Gardner Close	R	83	39	n/a	0	n/a
Redbridge - Ley Street	U	91	33	yes	10	yes
Reigate and Banstead - Horley[AA]	S	98	21	yes	0	yes
Reigate and Banstead - Horley South	S	98	26	yes	0	yes
Reigate and Banstead - Poles Lane	RU	99	14	yes	0	yes
Richmond Upon Thames - Barnes Wetlands	S	94	23	yes	0	yes
Richmond Upon Thames - Castelnau	R	99	34	yes	0	yes
Richmond Upon Thames - Craneford Way high level	I	32	23	n/a	0	n/a
Richmond Upon Thames - Craneford Way low level	I	35	22	n/a	0	n/a
Richmond Upon Thames - Hanworth Road high level	K	18	46	n/a	0	n/a
Richmond Upon Thames - Hanworth Road low level	K	18	49	n/a	0	n/a
Richmond Upon Thames - Ntl Physical Lab[A]	S	95	19	yes	0	yes
Sevenoaks - Bat and Ball	R	61	38	n/a	1	n/a
Sevenoaks - Greatness Park	U	96	17	yes	0	yes
Southwark - A2 Old Kent Road[AA]	R	70	43	n/a	0	n/a
Southwark - Elephant and Castle	U	80	41	n/a	0	n/a
Sutton - Beddington Lane	I	86	27	n/a	0	n/a

Site Name	Type	Capture Rate (%)	Annual Mean < 40 ugm^{-3}	Annual Mean Achieved?	No more than 18 occurrences of hourly mean > 200ugm^{-3} (104.7ppb)	Hourly Mean Achieved?
Sutton - Beddington Lane north	I	95	32	yes	0	yes
Sutton - Carshalton	S	88	22	n/a	0	n/a
Sutton - Wallington	K	59	66	n/a	9	n/a
Sutton - Worcester Park	K	98	52	no	11	yes
Thurrock - Calcutta Road Tilbury	R	89	31	n/a	0	n/a
Thurrock - London Road (Grays) [A]	U	97	26	yes	0	yes
Thurrock - London Road (Purfleet)	R	98	56	no	0	yes
Thurrock - Stanford-le-Hope[AA]	R	98	24	yes	0	yes
Tower Hamlets – Blackwall[T]	R	96	58	no	0	yes
Tower Hamlets - Mile End Road[AA]	R	87	53	n/a	0	n/a
Tower Hamlets - Millwall Park	U	34	24	n/a	0	n/a
Tower Hamlets - Victoria Park	U	62	30	n/a	0	n/a
Wandsworth - Battersea	R	74	43	n/a	0	n/a
Wandsworth - Putney	U	57	38	n/a	0	n/a
Wandsworth - Putney High Street	K	91	123	no	1443	no
Wandsworth - Putney High Street Facade	R	97	96	no	336	no
Wandsworth - Tooting High Street	R	50	61	n/a	9	n/a
Wandsworth - Wandsworth Town Hall	U	78	36	n/a	0	n/a
Westminster - Horseferry Road[A]	U	96	39	yes	0	yes
Westminster - Marylebone Road[AA]	K	98	88	no	56	no
Westminster - Oxford Street	K	88	135	n/a	1391	no
Westminster - Strand (Northbank BID)	R	60	108	n/a	284	no
Westminster - Victoria	U	94	52	no	0	Yes
Windsor and Maidenhead - Clarence Road	R	99	36	yes	0	yes
Windsor and Maidenhead - Frascati Way	R	96	38	yes	0	yes

Table 3: AQS Objective results for NO_2

Summary

- 32 sites out of the 60 sites that achieved the 90% data capture requirement achieved the annual mean objective for nitrogen dioxide (NO_2) less than 40 µgm^{-3}.
- 28 out of 60 sites did not achieve the annual mean objective.
- 9 sites recorded an annual mean of twice the legal limit or above.
- 50 sites achieved the hourly mean objective of no more than 18 occurrences of an hourly mean greater than 200 µgm^{-3}.
- 14 sites exceeded the hourly mean objective for NO_2.
- Two sites measured more than 1000 hours with mean NO_2 greater than 200 µgm^{-3}.
- The main source of NO_2 in London is traffic emissions.

3.3 Nitrogen Oxides

Site Name	Type	Capture Rate (%)	Annual Mean NO_X as NO_2 ugm^{-3}
Barking and Dagenham - Rush Green	S	92	30
Barking and Dagenham - Scrattons Farm	S	95	45
Bexley - Belvedere	S	98	35
Bexley - Belvedere West	U	85	31
Bexley - Slade Green[A]	S	92	40
Brentwood - Brentwood Town Hall	U	27	35
Camden - Bloomsbury[A]	U	98	75
Camden - Euston Road	R	82	297
Camden - Holborn (inmidtown)	K	96	221
Camden - Swiss Cottage[AA]	K	99	159
Castle Point - Hadleigh	R	96	40
City of London - Beech Street	R	98	344
City of London - Sir John Cass School	U	90	68
City of London - Walbrook Wharf	R	95	284
Croydon - Norbury	K	98	140
Croydon - Purley Way A23	R	84	80
Ealing - Hanger Lane Gyratory	R	98	288
Ealing - Horn Lane	I	99	114
Ealing - Southall	U	96	39
Ealing - Western Avenue	R	66	154
Enfield - Bowes Primary School	R	93	101
Enfield - Bush Hill Park	S	76	38
Enfield - Derby Road	R	40	97
Enfield - Prince of Wales School	U	98	42
Greenwich - A206 Burrage Grove	R	98	58
Greenwich - Blackheath	R	93	98
Greenwich - Eltham[AA]	S	94	28
Greenwich - Fiveways Sidcup Rd A20	R	99	116
Greenwich - Millennium Village	I	59	44
Greenwich - Plumstead High Street	R	71	67
Greenwich - Trafalgar Road	R	90	62
Greenwich - Westhorne Avenue	R	98	85
Greenwich - Woolwich Flyover	R	96	198
Greenwich and Bexley - Falconwood	R	99	95
Hackney - Old Street	R	98	141
Hammersmith and Fulham - Shepherds Bush	R	89	192
Haringey - Priory Park South[AA]	U	93	32
Haringey - Haringey Town Hall[AA]	R	96	87
Harrow - Pinner Road	R	25	115
Harrow - Stanmore	U	92	31
Havering - Rainham	R	99	62
Havering - Romford	R	75	71

Site Name	Type	Capture Rate (%)	Annual Mean NO_X as NO_2 ugm^{-3}
Hounslow and Ealing - Gunnersbury Avenue	R	11	219
Islington - Arsenal	U	99	40
Islington - Holloway Road	R	93	151
Kensington and Chelsea - Cromwell Road	R	63	111
Kensington and Chelsea - Earls Court Rd	K	99	265
Kensington and Chelsea - Kings Road	R	99	187
Kensington and Chelsea - Knightsbridge	R	97	174
Kensington and Chelsea - North Ken[AA]	U	98	46
Kingston Upon Thames - Sopwith Way	R	67	116
Kingston Upon Thames - Tolworth Broadway	R	65	108
Lambeth - Bondway Interchange	I	98	196
Lambeth - Brixton Road	K	97	414
Lambeth - Streatham Green	U	85	53
Lewisham - Catford	U	82	86
Lewisham - Loampit Vale	R	84	132
Lewisham - New Cross	R	92	112
Merton - Willow Lane Industrial Estate high level	I	40	48
Merton - Willow Lane Industrial Estate low level	I	40	55
Redbridge - Gardner Close	R	83	70
Redbridge - Ley Street	U	91	62
Reigate and Banstead - Horley[AA]	S	98	32
Reigate and Banstead - Horley South	S	98	43
Reigate and Banstead - Poles Lane	RU	99	18
Richmond Upon Thames - Barnes Wetlands	S	94	30
Richmond Upon Thames - Castelnau	R	99	67
Richmond Upon Thames - Craneford Way high level	I	32	33
Richmond Upon Thames - Craneford Way low level	I	35	33
Richmond Upon Thames - Hanworth Road high level	K	18	116
Richmond Upon Thames - Hanworth Road low level	K	18	117
Richmond Upon Thames - Ntl Physical Lab[A]	S	95	26
Sevenoaks - Bat and Ball	R	61	77
Sevenoaks - Greatness Park	U	96	24
Southwark - A2 Old Kent Road[AA]	R	70	97
Southwark - Elephant and Castle	U	80	64
Sutton - Beddington Lane	I	86	50
Sutton - Beddington Lane north	I	95	67
Sutton - Carshalton	S	88	33
Sutton - Wallington	K	59	143
Sutton - Worcester Park	K	98	125
Thurrock - Calcutta Road Tilbury	R	89	54
Thurrock - London Road (Grays)[A]	U	97	40
Thurrock - London Road (Purfleet)	R	98	176
Thurrock - Stanford-le-Hope[AA]	R	98	46
Tower Hamlets – Blackwall[T]	R	96	141
Tower Hamlets - Mile End Road[AA]	R	87	107

Site Name	Type	Capture Rate (%)	Annual Mean NO_X as NO_2 ugm^{-3}
Tower Hamlets - Millwall Park	U	34	35
Tower Hamlets - Victoria Park	U	62	36
Wandsworth - Battersea	R	74	84
Wandsworth - Putney	U	57	63
Wandsworth - Putney High Street	K	91	316
Wandsworth - Putney High Street Facade	R	97	244
Wandsworth - Tooting High Street	R	50	133
Wandsworth - Wandsworth Town Hall	U	78	67
Westminster - Horseferry Road[A]	U	96	63
Westminster - Marylebone Road[AA]	K	98	299
Westminster - Oxford Street	K	88	421
Westminster - Strand (Northbank BID)	R	60	353
Westminster - Victoria	U	94	102
Windsor and Maidenhead - Clarence Road	R	99	74
Windsor and Maidenhead - Frascati Way	R	96	90

Table 4: Annual Mean values for NOx

3.4 Ozone

Site Name	Type	Capture Rate (%)	No more than 10 days where maximum rolling 8hr mean >= 100 ugm^{-3} (50ppb)	Achieved?
Bexley - Belvedere West	U	99	7	yes
Bexley - Slade Green[A]	S	99	7	yes
Brent – Ikea[T]	R	94	0	yes
Camden - Bloomsbury[A]	U	98	2	yes
Ealing - Southall	U	99	3	yes
Greenwich - Eltham[AA]	S	99	7	yes
Greenwich - Plumstead High Street	R	98	0	yes
Greenwich - Westhorne Avenue	R	92	1	yes
Greenwich - Woolwich Flyover[T]	R	98	0	yes
Greenwich and Bexley - Falconwood	R	100	2	yes
Hackney - Old Street[T]	R	93	5	yes
Haringey - Priory Park South[AA]	U	99	7	yes
Kensington and Chelsea - North Ken[AA]	U	98	5	yes
Lewisham - Catford	U	91	0	yes
Merton - Willow Lane Industrial Estate	I	36	1	n/a
Redbridge - Ley Street	U	97	8	yes
Reigate and Banstead - Poles Lane	RU	99	13	no
Richmond Upon Thames - Barnes Wetlands	S	97	8	yes
Richmond Upon Thames - Craneford Way	I	35	1	n/a
Richmond Upon Thames - Hanworth Road	K	19	0	n/a
Richmond Upon Thames - Ntl Physical Lab[A]	S	93	9	yes
Sevenoaks - Greatness Park	U	95	13	no
Southwark - Elephant and Castle	U	85	2	n/a
Sutton - Carshalton	S	61	2	n/a
Thurrock - London Road (Grays)[A]	U	98	4	yes
Tower Hamlets – Blackwall[T]	R	90	0	yes
Tower Hamlets - Millwall Park	U	40	0	n/a
Wandsworth - Wandsworth Town Hall	U	90	4	yes
Westminster - Marylebone Road[AA]	K	98	0	yes

Table 5: AQS Objective results for O_3

Summary

- 21 sites out of 23 which achieved the 90% data capture requirement achieved the 8 hourly mean AQS objective for ozone of no more than ten days measuring a daily mean greater than or equal to 100µgm^{-3}.
- 2 sites, one rural and one urban background, did not achieve the objective.
- Ozone is a regional pollutant. It is greater away from busy roads as it is scavenged by NO_X from traffic.

3.5 Sulphur Dioxide

Site Name	Type	Capture Rate (%)	No more than 35 occurrences of 15min mean >=350ugm^{-3} (100ppb)	Achieved?
Barking and Dagenham - Rush Green	S	99	0	yes
Bexley - Slade Green	S	19	0	n/a
Camden - Bloomsbury[A]	U	98	0	yes
Enfield - Derby Road	R	40	0	n/a
Greenwich - Eltham	S	99	0	yes
Kensington and Chelsea - North Ken[AA]	U	99	0	yes
Lambeth - Bondway Interchange	I	99	0	yes
Lewisham - Catford	U	97	0	yes
Lewisham - New Cross	R	96	0	yes
Thurrock - Calcutta Road Tilbury	R	84	0	n/a
Thurrock - London Road (Grays)[A]	U	97	0	yes
Tower Hamlets - Victoria Park	U	65	0	n/a
Wandsworth - Wandsworth Town Hall	U	91	0	yes
Westminster - Marylebone Road[AA]	K	98	0	yes

Table 6: AQS Objective results for SO_2

Summary

- All 10 sites that achieved the 90% data capture requirement achieved the AQS objective of no more than 35 occurrences of 15 minute mean greater than 350 µgm^{-3} for SO_2.
- No 15 minute mean SO_2 measurements greater than 350 µgm^{-3} were recorded at any LAQN site.
- The 15 minute mean objective is the most stringent of the current AQS objectives for SO_2.
- The WHO Guidelines (WHO, 2006) recommended a significant reduction in the maximum daily mean concentration from the current 125 µgm^{-3} to an eventual 20 µgm^{-3}. Two of the 10 sites achieving the data capture requirement of 90% exceeded this target in 2015.

3.6 Particulate Matter PM_{10}

Site Name	Type	Capture Rate (%)	Annual Mean < 40 ugm^{-3}	Annual Mean Achieved?	No more than 35 occurrences of daily mean >= 50ugm^{-3}	Daily Mean Achieved?
Barking and Dagenham - Scrattons Farm	S	94	21	yes	3	yes
Bexley – Belvedere TEOM	S	94	18	yes	3	yes
Bexley - Belvedere FDMS	S	61	14	n/a	2	n/a
Bexley - Belvedere West TEOM	U	94	18	yes	1	yes
Bexley - Belvedere West FDMS	U	87	15	n/a	2	n/a
Bexley - Slade Green	S	97	17	yes	2	yes
Brent - Ikea	R	95	29	yes	23	yes
Brent - John Keble Primary School	R	93	17	yes	1	yes
Brent - Neasden Lane	I	53	31	n/a	15	n/a
Camden - Bloomsbury[A]	U	70	19	n/a	6	n/a
Camden - Euston Road	R	75	28	n/a	18	n/a
Camden - Shaftesbury Avenue	R	98	22	yes	4	yes
Camden - Swiss Cottage[AA]	K	93	20	yes	8	yes
City of London - Beech Street	R	88	28	n/a	17	n/a
City of London - Sir John Cass School	U	99	23	yes	3	yes
City of London - Upper Thames Street	R	92	41	no	74	no
Croydon - George Street	R	24	24	n/a	2	n/a
Ealing - Hanger Lane Gyratory	R	92	25	yes	6	yes
Ealing - Horn Lane FDMS[AA]	I	66	28	n/a	9	n/a
Ealing - Horn Lane TEOM	I	96	27	yes	17	yes
Ealing - Southall	U	98	15	yes	2	yes
Ealing - Western Avenue	R	75	31	n/a	22	n/a
Enfield - Bowes Primary School	R	51	19	n/a	1	n/a
Enfield - Derby Road	R	25	31	n/a	6	n/a
Greenwich - A206 Burrage Grove	R	96	22	yes	5	yes
Greenwich - Blackheath	R	89	25	n/a	12	n/a
Greenwich - Eltham	S	96	17	yes	4	yes
Greenwich - Fiveways Sidcup Rd A20	R	44	23	n/a	3	n/a
Greenwich - Millennium Village	I	55	17	n/a	1	n/a
Greenwich - Plumstead High Street	R	95	18	yes	3	yes
Greenwich - Trafalgar Road	R	90	19	yes	1	yes
Greenwich - Westhorne Avenue	R	91	22	yes	9	yes
Greenwich - Woolwich Flyover	R	99	30	yes	22	yes
Greenwich and Bexley – Falconwood TEOM	R	47	20	n/a	1	n/a
Greenwich and Bexley - Falconwood FDMS	R	49	28	n/a	14	n/a
Hackney - Old Street[T]	R	93	26	yes	5	yes
Hammersmith and Fulham - Shepherds Bush	R	87	28	n/a	15	n/a
Harrow - Pinner Road	R	41	18	n/a	1	n/a
Harrow - Stanmore	U	98	14	yes	1	yes
Havering - Rainham	R	94	18	yes	3	yes
Havering - Romford	R	94	24	yes	9	yes

Site Name	Type	Capture Rate (%)	Annual Mean < 40 ugm^{-3}	Annual Mean Achieved?	No more than 35 occurrences of daily mean >= 50ugm^{-3}	Daily Mean Achieved?
Hounslow and Ealing - Gunnersbury Avenue	R	10	30	n/a	3	n/a
Islington - Arsenal	U	92	18	yes	2	yes
Islington - Holloway Road	R	92	22	yes	2	yes
Kensington and Chelsea - Cromwell Road	R	51	23	n/a	4	n/a
Kensington and Chelsea - Earls Court Rd	K	94	27	yes	15	yes
Kensington and Chelsea - North Ken TEOM	U	96	19	yes	2	yes
Kensington and Chelsea - North Ken FDMS[AA]	U	97	20	yes	7	yes
Kingston Upon Thames - Sopwith Way	R	73	22	n/a	3	n/a
Kingston Upon Thames - Tolworth Broadway	R	69	22	n/a	1	n/a
Lambeth - Bondway Interchange	I	88	43	n/a	73	no
Lambeth - Brixton Road	K	73	28	n/a	11	n/a
Lambeth - Streatham Green	U	31	19	n/a	1	n/a
Lewisham - Loampit Vale	R	96	17	yes	1	yes
Lewisham - Mercury Way	I	92	22	yes	16	yes
Lewisham - New Cross	R	92	23	yes	8	yes
Merton - Merton Road	R	92	25	yes	21	yes
Merton - Willow Lane Industrial Estate	I	40	23	n/a	3	n/a
Redbridge - Gardner Close	R	37	17	n/a	1	n/a
Redbridge - Ley Street	U	78	19	n/a	3	n/a
Reigate and Banstead - Horley	S	80	19	n/a	1	n/a
Reigate and Banstead FDMS	S	96	21	yes	6	yes
Richmond Upon Thames - Barnes Wetlands	S	98	13	yes	1	yes
Richmond Upon Thames - Castelnau	R	99	17	yes	1	yes
Richmond Upon Thames - Craneford Way	I	36	22	n/a	3	n/a
Richmond Upon Thames - Hanworth Road	K	18	21	n/a	0	n/a
Sevenoaks - Bat and Ball	R	96	21	yes	3	yes
Sevenoaks - Greatness Park	U	71	21	n/a	2	n/a
Sevenoaks - Sevenoaks Quarry	I	45	27	n/a	4	n/a
Southwark - A2 Old Kent Road[AA]	R	46	20	n/a	3	n/a
Southwark - Elephant and Castle	U	80	24	n/a	5	n/a
Sutton - Beddington Lane	I	48	19	n/a	3	n/a
Sutton - Beddington Lane north	I	91	24	yes	8	yes
Sutton - Wallington	K	86	16	n/a	0	n/a
Sutton - Worcester Park	K	94	23	yes	13	yes
Thurrock - London Road (Grays)[A]	U	98	17	yes	2	yes
Thurrock - London Road (Purfleet)	R	99	25	yes	9	yes
Thurrock - Stanford-le-Hope[AA]	R	66	17	n/a	2	n/a
Tower Hamlets – Blackwall[T]	R	78	22	n/a	8	n/a
Tower Hamlets - Millwall Park	U	11	15	n/a	0	n/a
Tower Hamlets - Victoria Park	U	65	19	n/a	2	n/a
Wandsworth - Battersea	R	97	26	yes	16	yes
Wandsworth - Putney	U	83	14	n/a	1	n/a

Site Name	Type	Capture Rate (%)	Annual Mean < 40 ugm^{-3}	Annual Mean Achieved?	No more than 35 occurrences of daily mean >= 50ugm^{-3}	Daily Mean Achieved?
Wandsworth - Putney High Street	K	99	21	yes	1	yes
Wandsworth - Tooting High Street	R	53	24	n/a	4	n/a
Westminster - Horseferry Road[A]	U	92	17	yes	3	yes
Westminster - Marylebone Road TEOM	K	95	30	yes	13	yes
Westminster - Marylebone Road FDMS[AA]	K	97	24	yes	10	yes

Table 7: AQS Objective results for PM_{10}.

All PM_{10} measurements have been converted to reference equivalent by the methods recommended in Defra's Local Air Quality Management Technical Guidance (Defra, 2016), i.e. TEOM measurements have been corrected using the Volatile Correction Model (VCM) and unheated BAM measurements have been multiplied by 0.833. Results revised June 2018.

Summary

- 44 out of 45 sites achieving the 90% data capture requirement, met the annual mean AQS objective of 40 µgm^{-3} for PM_{10}. The site which did not achieve the objective was affected by local construction work.
- Two sites did not meet the daily mean objective of no more than 35 days with a daily mean greater than or equal to 50 µgm^{-3}. These sites measured 72 and 73 days with a mean concentration greater than 50 µgm^{-3}. One of these was the same site that did not achieve the annual mean objective and was affected by local construction work.

3.7 Particulate Matter $PM_{2.5}$

Site Name	Type	Instrument	Capture Rate (%)	Annual Mean ugm^{-3} uncorrected
Bexley - Belvedere	S	TEOM*	93	10
Bexley - Belvedere West	U	TEOM*	96	8
Bexley - Slade Green[AA]	S	FDMS	56	15
Bexley - Thamesmead	S	TEOM*	77	8
Brent – Ikea[T]	R	TEOM*	85	12
Camden - Bloomsbury[A]	U	FDMS	95	11
Camden - Euston Road	R	FDMS	78	17
Camden - Swiss Cottage[AA]	K	FDMS	96	12
City of London - Farringdon Street	K	BAM *	47	22
City of London - Farringdon Street	K	BAMH	22	17
Croydon - Norbury Manor	U	BAMH	63	9
Ealing - Southall FDMS	U	FDMS	97	12
Greenwich - A206 Burrage Grove	R	FDMS	86	12
Greenwich - Eltham[AA]	S	FDMS	77	11
Greenwich - Millennium Village	I	FDMS	34	12
Greenwich - Plumstead High Street	R	FDMS	98	15
Greenwich - Westhorne Avenue	R	FDMS	98	13
Greenwich - Woolwich Flyover[T]	R	TEOM*	88	12
Greenwich and Bexley - Falconwood	R	TEOM*	22	9
Greenwich and Bexley - Falconwood	R	FDMS	46	14
Hackney - Old Street[T]	R	TEOM*	99	12
Haringey - Haringey Town Hal[AA]l	R	FDMS	95	15
Harrow - Stanmore[AA]	U	FDMS	93	11
Havering - Rainham	R	FDMS	96	11
Kensington and Chelsea - Cromwell Road	R	FDMS	51	15
Kensington and Chelsea - North Ken[AA]	U	FDMS	96	11
Lewisham - New Cross	R	FDMS	88	16
Redbridge - Gardner Close	R	BAM*	13	9
Richmond Upon Thames - Bushy Park	S	FDMS	53	9
Sutton - Beddington Lane north	I	BAM*	83	15
Thurrock - Stanford-le-Hope[AA]	R	FDMS	96	10
Tower Hamlets – Blackwall[T]	R	FDMS	95	14
Westminster - Marylebone Road[AA]	K	FDMS	97	16

Table 8: Annual mean results for $PM_{2.5}$

n.b. instruments marked with a * are not considered a reference equivalent measurement method

Summary

- All 15 sites with data capture of 90% or more that used a reference equivalent measurement method achieved the EU target value of 25 µgm^{-3} as an annual mean. This target value should be met by 2020.
- No sites using a reference equivalent measurement method achieved the WHO guideline value of 10 µgm^{-3} (WHO, 2006).

4 References

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