



London Air Quality Network Summary Report 2011

December 2013

Louise Mittal, Timothy Baker and Gary Fuller

Environmental Research Group

King's College London

Title	London Air Quality Network – Summary Report 2011
--------------	--

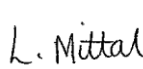
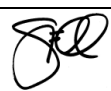
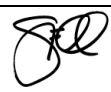
Customer	London Air Quality Network
-----------------	----------------------------

Customer Ref	
---------------------	--

File Reference	erg\AIRQUALI\LONDON\ANNUALRE\2011\2011 LAQN Summary Report.pdf
-----------------------	--

Report Number	
----------------------	--

Environmental Research Group
 King's College London
 4th Floor
 Franklin-Wilkins Building
 150 Stamford St
 London SE1 9NH
 Tel 020 7848 4044
 Fax 020 7848 4045

	Name	Signature	Date
Author	Louise Mittal		5 th December 2013
Reviewed by	Gary Fuller		5 th December 2013
Approved by	Gary Fuller		5 th December 2013

Contents

London Air Quality Network	1
Summary Report 2011	1
London Air Quality Network – Summary Report 2011	2
1 Introduction	4
2 Air quality Strategy Objectives and EU Limit Values	5
3 Results.....	6
3.1 Carbon Monoxide	6
3.2 Nitrogen Dioxide.....	7
3.3 Nitrogen Oxides	10
3.4 Ozone.....	13
3.5 Sulphur Dioxide.....	14
3.6 Particulate Matter PM ₁₀	15
3.7 Particulate Matter PM _{2.5}	18
4 References	19

1 Introduction

This report details the results of air pollution measurements made on the London Air Quality Network during 2011. 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 AEA 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 2011 are detailed in Tables 2 to 8.

Key to site types:

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

3.1 Carbon Monoxide

Site Name	Type	Capture Rate (%)	No occurrences of rolling 8hr mean $\geq 10\text{mgm}^{-3}$ (8.6ppb)	Achieved?
Bexley - Slade Green	S	98	0	yes
Camden - Bloomsbury	U	99	0	yes
Ealing - Acton Town Hall	R	98	0	yes
Hackney - Clapton	U	66	0	n/a
Islington - Holloway Road	R	66	0	n/a
Kensington and Chelsea - Cromwell Road	R	96	0	yes
Kensington and Chelsea - North Ken	U	97	0	yes
Newham - Cam Road	R	97	0	yes
Newham - Wren Close	U	95	0	yes
Redbridge - Gardner Close	R	90	0	yes
Redbridge - South Woodford	R	29	0	n/a
Richmond Upon Thames - Lower Mortlake Rd	R	87	0	n/a
Sevenoaks - Greatness Park	U	94	0	yes
Tower Hamlets - Mile End Road	R	95	0	yes
Wandsworth - Putney	U	87	0	n/a
Wandsworth - Wandsworth Town Hall	U	98	0	yes
Westminster - Horseferry Road	U	98	0	yes
Westminster - Marylebone Road	K	96	0	yes

Table 2: AQS Objective results for CO

3.2 Nitrogen Dioxide

Site Name	Type	Capture Rate (%)	Annual Mean < 40 ug ^m ⁻³	Annual Mean Achieved?	No more than 18 occurrences of hourly mean > 200ug ^m ⁻³ (104.7ppb)	Hourly Mean Achieved?
Barking and Dagenham - North Street	K	39	51	n/a	3	n/a
Barking and Dagenham - Rush Green	S	83	25	n/a	0	n/a
Barking and Dagenham - Scrattons Farm	S	43	37	n/a	0	n/a
Barnet - Finchley	U	89	31	n/a	0	n/a
Barnet - Tally Ho Corner	K	90	69	no	14	yes
Bexley - Belvedere	S	94	26	yes	0	yes
Bexley - Belvedere West	U	98	24	yes	0	yes
Bexley - Erith	I	8	34	n/a	0	n/a
Bexley - Slade Green	S	87	29	n/a	0	n/a
Brent - Ikea	R	82	75	n/a	10	n/a
Brent - John Keble Primary School	R	79	45	n/a	0	n/a
Brent - Neasden Lane	I	86	41	n/a	2	n/a
Brentwood - Brentwood Town Hall	U	94	28	yes	0	yes
Camden - Bloomsbury	U	97	50	no	0	yes
Camden - Euston Road	R	87	123	n/a	712	no
Camden - Shaftesbury Avenue	R	89	76	n/a	15	n/a
Camden - Swiss Cottage	K	97	72	no	76	no
Castle Point - Hadleigh	R	39	30	n/a	0	n/a
City of London - Senator House	U	94	51	no	0	yes
City of London - Sir John Cass School	U	84	45	n/a	0	n/a
City of London - Walbrook Wharf	R	74	103	n/a	231	no
Croydon - George Street	R	82	44	n/a	1	n/a
Croydon - Norbury	K	98	63	no	12	yes
Ealing - Acton Town Hall	R	93	54	no	3	yes
Ealing - Ealing Town Hall	U	95	42	no	0	yes
Ealing - Hanger Lane Gyratory	R	92	79	no	66	no
Ealing - Horn Lane	I	88	57	n/a	14	n/a
Ealing - Southall	U	98	29	yes	0	yes
Ealing - Southall Railway	R	72	34	n/a	0	n/a
Ealing - Western Avenue	R	86	64	n/a	2	n/a
Enfield - Bowes Primary School	R	84	45	n/a	2	n/a
Enfield - Bush Hill Park	S	39	35	n/a	0	n/a
Enfield - Derby Road	R	73	47	n/a	0	n/a
Greenwich - A206 Burrage Grove	R	99	43	no	1	yes
Greenwich - Blackheath	R	99	48	no	1	yes
Greenwich - Eltham	S	91	23	yes	0	yes
Greenwich - Fiveways Sidcup Rd A20	R	85	47	n/a	0	n/a
Greenwich - Millennium Village	I	95	33	yes	0	yes
Greenwich - Plumstead High Street	R	91	42	no	0	yes
Greenwich - Trafalgar Road	R	99	42	no	0	yes
Greenwich - Westthorne Avenue	R	99	44	no	0	yes
Greenwich - Woolwich Flyover	R	99	67	no	6	yes
Greenwich and Bexley - Falconwood	R	97	42	no	7	yes
Hackney - Clapton	U	65	40	n/a	3	n/a

Site Name	Type	Capture Rate (%)	Annual Mean < 40 ug ^m ⁻³	Annual Mean Achieved?	No more than 18 occurrences of hourly mean > 200ug ^m ⁻³ (104.7ppb)	Hourly Mean Achieved?
Hackney - Old Street	R	97	60	no	0	yes
Hammersmith and Fulham - Shepherds Bush	R	16	88	n/a	3	n/a
Haringey - Haringey Town Hall	R	73	39	n/a	0	n/a
Haringey - Priory Park	U	67	31	n/a	0	n/a
Harrow - Pinner Road	R	99	47	no	0	yes
Harrow - Stanmore	U	97	25	yes	0	yes
Havering - Rainham	R	23	41	n/a	0	n/a
Havering - Romford	R	92	40	yes	0	yes
Heathrow Airport	I	34	56	n/a	1	n/a
Hillingdon - Harlington	U	96	34	yes	0	yes
Hillingdon - Hillingdon Hospital	R	43	36	n/a	0	n/a
Hillingdon - Oxford Avenue	R	43	46	n/a	0	n/a
Hillingdon - Sipson Road	S	97	55	no	0	yes
Hillingdon - South Ruislip	R	44	43	n/a	0	n/a
Hounslow - Brentford	R	97	53	no	0	yes
Hounslow - Chiswick High Road	R	85	56	n/a	0	n/a
Hounslow - Cranford	S	96	28	yes	0	yes
Hounslow - Feltham	R	12	49	n/a	0	n/a
Hounslow - Hatton Cross	U	91	34	yes	0	yes
Hounslow - Heston Road	R	96	48	no	1	yes
Islington - Arsenal	U	91	37	yes	0	yes
Islington - Holloway Road	R	98	60	no	2	yes
Kensington and Chelsea - Cromwell Road	R	95	66	no	4	yes
Kensington and Chelsea - Earls Court Rd	K	96	101	no	385	no
Kensington and Chelsea - Kings Road	R	97	91	no	76	no
Kensington and Chelsea - Knightsbridge	R	97	81	no	179	no
Kensington and Chelsea - North Ken	U	94	36	yes	0	yes
Lambeth - Bondway Interchange	I	81	77	n/a	4	n/a
Lambeth - Brixton Road	K	64	158	n/a	1632	no
Lambeth - Streatham Green	U	91	38	yes	0	yes
Lewisham - Catford	U	99	51	no	0	yes
Lewisham - New Cross	R	94	51	no	0	yes
Mole Valley - Dorking	U	89	23	n/a	0	n/a
Newham - Cam Road	R	95	48	no	0	yes
Newham - Wren Close	U	94	39	yes	0	yes
Reading - Caversham Road	R	91	47	no	1	yes
Reading - Kings Road	R	82	53	n/a	0	n/a
Reading - New Town	U	94	26	yes	0	yes
Reading - Oxford Road	R	91	37	yes	0	yes
Redbridge - Fullwell Cross	K	82	52	n/a	1	n/a
Redbridge - Gardner Close	R	98	49	no	0	yes
Redbridge - Perth Terrace	U	96	33	yes	0	yes
Redbridge - South Woodford	R	95	54	no	0	yes
Reigate and Banstead - Horley	S	98	21	yes	0	yes
Reigate and Banstead - Horley South	S	89	29	n/a	0	n/a

Site Name	Type	Capture Rate (%)	Annual Mean < 40 ug ^m ⁻³	Annual Mean Achieved?	No more than 18 occurrences of hourly mean > 200ug ^m ⁻³ (104.7ppb)	Hourly Mean Achieved?
Reigate and Banstead - Poles Lane	RU	94	18	yes	0	yes
Reigate and Banstead - Reigate High St	K	73	60	n/a	12	n/a
Richmond Upon Thames - Barnes Wetlands	S	97	26	yes	0	yes
Richmond Upon Thames - Castlenau	R	99	39	yes	0	yes
Richmond Upon Thames - Lower Mortlake Rd	R	88	48	n/a	0	n/a
Richmond Upon Thames - Ntl Physical Lab	S	96	21	yes	0	yes
Sevenoaks - Bat and Ball	R	99	28	yes	0	yes
Sevenoaks - Greatness Park	U	92	19	yes	0	yes
Southwark - A2 Old Kent Road	R	73	46	n/a	9	n/a
Sutton - Beddington Lane north	I	98	38	yes	0	yes
Sutton - Carshalton	S	79	27	n/a	0	n/a
Sutton - Therapia Lane	I	94	31	yes	1	yes
Sutton - Wallington	K	60	68	n/a	46	no
Sutton - Worcester Park	K	98	57	no	10	yes
Thurrock - Calcutta Road Tilbury	R	94	40	yes	0	yes
Thurrock - London Road (Grays)	U	89	28	n/a	0	n/a
Thurrock - London Road (Purfleet)	R	98	62	no	4	yes
Thurrock - Stanford-le-Hope	R	98	34	yes	0	yes
Tower Hamlets - Blackwall	R	92	63	no	0	yes
Tower Hamlets - Mile End Road	R	95	57	no	0	yes
Tower Hamlets - Poplar	U	80	34	n/a	0	n/a
Waltham Forest - Crooked Billet	K	11	79	n/a	6	n/a
Waltham Forest - Dawlish Road	U	22	63	n/a	3	n/a
Waltham Forest - Leyton	R	22	50	n/a	0	n/a
Wandsworth - Putney	U	87	46	n/a	10	n/a
Wandsworth - Putney High Street	K	99	154	no	2768	no
Wandsworth - Putney High Street Facade	R	99	128	no	1662	no
Wandsworth - Wandsworth Town Hall	U	70	47	n/a	0	n/a
Westminster - Horseferry Road	U	98	41	no	0	yes
Westminster - Marylebone Road	K	97	97	no	217	no
Windsor and Maidenhead - Clarence Road	R	99	38	yes	0	yes
Windsor and Maidenhead - Frascati Way	R	98	49	no	0	yes

Table 3: AQS Objective results for NO₂

3.3 Nitrogen Oxides

Site Name	Type	Capture Rate (%)	Annual Mean NO _x as NO ₂ ug m ⁻³
Barking and Dagenham - North Street	K	39	97
Barking and Dagenham - Rush Green	S	83	37
Barking and Dagenham - Scrattons Farm	S	43	57
Barnet - Finchley	U	89	49
Barnet - Tally Ho Corner	K	90	155
Bexley - Belvedere	S	94	40
Bexley - Belvedere West	U	98	35
Bexley - Erith	I	8	67
Bexley - Slade Green	S	87	46
Brent - Ikea	R	82	251
Brent - John Keble Primary School	R	79	93
Brent - Neasden Lane	I	86	94
Brentwood - Brentwood Town Hall	U	94	37
Camden - Bloomsbury	U	97	79
Camden - Euston Road	R	87	358
Camden - Shaftesbury Avenue	R	89	159
Camden - Swiss Cottage	K	97	169
Castle Point - Hadleigh	R	39	47
City of London - Senator House	U	94	79
City of London - Sir John Cass School	U	84	77
City of London - Walbrook Wharf	R	74	317
Croydon - George Street	R	82	85
Croydon - Norbury	K	98	160
Ealing - Acton Town Hall	R	93	126
Ealing - Ealing Town Hall	U	95	84
Ealing - Hanger Lane Gyratory	R	92	280
Ealing - Horn Lane	I	88	123
Ealing - Southall	U	98	45
Ealing - Southall Railway	R	72	84
Ealing - Western Avenue	R	86	156
Enfield - Bowes Primary School	R	84	96
Enfield - Bush Hill Park	S	39	55
Enfield - Derby Road	R	73	100
Greenwich - A206 Burrage Grove	R	99	82
Greenwich - Blackheath	R	99	108
Greenwich - Eltham	S	91	31
Greenwich - Fiveways Sidcup Rd A20	R	85	121
Greenwich - Millennium Village	I	95	65
Greenwich - Plumstead High Street	R	91	83
Greenwich - Trafalgar Road	R	99	78
Greenwich - Westthorne Avenue	R	99	95
Greenwich - Woolwich Flyover	R	99	212
Greenwich and Bexley - Falconwood	R	97	95
Hackney - Clapton	U	65	66
Hackney - Old Street	R	97	147
Hammersmith and Fulham - Shepherds Bush	R	16	227

Site Name	Type	Capture Rate (%)	Annual Mean NO _x as NO ₂ ug m ⁻³
Haringey - Haringey Town Hall	R	73	75
Haringey - Priory Park	U	67	42
Harrow - Pinner Road	R	99	103
Harrow - Stanmore	U	97	37
Havering - Rainham	R	23	74
Havering - Romford	R	92	74
Heathrow Airport	I	34	120
Hillingdon - Harlington	U	96	56
Hillingdon - Hillingdon Hospital	R	43	64
Hillingdon - Oxford Avenue	R	43	83
Hillingdon - Sipson Road	S	97	117
Hillingdon - South Ruislip	R	44	92
Hounslow - Brentford	R	97	123
Hounslow - Chiswick High Road	R	85	143
Hounslow - Cranford	S	96	45
Hounslow - Feltham	R	12	113
Hounslow - Hatton Cross	U	91	58
Hounslow - Heston Road	R	96	104
Islington - Arsenal	U	91	56
Islington - Holloway Road	R	98	145
Kensington and Chelsea - Cromwell Road	R	95	153
Kensington and Chelsea - Earls Court Rd	K	96	282
Kensington and Chelsea - Kings Road	R	97	215
Kensington and Chelsea - Knightsbridge	R	97	182
Kensington and Chelsea - North Ken	U	94	54
Lambeth - Bondway Interchange	I	81	171
Lambeth - Brixton Road	K	64	450
Lambeth - Streatham Green	U	91	69
Lewisham - Catford	U	99	96
Lewisham - New Cross	R	94	117
Mole Valley - Dorking	U	89	35
Newham - Cam Road	R	95	80
Newham - Wren Close	U	94	55
Reading - Caversham Road	R	91	95
Reading - Kings Road	R	82	136
Reading - New Town	U	94	37
Reading - Oxford Road	R	91	85
Redbridge - Fullwell Cross	K	82	111
Redbridge - Gardner Close	R	98	96
Redbridge - Perth Terrace	U	96	51
Redbridge - South Woodford	R	95	110
Reigate and Banstead - Horley	S	98	32
Reigate and Banstead - Horley South	S	89	47
Reigate and Banstead - Poles Lane	RU	94	25
Reigate and Banstead - Reigate High St	K	73	144
Richmond Upon Thames - Barnes Wetlands	S	97	36

Site Name	Type	Capture Rate (%)	Annual Mean NO _x as NO ₂ ugm ⁻³
Richmond Upon Thames - Castlenau	R	99	74
Richmond Upon Thames - Lower Mortlake Rd	R	88	106
Richmond Upon Thames - Ntl Physical Lab	S	96	29
Sevenoaks - Bat and Ball	R	99	62
Sevenoaks - Greatness Park	U	92	28
Southwark - A2 Old Kent Road	R	73	106
Sutton - Beddington Lane north	I	98	75
Sutton - Carshalton	S	79	41
Sutton - Therapia Lane	I	94	52
Sutton - Wallington	K	60	154
Sutton - Worcester Park	K	98	134
Thurrock - Calcutta Road Tilbury	R	94	70
Thurrock - London Road (Grays)	U	89	42
Thurrock - London Road (Purfleet)	R	98	167
Thurrock - Stanford-le-Hope	R	98	67
Tower Hamlets - Blackwall	R	92	148
Tower Hamlets - Mile End Road	R	95	119
Tower Hamlets - Poplar	U	80	49
Waltham Forest - Crooked Billet	K	11	193
Waltham Forest - Dawlish Road	U	22	92
Waltham Forest - Leyton	R	22	96
Wandsworth - Putney	U	87	75
Wandsworth - Putney High Street	K	99	360
Wandsworth - Putney High Street Facade	R	99	286
Wandsworth - Wandsworth Town Hall	U	70	85
Westminster - Horseferry Road	U	98	64
Westminster - Marylebone Road	K	97	306
Windsor and Maidenhead - Clarence Road	R	99	81
Windsor and Maidenhead - Frascati Way	R	98	114

Table 4: Annual Mean values for NO_x

3.4 Ozone

Site Name	Type	Capture Rate (%)	No more than 10 days where maximum rolling 8hr mean $\geq 100 \mu\text{g m}^{-3}$ (50ppb)	Achieved?
Bexley - Belvedere West	U	98	24	no
Bexley - Slade Green	S	98	17	no
Brent - Ikea	R	87	0	n/a
Camden - Bloomsbury	U	99	3	yes
City of London - Senator House	U	95	3	yes
City of London - Walbrook Wharf	R	86	0	n/a
Croydon - Thornton Heath	S	94	14	no
Ealing - Acton Town Hall	R	98	0	yes
Ealing - Ealing Town Hall	U	96	9	yes
Greenwich - Eltham	S	98	15	no
Greenwich - Plumstead High Street	R	93	1	yes
Greenwich - Westthorne Avenue	R	99	3	yes
Greenwich - Woolwich Flyover	R	100	1	yes
Greenwich and Bexley - Falconwood	R	97	6	yes
Hackney - Clapton	U	66	1	n/a
Hackney - Old Street	R	99	1	yes
Haringey - Priory Park	U	99	18	no
Hillingdon - Harlington	U	98	11	no
Hillingdon - Sipson Road	S	99	4	yes
Hounslow - Cranford	S	96	6	yes
Kensington and Chelsea - North Ken	U	93	21	no
Lewisham - Catford	U	100	0	yes
Newham - Cam Road	R	86	9	n/a
Newham - Wren Close	U	95	17	no
Reading - New Town	U	99	16	no
Redbridge - Perth Terrace	U	99	12	no
Reigate and Banstead - Poles Lane	RU	98	22	no
Richmond Upon Thames - Barnes Wetlands	S	97	12	no
Richmond Upon Thames - Lower Mortlake Rd	R	88	0	n/a
Richmond Upon Thames - Ntl Physical Lab	S	94	28	no
Sevenoaks - Greatness Park	U	96	29	no
Sutton - Carshalton	S	98	19	no
Thurrock - London Road (Grays)	U	97	10	yes
Tower Hamlets - Blackwall	R	94	0	yes
Tower Hamlets - Poplar	U	99	30	no
Wandsworth - Wandsworth Town Hall	U	94	2	yes
Westminster - Horseferry Road	U	99	8	yes
Westminster - Marylebone Road	K	57	0	n/a

Table 5: AQS Objective results for O₃

3.5 Sulphur Dioxide

Site Name	Type	Capture Rate (%)	No more than 35 occurrences of 15min mean $\geq 350\mu\text{g m}^{-3}$ (100ppb)	Achieved?
Barking and Dagenham - Rush Green	S	85	0	n/a
Bexley - Slade Green	S	69	0	n/a
Brent - Ikea	R	66	0	n/a
Brent - John Keble Primary School	R	79	0	n/a
Camden - Bloomsbury	U	98	0	yes
Castle Point - Hadleigh	R	39	0	n/a
City of London - Senator House	U	91	0	yes
Ealing - Ealing Town Hall	U	90	0	yes
Enfield - Derby Road	R	98	0	yes
Greenwich - Eltham	S	99	0	yes
Haringey - Haringey Town Hall	R	9	0	n/a
Hounslow - Cranford	S	78	0	n/a
Kensington and Chelsea - Cromwell Road	R	95	0	yes
Kensington and Chelsea - North Ken	U	98	0	yes
Lambeth - Bondway Interchange	I	88	0	n/a
Lambeth - Brixton Road	K	78	0	n/a
Lewisham - Catford	U	99	0	yes
Lewisham - New Cross	R	91	0	yes
Newham - Cam Road	R	97	0	yes
Newham - Wren Close	U	86	0	n/a
Redbridge - Gardner Close	R	90	0	yes
Richmond Upon Thames - Lower Mortlake Rd	R	21	0	n/a
Sevenoaks - Greatness Park	U	96	0	yes
Thurrock - London Road (Grays)	U	97	0	yes
Thurrock - Stanford-le-Hope	R	96	0	yes
Tower Hamlets - Poplar	U	99	0	yes
Wandsworth - Wandsworth Town Hall	U	82	0	n/a
Westminster - Horseferry Road	U	98	0	yes
Westminster - Marylebone Road	K	86	0	n/a

Table 6: AQS Objective results for SO₂

3.6 Particulate Matter PM₁₀

Site Name	Type	Capture Rate (%)	Annual Mean < 40 ug m ⁻³	Annual Mean Achieved?	No more than 35 occurrences of daily mean >= 50 ug m ⁻³	Daily Mean Achieved?
Barking and Dagenham - North Street	K	31	38	n/a	27	n/a
Barking and Dagenham - Scrattons Farm	S	69	24	n/a	14	n/a
Barnet - Finchley	U	92	21	yes	14	yes
Barnet - Tally Ho Corner	K	96	28	yes	23	yes
Bexley - Belvedere	S	95	22	yes	20	yes
Bexley - Belvedere FDMS	S	82	25	n/a	25	n/a
Bexley - Belvedere West	U	97	21	yes	16	yes
Bexley - Belvedere West FDMS	U	92	19	yes	12	yes
Bexley - Erith	I	9	26	n/a	2	n/a
Bexley - Manor Road East Gravimetric	I	8	24	n/a	2	n/a
Bexley - Manor Road West Gravimetric	I	83	29	n/a	38	no
Bexley - Slade Green	S	98	18	yes	4	yes
Brent - Ikea	R	87	35	n/a	46	no
Brent - John Keble Primary School	R	87	25	n/a	15	n/a
Brent - Neasden Lane	I	94	39	yes	86	no
Camden - Bloomsbury	U	96	23	yes	17	yes
Camden - Shaftesbury Avenue	R	92	32	yes	27	yes
Camden - Swiss Cottage	K	94	27	yes	31	yes
City of London - Sir John Cass School	U	94	28	yes	21	yes
City of London - Upper Thames Street	R	99	37	yes	47	no
Croydon - George Street	R	94	24	yes	18	yes
Croydon - Thornton Heath	S	97	22	yes	18	yes
Dummy site for tests 4	U	14	9	n/a	0	n/a
Ealing - Acton Town Hall	R	97	26	yes	24	yes
Ealing - Acton Town Hall FDMS	R	86	24	n/a	22	n/a
Ealing - Hanger Lane Gyratory	R	81	32	n/a	29	n/a
Ealing - Horn Lane	I	97	36	yes	59	no
Ealing - Southall	U	97	22	yes	13	yes
Ealing - Southall Railway	R	70	22	n/a	5	n/a
Ealing - Western Avenue	R	85	32	n/a	23	n/a
Enfield - Bowes Primary School	R	69	29	n/a	28	n/a
Enfield - Derby Road	R	93	26	yes	23	yes
Greenwich - A206 Burrage Grove	R	94	28	yes	30	yes
Greenwich - Blackheath	R	99	32	yes	41	no
Greenwich - Eltham	S	94	23	yes	20	yes
Greenwich - Fiveways Sidcup Rd A20	R	77	30	n/a	26	n/a
Greenwich - Millennium Village	I	95	25	yes	25	yes
Greenwich - Plumstead High Street	R	90	22	yes	15	yes
Greenwich - Trafalgar Road	R	99	23	yes	18	yes
Greenwich - Westthorne Avenue	R	97	23	yes	25	yes
Greenwich - Woolwich Flyover	R	99	35	yes	37	no
Greenwich and Bexley - Falconwood FDMS	R	87	27	n/a	25	n/a
Hackney - Old Street	R	94	31	yes	33	yes
Hammersmith and Fulham - Shepherds Bush	R	16	33	n/a	3	n/a
Haringey - Haringey Town Hall	R	65	26	n/a	18	n/a
Haringey - Priory Park	U	98	19	yes	8	yes

Site Name	Type	Capture Rate (%)	Annual Mean < 40 $\mu\text{g m}^{-3}$	Annual Mean Achieved?	No more than 35 occurrences of daily mean $\geq 50\mu\text{g m}^{-3}$	Daily Mean Achieved?
Harrow - Pinner Road	R	98	25	yes	16	yes
Harrow - Stanmore	U	96	20	yes	9	yes
Harwell Rural PARTISOL	RU	90	14	yes	5	yes
Havering - Romford	R	96	25	yes	20	yes
Heathrow Airport	I	35	31	n/a	15	n/a
Hillingdon - Harlington	U	58	19	n/a	1	n/a
Hillingdon - Hillingdon Hospital	R	43	25	n/a	9	n/a
Hillingdon - Oxford Avenue	R	44	27	n/a	14	n/a
Hillingdon - South Ruislip	R	44	27	n/a	14	n/a
Hounslow - Brentford	R	97	31	yes	35	yes
Hounslow - Chiswick High Road	R	48	27	n/a	15	n/a
Hounslow - Cranford	S	48	18	n/a	1	n/a
Hounslow - Feltham	R	50	20	n/a	0	n/a
Hounslow - Hatton Cross	U	91	22	yes	15	yes
Hounslow - Heston Road	R	97	28	yes	32	yes
Islington - Arsenal	U	99	22	yes	15	yes
Islington - Holloway Road	R	97	29	yes	25	yes
Kens and Chelsea 6 - N Ken Par PM10	U	93	19	yes	14	yes
Kensington and Chelsea - Cromwell Road	R	73	27	n/a	7	n/a
Kensington and Chelsea - Earls Court Rd	K	98	33	yes	41	no
Kensington and Chelsea - North Ken	U	92	23	yes	15	yes
Kensington and Chelsea - North Ken FDMS	U	84	24	n/a	17	n/a
Lambeth - Bondway Interchange	I	79	43	n/a	89	no
Lambeth - Brixton Road	K	79	37	n/a	36	no
Lambeth - Streatham Green	U	65	27	n/a	20	n/a
Lewisham - Mercury Way	I	92	23	yes	24	yes
Lewisham - New Cross	R	94	26	yes	18	yes
Marylebone Rd - Partisol PM10 and Magee	K	78	35	n/a	33	n/a
Merton - Merton Road	R	16	26	n/a	0	n/a
Mole Valley - Dorking	U	88	21	n/a	11	n/a
Newham - Cam Road	R	70	29	n/a	16	n/a
Newham - Wren Close	U	65	27	n/a	14	n/a
Reading - Caversham Road	R	80	32	n/a	30	n/a
Reading - Kings Road	R	90	31	yes	29	yes
Reading - New Town	U	92	19	yes	8	yes
Reading - Oxford Road	R	92	25	yes	15	yes
Redbridge - Fullwell Cross	K	93	29	yes	29	yes
Redbridge - Gardner Close	R	78	26	n/a	10	n/a
Redbridge - Perth Terrace	U	98	16	yes	4	yes
Redbridge - South Woodford	R	97	28	yes	25	yes
Reigate and Banstead - Horley	S	97	22	yes	9	yes
Richmond Upon Thames - Barnes Wetlands	S	92	22	yes	17	yes
Richmond Upon Thames - Castlenau	R	99	23	yes	15	yes
Richmond Upon Thames - Lower Mortlake Rd	R	89	26	n/a	12	n/a
Sevenoaks - Bat and Ball	R	99	25	yes	18	yes
Sevenoaks - Greatness Park	U	95	23	yes	13	yes

Site Name	Type	Capture Rate (%)	Annual Mean < 40 $\mu\text{g m}^{-3}$	Annual Mean Achieved?	No more than 35 occurrences of daily mean $\geq 50\mu\text{g m}^{-3}$	Daily Mean Achieved?
Southwark - A2 Old Kent Road	R	80	27	n/a	31	n/a
Sutton - Beddington Lane north	I	99	28	yes	25	yes
Sutton - Therapia Lane	I	98	27	yes	21	yes
Sutton - Wallington	K	59	25	n/a	4	n/a
Sutton - Worcester Park	K	78	31	n/a	27	n/a
Thurrock - London Road (Grays)	U	83	25	n/a	25	n/a
Thurrock - London Road (Purfleet)	R	97	28	yes	24	yes
Thurrock - Stanford-le-Hope	R	95	23	yes	18	yes
Tower Hamlets - Blackwall	R	94	28	yes	32	yes
Tower Hamlets - Poplar	U	98	23	yes	16	yes
Waltham Forest - Crooked Billet	K	10	29	n/a	0	n/a
Waltham Forest - Dawlish Road	U	24	29	n/a	8	n/a
Waltham Forest - Leyton	R	23	32	n/a	12	n/a
Wandsworth - Putney	U	79	22	n/a	13	n/a
Wandsworth - Putney High Street	K	99	32	yes	29	yes
Westminster - Horseferry Road	U	76	19	n/a	8	n/a
Westminster - Marylebone Road	K	97	41	no	73	no
Westminster - Marylebone Road FDMS	K	93	38	yes	57	no
Westminster - Oxford Street	K	95	30	yes	23	yes

Table 7: AQS Objective results for PM₁₀.

All PM₁₀ measurements have been converted to reference equivalent by the methods recommended in Defra's Local Air Quality Management Technical Guidance (Defra, 2009), i.e. TEOM measurements have been corrected using the Volatile Correction Model (VCM) and BAM measurements have been multiplied by 0.83.

3.7 Particulate Matter PM_{2.5}

Site Name	Type	Instrument	Capture Rate (%)	Annual Mean $\mu\text{g m}^{-3}$ uncorrected
Bexley - Belvedere	S	TEOM	95	10
Bexley - Belvedere West	U	TEOM	98	10
Bexley - Erith	I	FDMS	8	15
Bexley - Slade Green FDMS	S	FDMS	96	15
Bexley - Thamesmead	S	TEOM	99	10
Brent - Ikea	R	TEOM	86	16
Camden - Bloomsbury	U	FDMS	98	17
Camden - Swiss Cottage	K	FDMS	91	16
Ealing - Acton Town Hall	R	TEOM	94	13
Environment Agency Neasden Lane	I	TEOM	52	14
Greenwich - A206 Burrage Grove	R	FDMS	48	25
Greenwich - Eltham	S	FDMS	79	16
Greenwich - Millennium Village	I	FDMS	90	19
Greenwich - Plumstead High Street	R	FDMS	94	19
Greenwich - Westthorne Avenue	R	FDMS	99	17
Greenwich - Woolwich Flyover	R	TEOM	99	17
Greenwich and Bexley - Falconwood FDMS	R	FDMS	56	18
Hackney - Clapton	U	TEOM	54	12
Hackney - Old Street	R	TEOM	93	15
Haringey - Haringey Town Hall	R	FDMS	73	19
Harrow - Stanmore	U	FDMS	90	16
Harwell Rural PARTISOL	RU	GRAV	91	10
Hillingdon - Harlington	U	FDMS	84	16
Kensington and Chelsea - N Ken Par PM10	U	GRAV	96	13
Kensington and Chelsea - Cromwell Road	R	FDMS	38	17
Kensington and Chelsea - North Ken	U	FDMS	91	16
Marylebone Rd - Partisol PM10 and Magee	K	GRAV	39	25
Reading - New Town	U	FDMS	95	14
Redbridge - Fullwell Cross	K	BAM	95	12
Redbridge - Gardner Close	R	BAM	97	15
Richmond Upon Thames - Ntl Physical Lab	S	FDMS	79	17
Thurrock - Stanford-le-Hope	R	FDMS	77	18
Tower Hamlets - Blackwall	R	FDMS	94	18
Westminster - Marylebone Road FDMS	K	FDMS	95	24

Table 8: AQS Objective results for PM_{2.5}

4 References

European Commission (EC) 2008. Directive 2008/50/EC of the European Parliament and of the Council on ambient air quality and cleaner air for Europe. Commission of the European Community, Brussels.

Department of Environment Food and Rural Affairs (Defra), 2009. Local Air Quality Management, Technical Guidance LAQM.TG(09).

Department of Environment Food and Rural Affairs (Defra), 2008. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland.

World Health Organisation (WHO), 2006. WHO air quality guidelines for nitrogen dioxide, ozone, sulphur dioxide and particulate matter. Global update 2005. Summary of risk assessment. WHO, Geneva.