Islington Air Quality Annual Status Report

Islington Environmental Pollution, Policy and Project Team

2016 Report

For: GLA
Completed by: Jo Shaw, Environmental Projects Officer
Date: 1st May 2017

This report provides a detailed overview of air quality in the London Borough of Islington and the actions we have undertaken to reduce air pollution during 2016. 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)). www.london.gov.uk/what-we-do/environment/pollution-and-air-quality/working-boroughs

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Abbreviations

AIR-PT/WASP	Air proficiency testing / workplace analysis scheme for proficiency- air quality monitoring schemes
AQ	Air quality
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AQO	Air Quality Objective
AQS	Air Quality Strategy
BREEAM	Building research establishment environmental assessment methodology
CEN	European Committee for Standardization
CHP	Combined heat and power
CIL	Community infrastructure levy
CNG	Compressed natural gas
CO	Carbon monoxide
CoPA	Control of pollution act
DEFRA	Department for environment and rural affairs
EIA	Environmental impact assessment
ES	Emissions surcharge
EV	Electric Vehicle
FORS	Freight operators recognition scheme
GLA	Greater London Authority
HGV	Heavy goods vehicle
LA	Local authority
LAEI	London Atmospheric Emissions Inventory
LAQM	Local Air Quality Management
LEN	Low emissions neighbourhood
LEZ	Low emission zone
LIP	Local implementation plan
LLAQM	London Local Air Quality Management
NO_x	Nitrogen oxides
NO_2	Nitrogen dioxide
NPL	National physical laboratory
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
QA/QC	Quality assurance/ quality control
RE:FIT	Building retrofit scheme www.london.gov.uk/what-we-do/environment/energy/energy-buildings/refit
s106	Section 106
TEOM	Tapered element oscillating microbalance
TfL	Transport for London
TG	Technical guidance
UKAS	United kingdom accreditation service
ULEV	Ultra-low emission vehicle
ULEZ	Ultra-low emission zone
ZEN	Zero Emissions Network

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

The results of monitoring for the sites listed in Table B and Table C are included in Tables D to Table G.

1.1 Locations

Table B.   Details of Automatic Monitoring Sites for 2016

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
IS6	Arsenal	531328	186067	Urban Background	Y	1	N/A	2.5	NO_2, PM_{10}	TEOM
IS2	Holloway Road	530650	185750	Roadside	Y	1	3	3	CO, NO_2, PM_{10}	TEOM

Table C.   Details of Non-Automatic Monitoring Sites for 2016

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)
BIS005/03	Caledonian Road	530721	183584	Roadside	Y	0.5	0.5	2.5	NO_2	N
BIS005/02	Roseberry Avenue	531336	182599	Roadside	Y	0.5	0.5	2.5	NO_2	N
BIS005/06	City Road	532566	182736	Roadside	Y	0.5	0.5	2.5	NO_2	N
BIS005/07	Old Street	532577	182429	Roadside	Y	0.5	0.5	2.5	NO_2	N
BIS005/08	Highbury Corner	531669	184743	Roadside	Y	0.5	0.5	2.5	NO_2	N
BIS005/09	Balls Pond Road	532820	184822	Roadside	Y	0.5	0.5	2.5	NO_2	N

BIS005/11	Holloway Road	531034	185349	Roadside	Y	0.5	0.5	2.5	NO_2	N
BIS005/13	Junction Road	529204	186093	Roadside	Y	0.5	0.5	2.5	NO_2	N
IS005/01DT1	Archway Close	529396	186848	Roadside	Y	0.5	0.5	2.5	NO_2	N
Hol 1*	Holloway Road	530650	185750	Roadside	Y	1	3	3	NO_2	Y
Hol 2*	Holloway Road	530650	185750	Roadside	Y	1	3	3	NO_2	Y
Hol 3*	Holloway Road	530650	185750	Roadside	Y	1	3	3	NO_2	Y
BIS005/04	Percy Circus	530901	182855	Urban Background	Y	1	N/A	2.5	NO_2	N
BIS005/05	Myddleton Square	531317	182998	Urban Background	Y	1	N/A	2.5	NO_2	N
BIS005/01	Arran Walk	532303	184460	Urban Background	Y	1	N/A	2.5	NO_2	N
IS005/03	Sotheby Road	532252	185983	Urban Background	Y	1	N/A	2.5	NO_2	N
BIS005/10	Highbury Fields	531755	185454	Urban Background	Y	1	N/A	2.5	NO_2	N
BIS005/12	Lady Margaret Rd	529325	185813	Urban Background	Y	1	N/A	2.5	NO_2	N
IS005/02	Zoffany Park	529881	187022	Urban Background	Y	1	N/A	2.5	NO_2	N
BIS005/14	Elthorne Park	529987	187342	Urban Background	Y	1	N/A	2.5	NO_2	N
BIS005/15	Turle Road	530469	186891	Urban Background	Y	1	N/A	2.5	NO_2	N
IS005/04	Upper Street (Waterloo Terrace)	531625	184100	Urban Background	Y	1	N/A	2.5	NO_2	N

* Used for collocation study

1.2 Comparison of Monitoring Results with AQOs

The results presented are after adjustments for "annualisation" and for distance to a location of relevant public exposure, the details of which are described in Appendix A.

Table D. Annual Mean NO₂ Ratified and Bias-adjusted Monitoring Results ($\mu g\ m^{-3}$)

Site ID	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2016 % [b]	Annual Mean Concentration (μgm^{-3})						
				2010 [c]	2011 [c]	2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]
BIS005/03	Roadside	100	100	**46**	**54**	**50**	**47**	**51**	**58**	**53**
BIS005/02	Roadside	100	100	**61**	**70**	**58**	**57**	**58**	**62**	**62**
BIS005/06	Roadside	100	100	**55**	**60**	**52**	**42**	**49**	**53**	**53**
BIS005/07	Roadside	100	100	**62**	**72**	**65**	**60**	**56**	**65**	**55**
BIS005/08	Roadside	92	92	**63**	**69**	**60**	**63**	**61**	**67**	**64**
BIS005/09	Roadside	100	100	**59**	**61**	**53**	**56**	**59**	**64**	**58**
BIS005/11	Roadside	100	100	**53**	**58**	**57**	**57**	**61**	**65**	**57**
BIS005/13	Roadside	100	100	**50**	**52**	**45**	**41**	**46**	**53**	**46**
IS005/01DT1	Roadside	92	92	**52**	**57**	**63**	**51**	**58**	**55**	**55**
BIS005/04	Urban Background	100	100	38	**42**	40	38	40	**45**	**46**
BIS005/05	Urban Background	100	100	34	39	36	37	39	39	38
BIS005/01	Urban background (Arran Walk)	100	100	30	33	32	30	32	39	35
IS005/03	Urban background	75	75	31	30	28	32	32	31	37
BIS005/10	Urban Background	100	100	30	36	33	31	32	33	34
BIS005/12	Urban background	100	100	39	35	34	33	33	35	36
IS005/02	Urban Background	100	100	31	35	31	28	28	33	33

Site ID	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2016 % [b]	Annual Mean Concentration (µgm⁻³)						
				2010 [c]	2011 [c]	2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]
BIS005/14	Urban Background	83	83	32	34	30	30	30	33	35
BIS005/15	Urban Background	92	92	30	33	32	30	32	33	37
IS005/04	Urban Background	92	92	30	40	35	34	37	40	39
IS2	Automatic	92	92	**59**	**60**	**55**	**54**	**55**	**61**	**60**
IS6	Automatic	99	99	37	37	37	40	N/A	29	33

Notes: Exceedance of the NO$_2$ annual mean AQO of 40 µgm⁻³ are shown in **bold**.

NO$_2$ annual means in excess of 60 µg m⁻³, indicating a potential exceedance of the NO$_2$ hourly mean AQS objective are shown in bold and underlined.

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

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

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

Table 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 > 200 µgm⁻³						
			2010 [c]	2011 [c]	2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]
IS2	92	92	8	2	0	3	0	0	0
IS6	99	99	0	0	1	10	0	0	0

Notes: Exceedance of the NO$_2$ short term AQO of 200 µgm⁻³ over the permitted 18 days per year are shown in **bold**.

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

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

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

Table F.   Annual Mean PM$_{10}$ Automatic Monitor Results (µg m^{-3})

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2016 % [b]	Annual Mean Concentration (µgm^{-3})						
			2010 [c]	2011 [c]	2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]
IS2	98	98	27	25	27	27	21	22	21
IS6	92	92	22	22	24	22	20	19	18

Notes: Exceedance of the PM$_{10}$ annual mean AQO of 40 µgm^{-3} are shown in **bold**.

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

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

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

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

| Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2016 % [b]	Number of Daily Means > 50 µgm^{-3}						
			2010 [c]	2011 [c]	2012 [c]	2013 [c]	2014 [c]	2015 [c]	2016 [c]
IS2	98	98	8	25	19	10	6	3	7
IS6	92	92	5	15	20	7	5	1	3

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 90% of a full year, the 90.4th percentile is shown in brackets after the number of exceedances.

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

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

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

Figure 1.   Daily means of NO₂ and PM₁₀ at Holloway Road
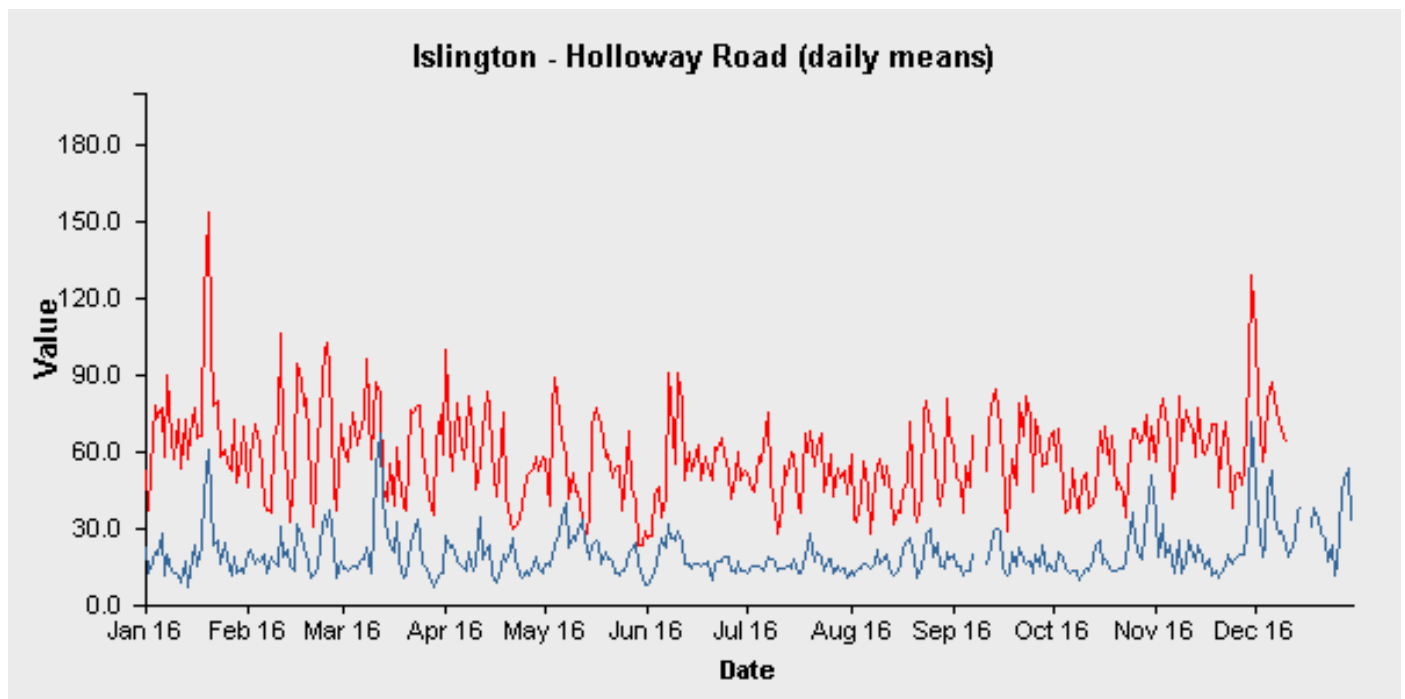
Daily means NO₂ (μg m-3) (red) and PM₁₀ (ref equivalent) (blue) at Holloway Road Automatic Monitor (IS2). Data from www.londonair.org.uk/LondonAir/Default.aspx, April 2017.

Figure 2.   Daily means of NO₂ and PM₁₀ at Arsenal
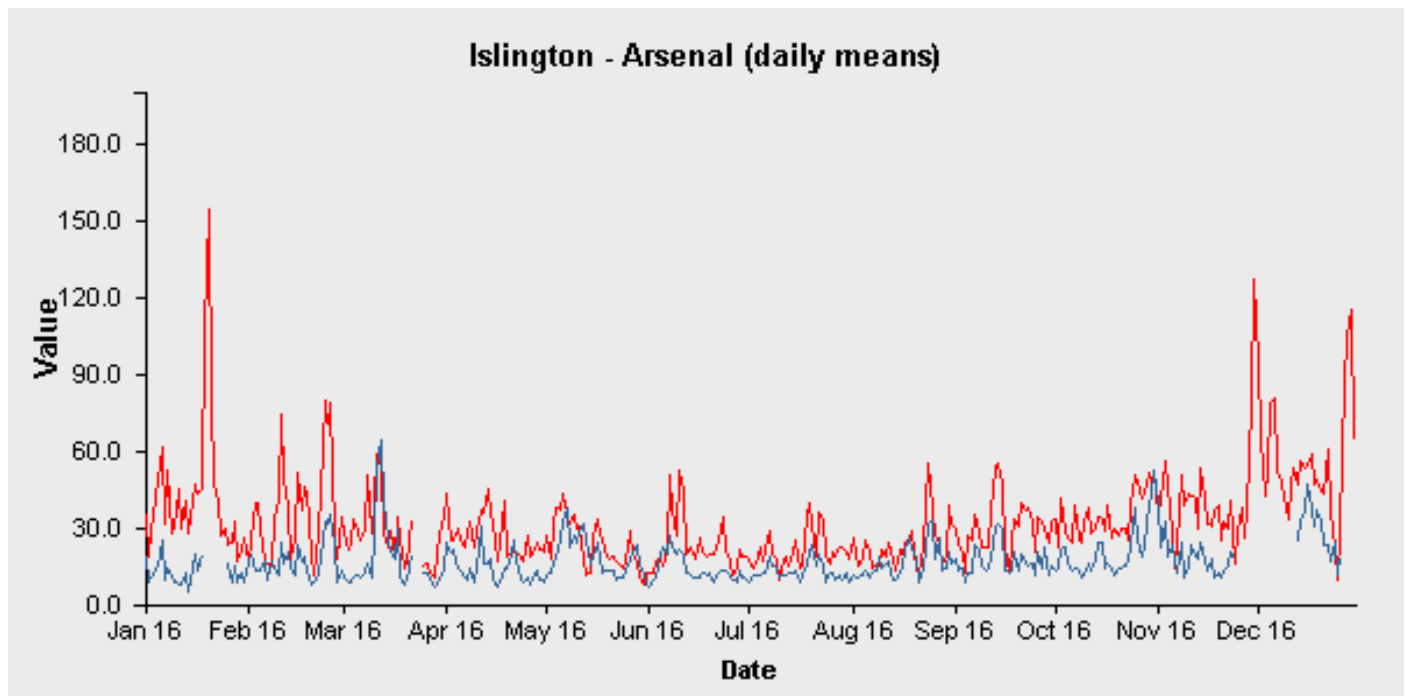
Daily means NO₂ (μg m-3) (red) and PM₁₀ (ref equivalent) (blue) at Arsenal Automatic Monitor (IS6). Data from www.londonair.org.uk/LondonAir/Default.aspx, April 2017.

2. Action to Improve Air Quality

Table H. Commitment to Cleaner Air Borough Criteria

Theme	Criteria		Achieved	Evidence
1. Political leadership	*1.a*	Pledged to become a Cleaner Air for London Borough (at cabinet level) by taking significant action to improve local air quality and signing up to specific delivery targets.	Y	Islington is keen to retain its Cleaner Air Borough status. Islington has an appointed Executive Member for Environment and Transport, covering air quality within the borough. Air Quality is integrated into many Council policy documents and Islington has an Air Quality Action plan. Islington has worked on many air quality projects in 2016 as well as increasing public awareness, lobbying the Mayor, monitoring air quality and reducing air quality impacts form construction and other industries. 2016 has seen significant political interest in Air Quality from the Authority's councillors.
	1.b	Provided an up-to-date Air Quality Action Plan (AQAP), fully incorporated into LIP funding and core strategies.	Y	The Air Quality Strategy 2014-2017 is still operational www.islington.gov.uk/environment/sus_pollute/air_quality/air-quality-strategy. A new Air Quality Strategy to continue beyond 2017 is being created. Air quality is incorporated into the Council's Transport Strategy Local Implementation Plan 2011-2031 www.islington.gov.uk//~/media/sharepoint-lists/public-records/environmentalprotection/businessplanning/plans/20122013/20120530lipmaindocument.
2. Taking action	2.a	Taken decisive action to address air pollution, especially where human exposure and vulnerability (e.g. schools, older people, hospitals etc.) is highest.	Y	The Cleaner Air For Schools projects continued in 2016. For example a walking map was created with Grafton Primary School. Islington is part of the London wide anti-idling scheme. Three anti-idling events were conducted in 2016 to around 100 people; 19th October around Upper Street, 9th November around Archway and 14th December around Finsbury Park. These events included locations outside several schools and the Whittington Hospital. These events will continue in 2017. A Car Free Day with 240 pupils from three primary schools located in high pollution areas in the Borough was conducted 22nd September 2016. These primary schools were Grafton (6th most polluted in Islington, 91st in London), Hugh Myddelton (2nd most polluted in Islington, 46th in London) and St Peter and Paul Catholic (7th most polluted in Islington, 99th in London). Islington schools were provided with resources such as walking diaries and leaflets, to support them to take part in the 2016 Walk to School Week. The Theatre in

				education programme was on-going in 2016. Topics covered included; sustainable travel, active travel and air quality. 67 school and 90 school holiday bikeability courses were conducted in 2016 to around 1200 pupils. 20 girls took part in the 2016 This Girl Can project where they attended a bikeability course and conducted a cycle campaign.
	2.b	Developed plans for business engagement (including optimising deliveries and supply chain), retrofitting public buildings using the RE:FIT framework, integrating no engine idling awareness raising into the work of civil enforcement officers, (etc etc).	Y	Three anti-idling events were conducted in 2016 including locations targeting local businesses, such as the event 14th December around Finsbury Park. Events were attended by volunteers and council staff (including two enforcement officers at each event). Further information was also provided to local residents, delivery drivers and commercial premises regarding idling vehicle engines at these events and throughout the year. City Fringe ZEN continued to work with businesses to improve air quality and business efficiency in 2016 and now consists of a network of over 260 businesses in Islington. Work also began on Archway ZEN and City Fringe LEN in 2016 with local business engagement a key factor.
	2.c	Integrated transport and air quality, such as: improving traffic flows on borough roads to reduce stop/start conditions, improving the public realm for walking and cycling, and introducing traffic reduction measures.	Y	Work revamping the Archway Gyratory System started early 2016. A new two way traffic system including a new public space, dedicated cycle lanes and pedestrian crossings opened in December 2016. Other gyratory systems being considered which include plans for active travel etc. are Highbury Corner and Old Street. Consultations for Highbury Corner began in 2016. The tri-borough LEN interventions project was developed further in 2016; including consideration of areas that are only for use by electric vehicles, pedestrians or ULEV loading-servicing. A feasibility study for electric streets was commissioned in early 2017. The Borough remains a 20mph zone.
	2.d	Made additional resources available to improve local air quality, including by pooling its collective resources (s106 funding, LIPs, parking revenue, etc).	Y	Continued funding from section 106 and LIP to promote City Fringe ZEN and Archway ZEN among businesses in 2016. A car free day was conducted 22nd September 2016 involving Grafton, Hugh Myddelton and St Peter and St Paul Catholic Primary Schools. This event was funded through LIPs and included lung capacity tests and sustainable transport information. LIP funding for a school engagement project with three schools was also gained in 2016 to start early 2017. S106 money is collected to employ two Construction Impact Monitoring Officers who monitored sites throughout 2016.
3. Leading by example	3.a	Invested sufficient resources to complement and drive action from others.	Y	Three AQ officers and one AQ manager; employed to monitor air quality in the Borough, enforce air quality policies, complete air quality projects and manage air quality concerns in the Borough. Three additional staff for ZEN and LEN projects focussing on reducing pollution in specific areas and two officers reducing

				pollution from construction. These roles are all part of a new Environmental Pollution Policy and Projects Council Team formed end of 2016/ beginning of 2017 to ensure a coordinated and complete air quality response.
	3.b	Maintained an appropriate monitoring network so that air quality impacts within the borough can be properly understood	Y	24 existing AQ monitors were maintained in 2016 (including two automatic monitoring sites). Only two bus monitor locations were lost. Daily local air quality information is provided through the London Air Quality Network website. An additional portable air quality monitor was purchased and training completed in 2016 to provide pollution details outside local schools as part of a schools air quality education project starting in schools in early 2017.
	3.c	Reduced emissions from council operations, including from buildings, vehicles and all activities.	Y, ongoing	During 2016 Council homes continued to be made more efficient through projects and yearly cyclical works. For example in 2016 Eco funding was used to install flat roof insulation on 41 council flats, double glazing in 192 properties and upgrade the district heating system for 110 properties at one estate. While a project for vulnerable residents called WoPr helped 33 households through boiler upgrades, secondary glazing, floor insulation and internal wall insulation. As part of cyclical housing improvements work was ongoing in 2016 to upgrade 373 units from single to double glazing and insulation of 245 flat roof properties (with a U-Value improvement from 2.79W/m2k to 0.18W/m2k for some of this roof insulation). 2016 also saw continuation of freight consolidation for deliveries and replacement of council vehicles with hybrid and electric where possible.
	3.d	Adopted a procurement code which reduces emissions from its own and its suppliers activities, including from buildings and vehicles operated by and on their behalf (e.g. rubbish trucks).	Y, ongoing	65% of refuse vehicles have been changed to meet emissions standards in 2016. Will look for alternative fuel for all new vehicles as funding allows. Procurement Strategy 2015/20 includes section on ensuring economic, environmental and social value.
4. Using the planning system	**4.a**	Fully implemented the Mayor's policies relating to air quality neutral, combined heat and power and biomass.	Y	All approved planning applications are considered based on the Council's Local Plan and Core Strategy (www.islington.gov.uk/planning/planningpol/local_dev_frame) which includes environment impacts. For example 3.2.15 in the Core Strategy encourages sustainable transport to reduce pollution and poor air quality. For more information on work conducted by Islington in 2016 see section three of this document entitled 'Planning update and other new sources of emissions'. Officers ensure a development is as near to neutral in terms of air quality as possible. All new major developments in Islington are now required to submit air quality impact assessments and meet the air quality neutral standard. Planning applications with

				an air quality impact were reviewed by the pollution team throughout 2016. The Bunhill heat network Bunhill 1 serves over 850 nearby homes as well as the local leisure centre. Work on the Bunhill 2 extension has been carried out throughout 2016. The extension will provide heat to hundreds of new homes and several new community buildings.
	4.b	Collected s106 from new developments to ensure air quality neutral development, *where possible*.	Y	S106 money is collected to employ two Construction Impact Monitoring Officers that ensure a development is as near to neutral in terms of air quality as possible. This was about ten sites in 2016. NRMM checked and information on requirements and options provided to developers where needed.
	4.c	Provided additional enforcement of construction and demolition guidance, with regular checks on medium and high risk building sites.	Y	Staff visited sites on a regular basis to ensure compliance and action taken, whether in terms of s61 or s60 CoPA 1974 notices. Also part of MAQF project for NRMM including an enforcement officer. In 2016 officers worked with over 50 sites to provide advice and ensure compliance.
5. Integrating air quality into the public health system	5	Included air quality in the borough's Health and Wellbeing Strategy and/or the Joint Strategic Needs Assessment.	Y	Development of the new Health and Wellbeing Strategy for 2017-2020 began in 2016 and includes a section on preventing and managing long term conditions. We have been in discussion with Public Health to promote awareness of the effects of pollution on health and how their work to tackle long term conditions such as COPD could link to air quality.
6. Informing the public	6.a	Raised awareness about air quality locally.	Y	The London Borough of Islington continues to promote and coordinate AirText, providing information on local air quality. The Council is also part of the London Air Quality Network which provides up to date information on air quality on a local and London-wide basis. Islington has conducted a number of air quality events and generated press coverage throughout 2016 including the 2016 car free day 22nd September (www.islingtongazette.co.uk/news/environment/world_car_free_day_in_islington_we_care_about_the_air_we_share_1_4714933), three anti idling events in 2016 (http://www.islington.media/r/6396/islington_takes_action_on_idling_drivers_as_part_of), working with schools, ZEN and LEN. Information on air quality is available on the Council website and was updated in 2016 www.islington.gov.uk/environment/sus_pollute/air_quality.

2.1 Air Quality Action Plan Progress

Table I provides a brief summary of the London Borough of Islington progress against the Air Quality Action Plan, showing progress made this year.

Table I.   Delivery of Air Quality Action Plan Measures

Measure	Action	Progress
Lobbying the Mayor of London		
	Introduction of low emission and alternatively fuelled taxis, together with enforcement of emission standards	The Mayor announced funding of £65m in October 2016 to support zero emission taxis.
	Commit to undertake independent, real-world testing of Euro 6 vehicles in 2014/15 to assess whether this is a suitable benchmark for diesel vehicles in the ULEZ	No commitment received but research conducted by the International Council on Clean Transportation released in 2016 shows that Euro 6 does not perform as well as is claimed. Continued lobbying in 2016 consultation responses for stricter diesel controls.
	Consider an earlier implementation date for the ULEZ and undertake an options appraisal to outline the cost and benefits of different approaches including widening out from the current congestion charge zone.	Islington responded to the Mayors two 2016 consultations on ES and ULEZ and is now awaiting the outcome and next consultation stage. The proposals include earlier implementation dates and expansion of area covered.
	To apply the next phase of the low emission zone (LEZ) to all buses and coaches.	Mayor's consultation includes all buses, coaches and lorries to be compliant in the ULEZ by 2020, or by the earlier date of 2019. Islington responded to consultation encouraging earlier uptake and a decrease in exemptions.
	Give a long term commitment to funding to boroughs for air quality initiatives, projects and improvements	TfL provide LIPs funding, DEFRA and GLA provide funding for improvements to Air Quality. Further funding announced in 2016 for LA bids, Islington was successful in several bids.
	Review junctions at Old Street, Highbury Corner and Archway with priority given to improvements that will create an environment which is conducive to active travel and protects our residents from exposure to poor air quality.	Work revamping the Archway Gyratory System started early 2016. A new two way traffic system including a new public space, dedicated cycle lanes and pedestrian crossings opened in December 2016. Consultation on Highbury Corner is being undertaken (public consultation released 2016) and Old Street junction will also be considered by TfL.
Transport		
Encouraging changes in driver behaviour	Continue to renew the council's fleet over the next 3 years to replace vehicles with the cleanest, affordable technology.	A review of the fleet is being conducted to identify which vehicles may be operated as electric or ultra-low emission and changes will be made when funds are available. In 2016 there were 12 electric vehicles and 4 hybrid.
	School travel plans will be updated to include air quality awareness raising measures and actions to reduce emissions and exposure	Over 50 School Travel Plans were approved in 2016. These plans encourage a change in travel patterns of school communities to safer, healthier and environmentally friendly methods of travel.

	Undertake a targeted campaign to encourage active travel working together with local schools.	In 2016 the council continued its tri borough school engagement programme to encourage active travel and raise awareness of poor air quality by creating a walking map for Grafton School. The Theatre in education programme was on-going in 2016 covering sustainable travel, active travel and air quality. Schools were supported to take part in the 2016 Walk to School Week; schools were given resources such as posters, leaflets, walking diaries, competition ideas and assembly plans. Grafton, Hugh Myddelton and St Peter and St Paul Catholic Primary Schools took part in the 2016 Car Free Day 22nd September which included air quality information, lung function tests and sustainable travel information. 67 school and 90 school holiday bikeability courses were conducted in 2016 to around 1200 pupils. 20 girls took part in the This Girl Can project in 2016 where they attended a bikeability course and conducted a cycle campaign.
Reducing emissions from idling vehicles	Undertake an anti-idling campaign that will include the following; - Webpage update - Signage - Targeted hotspot enforcement - Dashboard notices - Campaign day - Targeted campaign outside schools.	The council webpage has been updated with information about idling, including the laws and impacts on air quality. Council officers have been trained and authorised to get idling compliance. Idling stickers have been produced for street use and council vehicle dashboards. Islington is part of the London wide Anti- Idling campaign for 2016-17 and conducted three of these events in 2016 speaking to around 100 people; 19th October around Upper Street, 9th November around Archway and14th December around Finsbury Park. These events included locations outside schools at drop off and pick up time as well as targeting traffic outside local businesses.
Low emission zone feasibility study	Conduct a study into the validity and feasibility of having an Islington low emission zone or extending the boundary of the ULEZ. This will include a review into the most suitable location, legal implications, enforcement strategy and effect on residents.	Two Mayor of London consultations conducted in 2016 on ES and ULEZ, including proposals to extend the ULEZ to the North and South Circular for all vehicles and London wide for HGVs. Further consultation expected 2017. Islington responded to all consultations in 2016.
Reducing emissions from taxis	Review taxi services operating in the borough to create a green ranking scheme	Following previous work a rapid electric charger was installed on Sheringham Road in late 2016/early 2017 (located near a taxi rank on Holloway Road) and preparations for further charging points were started in 2016.
Emission- based parking surcharges	Continue tiered parking permit charge based on emissions	Permits continue to be varied dependent on engine type, size, age, CO2 emissions etc. In addition since 2015 a diesel surcharge is added to all residential diesel permits.
	Work with Transport for London (TfL) and partners in developing and responding to TfL's Ultra Low Emission Zone (ULEZ).	Responded to two ULEZ consultations in 2016 asking for earlier and wider introduction, with less exemptions and a move to a diesel free London.
	Review deliveries to council buildings and consolidate to reduce vehicle traffic and emissions.	The council diverted delivery of stationary and cleaning supplies to the London Boroughs Consolidation Centre (LBCC) reducing delivery days from five to three per week. Plans to expand the scheme to local businesses were investigated in 2016.
Planning & Development		

Determining the impacts of new developments on air quality	Require all new developments to submit air quality impact assessments to meet an "air quality neutral" standard	All new major developments in Islington are now required to submit air quality impact assessments. They are required to meet the GLA air quality neutral standard and protection measures for those developments that seek to introduce new receptors into areas of existing poor air quality. All planning applications that may have an impact on local air quality are reviewed by the pollution team as part of the consultation process.
	Require management plans for new developments including specific travel plans	Islington's Core Strategy and Development Management Policies both include sections on transport in new developments
Reducing emissions at construction sites	Update Islington's Code of Construction Practice to include further requirements for reducing local air pollution, monitoring criteria and best practice transport strategy.	Developed draft documents in 2016, aim to publish 2017
	Require all developers to meet the highest feasible level of BREEAM (Building Research Establishment Environmental Assessment Methodology) and all major developments to meet the code for sustainable homes level 4/5.	Islington's local validation requirements for planning include the need to meet the highest level of BREEAM and the code for sustainable homes. www.islington.gov.uk//~/media/sharepoint-lists/public-records/environmentalprotection/information/guidance/20112012/20120303introductiontobreeamandcsh.
Energy Usage		
Improving energy efficiency	Produce guidance for housing providers and private landlords to give advice on measures that can be taken to reduce emissions by improving energy efficiency.	Guidance available to residents and landlords through a dedicated phone line, website and face to face services run by the Energy Strategy and Advice Team. In 2016 the team received 4,500 calls from Islington and receive 1700 requests for extra support for vulnerable residents through Islington SHINE. www.energyadvice.islington.gov.uk/.
Cleaner energy	Provide advice on use of non-combustion renewable energy technologies to developers to ensure compliance with carbon reduction targets, minimising emissions.	The energy strategies produced by developers are now reviewed by the pollution team as part of the planning process to ensure the best available technology is used.
	Expand the Bunhill Heat and Power Network to utilise other heat sources.	The potential for heat networks has been reviewed across the borough and twelve opportunity areas identified, including the Bunhill network. Expansion of Bunhill 1 to source waste heat from electrical transformers and the London Underground started in 2016. A feasibility study was completed into the opportunity to source heat for the network from a data centre and the canal. This is currently being built.
Providing advice on energy saving and fuel use	Continue to provide services to residents through the Energy Strategy and Advice Team.	Islington's telephone energy advice service dealt with over 4,500 calls from Islington residents in 2016. Over 1,700 vulnerable Islington residents were offered a range of health and wellbeing services including AirText.
Businesses		
Business Engagement Programme	Work with businesses on the "City Air" initiative in our hotspots, assisting them to improve local air quality by reviewing operations such as deliveries, building management and energy.	Businesses continued to be engaged through award winning City Fringe ZEN at Old Street in 2016 which now involves almost 1000 businesses, with 265 of these located in Islington. Plans to expand this scheme to Archway as well as develop a Low Emission Network in the City Fringe area began in 2016 and will develop further in 2017.

	Work with neighbouring boroughs to extend existing programmes such as the Zero Emission Network (ZEN) to improve air quality at the borough boundaries	The ZEN has been expanded beyond Hackney to now include Islington and Tower Hamlets. In Islington 265 businesses around the Bunhill area have signed up to the ZEN and actions carried out have included electric vehicle trials, use of zero emission taxis, cargo bike trials and use of car clubs. Eco-Audits have been conducted to give advice on how emissions from energy use can be reduced. The ZEN businesses are now being invited to join the freight consolidation scheme. The model will be extended to Archway in 2017 with initial set up started in 2016.
Air quality awareness raising initiatives		
	Hold an annual car free event.	Annual car free day held on Islington Green September 22nd 2016. Consisted of a closed event for children of three Islington primary schools located in high pollution areas and an open event for members of the public. 240 pupils attended from Grafton Primary, Hugh Myddelton Primary and St Peter and Paul Catholic Primary School Activities included air quality information, lung function tests and sustainable travel information.
	Develop Air Quality Champions for Islington to work with officers to implement measures to improve local areas and reduce emissions.	In previous years 17 AQ champions were recruited across Islington. They provided information on AirText for local pharmacies to cascade to customers collecting medication for illnesses impacted by air quality. They also conducted programmes such as Air Aware. In 2016 further volunteers were recruited for the 2016-17 anti-idling campaign. Three events were completed in 2016 reaching around 100 people; 19th October around Upper Street, 9th November around Archway and14th December around Finsbury Park.
Provision of air quality information	Continue to lead the London wide AirText service and promote to residents.	Islington continues to lead the AirText consortium and promotes AirText where possible for example through the energy advice service which received 4500 calls in 2016.
Public Realm		
	Increase cycle parking around the borough, particularly in shopping areas and on housing estates.	In 2016 around 160 cycle parking bays were installed.
	Map and advertise safer walking and cycling routes.	Clean Air walking routes have been mapped and are available to the public. Clean Walking Routes have been mapped with local schools. Islington organised a Festival of Cycling in June 2016 in conjunction with Hackney and Haringey Councils. Over 1500 people attended and participated in activities such as personal travel planning as well as a 67 mile ride, bike security marking, scooter training, bike repair and bike exchange where you see a lorry drivers perspective.
	Promote walking through the Islington Joint Strategic Needs Assessment to tackle physical inactivity and obesity.	The 2014 Joint Strategic Needs Assessment provided a focus on physical activity and detailed programmes and services that are available to tackle obesity. The Joint Health and Wellbeing Strategy for 2017-2020 was developed in 2016 and includes a section on promoting healthier and more active families, increasing physical activity

		(such as walking) in their everyday lives. https://www.islington.gov.uk/consultations/draft-joint-health-and-wellbeing-strategy.
	500 trees to be planted across the borough in 2013/14	Action completed with a further 480 trees planted in 2014/15, 339 in 2015/16 and 194 planted so far in 2016/17.
	Research plants to improve air quality and plant with available budget.	Research into species that have a positive impact on local air quality has been completed. Air quality planting is carried out where possible. For example plans for planting in Archway ZEN were developed in 2016 to be completed in 2017.
	Ensure that contractors undertaking works to the highway use best practice to avoid adding to local air pollution.	An update to the Code of Construction Practice, which is issued to contractors and enforced by Public Protection, was developed in 2016 and will be launched in 2017, setting out expected methods of working, including ways to reduce air pollution.
	Work with TfL to ensure that all new road improvements are considerate of walking and cycling and create safer, cleaner spaces for active travel.	Work revamping the Archway Gyratory System started early 2016. A new two way traffic system including a new public space, dedicated cycle lanes and pedestrian crossings opened in December 2016. Other gyratory systems being considered which include plans for active travel etc. are Highbury Corner and Old Street. Consultations for Highbury Corner began in 2016.
	Work with the Canal and River Trust to reduce pollutant concentrations around Regents Canal by changes to mooring rules, launching best practice guidance for boaters and using enforcement actions where non-compliance continues.	New mooring rules are in place for part of the canal. Wood burning is no longer permitted except for kindling. An action plan has been developed with residents to address issues affecting air quality along the canal and its environs. In 2016 plans to install a number of electric charging points at moorings began.
Cleaner Air Borough		
	Participate in the GLA's Cleaner Air Borough initiative and obtain a kite mark demonstrating Islington's commitment to improving air quality.	The London Borough of Islington was awarded Cleaner Air Borough status in 2016 and continues to be committed to improving air quality.

3.   Planning Update and Other New Sources of Emissions

Table J.   Planning requirements met by planning applications in the LB Islington in 2016

Condition	Number
Number of planning applications reviewed for air quality impacts	24
Number of planning applications required to monitor for construction dust	8
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	8
Number of AQ Neutral building and/or transport assessments undertaken	20
Number of AQ Neutral building and/or transport assessments not meeting the benchmark and so required to include additional mitigation	0
Number of planning applications with S106 agreements including other requirements to improve air quality	10*
Number of planning applications with CIL payments that include a contribution to improve air quality	0
NRMM: Central Activity Zone and Canary Wharf Number of conditions related to NRMM included. Number of developments registered and compliant. Please include confirmation that you have checked that the development has been registered at www.nrmm.london and that all NRMM used on-site is compliant with Stage IIIB of the Directive and/or exemptions to the policy.	6 conditions on commenced sites 6 registered with NRMM Compliance status unknown
NRMM: Greater London (excluding Central Activity Zone and Canary Wharf) Number of conditions related to NRMM included. Number of developments registered and compliant. Please include confirmation that you have checked that the development has been registered at www.nrmm.london and that all NRMM used on-site is compliant with Stage IIIA of the Directive and/or exemptions to the policy.	16 conditions included on commenced sites 16 registered with NRMM Compliance status unknown.

* This is a best guess as information on S106 is not currently collected in a way where air quality is separated. We are working with planning to look at ways to more accurately monitor work conducted in the Borough.

3.1   New or significantly changed industrial or other sources

No new sources identified

Appendix A Details of Monitoring Site QA/QC

A.1   Automatic Monitoring Sites

The authority is a member of the London Air Quality Network. Routine calibrations are carried out by King's College London once every two weeks. King's also carries out ad hoc visits to investigate faults.

QA/QC audits are carried out twice per year by the National Physical Laboratory (NPL) who have UKAS accreditation to carry out this work. In addition to fulfilling the recommendations of LAQM TG16, NPL audits meet the testing requirements for air quality measurement methods stipulated in the CEN standards (e.g. NO_2 and NO_x: EN 14211:2005) which are specified for compliance with the EU ambient air quality directive (2008/50/EC).

We are not aware of any issues to be highlighted.

PM_{10} Monitoring Adjustment

The Council's two automatic monitoring sites measure Particulate Matter by TEOM. The finalised TEOM data is corrected using the Volatile Correction Model, as recommended in Defra's LAQM TG16.

One of our automatic monitoring sites is on the busy and congested A1 (Holloway Road) it is also in a LAEI area.

Figure 3.   Location of Holloway Road Automatic Monitoring Site (IS2)

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A.2 Diffusion Tube Quality Assurance / Quality Control

The laboratory supplying and analysing the diffusion tubes are Lambeth Scientific Services, Inter comparison field no. NPL002 and LGC no AR0375, a UKAS accredited laboratory. They use a preparation method of 50% TEA 50% Acetone and follow Practical Guidance when preparing samples.
The results of the labs precision are as follows:

- 8 good and 3 poor tube precision results of the 11 diffusion tube collocation studies conducted over the past three years (2014-2016) taken from latest data available March 2017 on https://laqm.defra.gov.uk/diffusion-tubes/precision.html
- Latest AIR-PT/WASP results taken from AIR-PT Rounds 7-18 (April 2015 – Feb 2017) shows 97% lab results in this period were deemed satisfactory (based on a z-score ≤±2), suggesting no systematic source of bias. Data taken from http://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html.

Figure 4. AIR-PT/WASP results (Rounds 7-18 April 2015-Feb 2017)

Table 1: Laboratory summary performance for AIR NO$_2$ PT rounds AR007, 9, 10, 12, 13, 15, 16 and 18

The following table lists those UK laboratories undertaking LAQM activities that have participated in recent AIR NO$_2$ PT rounds and the percentage (%) of results submitted which were subsequently determined to be **satisfactory** based upon a z-score of ≤ ± 2 as defined above.

AIR PT Round	AIR PT AR007	AIR PT AR009	AIR PT AR010	AIR PT AR012	AIR PT AR013	AIR PT AR015	AIR PT AR016	AIR PT AR018
Round conducted in the period	April – May 2015	July – August 2015	October – November 2015	January – February 2016	April – May 2016	July – August 2016	September – October 2016	January – February 2017
Aberdeen Scientific Services	100 %	75 %	100 %	100 %	100 %	100 %	100 %	100 %
Cardiff Scientific Services	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Edinburgh Scientific Services	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Environmental Services Group, Didcot [1]	100 %	100 %	100 %	100 %	75 %	75 %	100 %	100 %
Exova (formerly Clyde Analytical)	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Glasgow Scientific Services	100 %	100 %	100 %	75 %	100 %	0 %	100 %	100 %
Gradko International [1]	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Kent Scientific Services	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Kirklees MBC	100 %	100 %	100 %	100 %	100 %	100 %	NR [2]	NR [2]
Lambeth Scientific Services	100 %	100 %	100 %	100 %	100 %	100 %	75 %	100 %
Milton Keynes Council	100 %	100 %	100 %	50 %	100 %	100 %	75 %	100 %
Northampton Borough Council	100 %	100 %	100 %	50 %	100 %	NR [2]	75 %	0 %
Somerset Scientific Services	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
South Yorkshire Air Quality Samplers	100 %	100 %	75 %	100 %	100 %	75 %	100 %	100 %
Staffordshire County Council	100 %	75 %	75 %	75 %	75 %	100 %	NR [2]	100 %
Tayside Scientific Services (formerly Dundee CC)	NR [2]	NR [2]	NR [2]	100 %	NR [2]	100 %	NR [2]	100 %
West Yorkshire Analytical Services	75 %	75 %	75 %	75 %	100 %	NR [2]	50 %	100 %

[1] Participant subscribed to two sets of test samples (2 x 4 test samples) in each AIR PT round.
[2] NR No results reported
[3] Kent Scientific Services, Cardiff Scientific Services and Exova (formerly Clyde Analytical) no longer carry out NO$_2$ diffusion tube monitoring and therefore did not submit results.

A bias adjustment of 0.94 for 2016 has been derived for Lambeth Scientific Services from the latest version of the national bias adjustment calculator 03/17 available at http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html. See Figure 5 for results.

Figure 5.   National Bias Adjustment Lambeth Scientific Services

Analysed By[1]	Method	Year[5]	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[6]	Bias Adjustment Factor (A) (Cm/Dm)
Lambeth Scientific Services	50% TEA in acetone	2016	KS	Marylebone Road Intercomparison	12	84	79	6.1%	G	0.94
Lambeth Scientific Services	50% TEA in acetone	2016		Overall Factor[3] (1 study)					Use	0.94

A local collocation study was completed using data from the Holloway Road site ID IS2 (see table B). The bias adjustment factor applied to the diffusion tubes from this is 1.17. See Figure 6 for results of the collocation study.

Figure 6.   Precision and accuracy of collocation study at Holloway Road
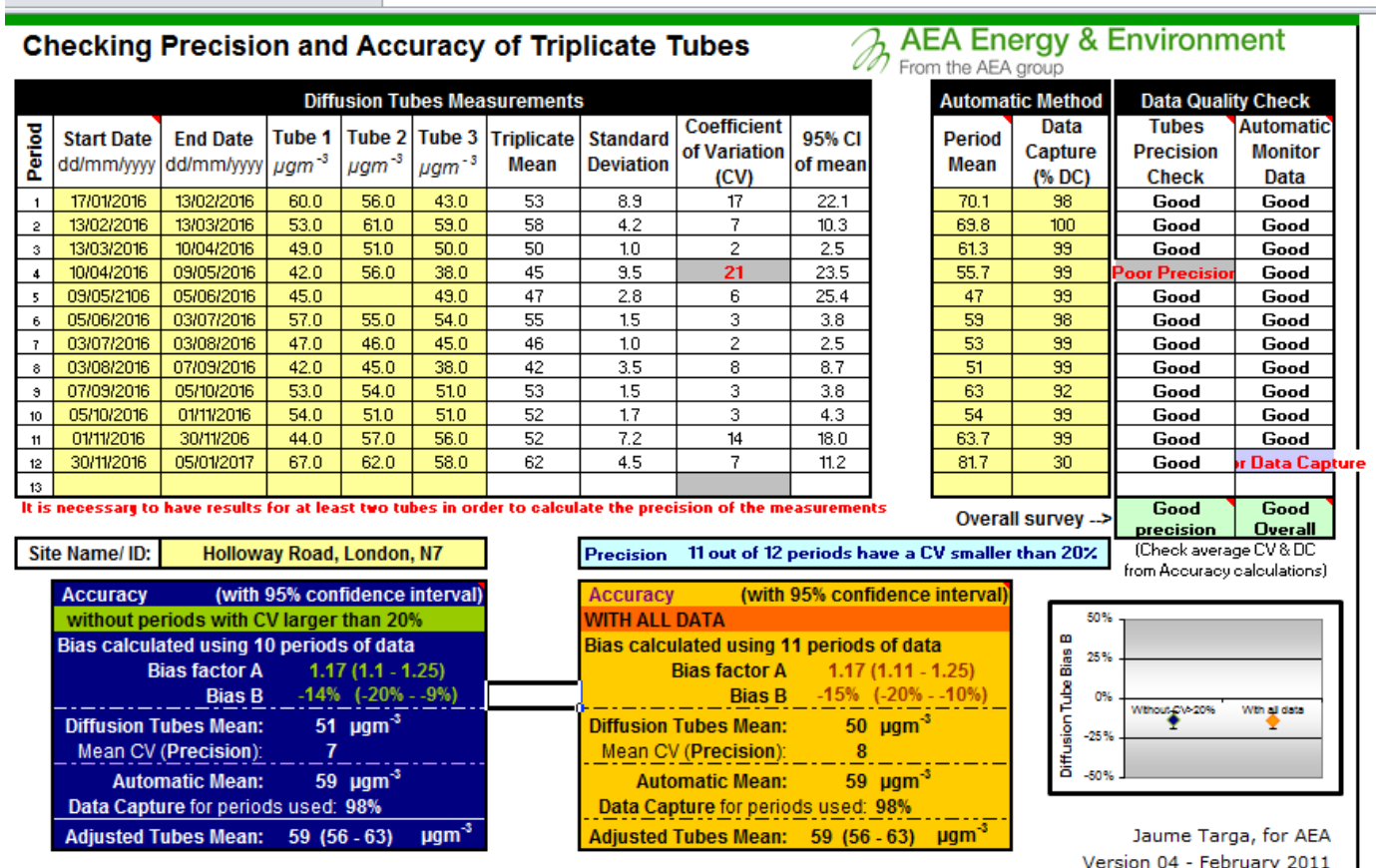
Bias adjustment factors used in previous years can be found in table K.

Table K.   Bias Adjustment Factors used in previous years

	2009	2010	2011	2012	2013	2014	2015
Bias adjustment factor	0.86	0.86	1	0.83	0.8	0.87	1.24

Discussion of Choice of Factor to Use

The bias adjustment factor of 1.17, gathered from the local collocation study on Holloway Road, was used for 2016. The national bias adjustment for Lambeth laboratory consisted of only one study and we considered the local collocation study a better representation of the Borough. Furthermore this location is one of the most polluted thoroughfares in the London Borough of Islington.

Appendix B Full Monthly Diffusion Tube Results for 2016

Table L.   NO₂ Diffusion Tube Results

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2015 % [b]	Annual Mean NO₂												Annual mean – raw data [c]	Annual mean – bias adjusted [c]
			Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec		
BIS005/03	100	100	60.0	52.0	48.0	37.0	45.0	35.0	22.0	37.0	40.0	49.0	52.0	65.0	45.2	53 (50 - 56)
BIS005/02	100	100	66.0	57.0	49.0	49.0	56.0	47.0	40.0	50.0	56.0	59.0	53.0	55.0	53.1	62 (59 - 66)
BIS005/06	100	100	58.0	56.0	44.0	44.0	42.0	46.0	39.0	35.0	30.0	37.0	55.0	56.0	45.2	53 (50 - 56)
BIS005/07	100	100	67.0	6.0	41.0	27.0	55.0	55.0	47.0	42.0	53.0	51.0	58.0	67.0	47.4	55 (53 - 59)
BIS005/08	92	92	59.0	45.0	54.0	64.0	58.0	61.0	26.0	50.0		62.0	52.0	67.0	54.4	64 (60 - 68)
BIS005/09	100	100	62.0	46.0	48.0	58.0	33.0	43.0	43.0	47.0	42.0	52.0	49.0	67.0	49.2	58 (55 - 61)
BIS005/11	100	100	57.0	57.0	47.0	58.0	57.0	47.0	33.0	41.0	26.0	42.0	58.0	62.0	48.8	57 (54 - 61)
BIS005/13	100	100	53.0	38.0	38.0	30.0	34.0	35.0	37.0	30.0	32.0	54.0	40.0	54.0	39.6	46 (44 - 49)
IS005/01DT1	92	92	69.0	37.0	45.0	49.0	53.0	37.0	42.0	42.0	45.0	42.0	52.0		46.6	55 (52 - 58)
BIS005/04	100	100	54.0	36.0	39.0	43.0	27.0	39.0	28.0	33.0	30.0	45.0	46.0	51.0	39.3	46 (44 - 49)
BIS005/05	100	100	49.0	35.0	29.0	34.0	17.0	30.0	22.0	18.0	27.0	44.0	39.0	49.0	32.8	38 (36 - 41)
BIS005/01	100	100	36.0	35.0	31.0	29.0	22.0	31.0	22.0	24.0	31.0	23.0	34.0	44.0	30.2	35 (33 - 38)
IS005/03	75	75	42.0	34.0	28.0		20.0			23.0	21.0	34.0	37.0	48.0	31.9	37 (35 - 40)

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2015 % [b]	Annual Mean NO$_2$												Annual mean – raw data [c]	Annual mean – bias adjusted [c]
			Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec		
BIS005/10	100	100	33.0	23.0	29.0	26.0	17.0	26.0	20.0	23.0	24.0	30.0	**42.0**	**52.0**	28.8	34 (32 - 36)
BIS005/12	100	100	**45.0**	34.0	35.0	28.0	18.0	22.0	18.0	19.0	27.0	35.0	37.0	**51.0**	30.8	36 (34 - 38)
IS005/02	100	100	36.0	28.0	25.0	29.0	24.0	24.0	18.0	21.0	19.0	32.0	36.0	**45.0**	28.1	33 (31 - 35)
BIS005/14	83	83			33.0	28.0	20.0	26.0	23.0	23.0	28.0	33.0	33.0	**50.0**	29.7	35 (33 - 37)
BIS005/15	92	92	37.0	32.0	35.0	29.0	18.0		20.0	24.0	30.0	36.0	36.0	**50.0**	31.5	37 (35 - 39)
IS005/04	92	92		38.0	30.0	35.0	32.0	29.0	23.0	30.0	29.0	41.0	35.0	40.0	32.9	39 (37 - 41)

Exceedance of the NO$_2$ annual mean AQO of 40 µgm^{-3} are shown in **bold**.

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

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

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