ISLINGTON

Islington Air Quality Annual Status Report 2018

This report provides a detailed overview of air quality in Islington during 2018. It has been produced to meet the requirements of the London Local Air Quality Management statutory process[1].

Vorley Road redesign outside nursery

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[1] LLAQM Policy and Technical Guidance 2016 (LLAQM.TG(16)). https://www.london.gov.uk/what-we-do/environment/pollution-and-air-quality/working-boroughs

Executive Summary

Background of Report

This report provides details of the air quality in Islington in 2018 and a brief summary of the actions taken by the London Borough of Islington to improve air quality in this period.

Air quality refers to the condition of the air around us and how many pollutants (chemicals or substances) it contains. The more pollutants the air contains the more air pollution there is and the worse the air quality is.

Air pollution affects everyone's health but the young, elderly and those with respiratory and cardiovascular conditions are most at risk. In periods of high pollution those with existing heart and respiratory conditions such as asthma may find their condition exacerbated. At very high levels otherwise healthy individuals may find they get a sore throat, sore eyes or a tickly cough. The long term impacts can be even greater. Air pollution increases the risk of respiratory and cardiovascular conditions, reduces lung development in children and is also increasingly being linked to a range of other conditions such as cancer, diabetes and dementia. Islington Council is leading the fight against London's poor air quality and its impact on everyone in the borough.

The EU sets limits for a number of known air pollutants, that member states must meet. The London Borough of Islington is required by the Government and the Mayor of London to monitor air pollution in the borough, and take action to reduce it, as well as report on this every year in the form of this Annual Status Report (ASR). The Government and the Mayor of London also have a range of responsibilities for taking action to reduce pollution.

The main source of pollution in the borough is road transport. Other pollution sources in the borough include domestic and commercial gas use and industry. Islington is working hard to reduce the pollution in the borough from these sources.

Air Quality in Islington

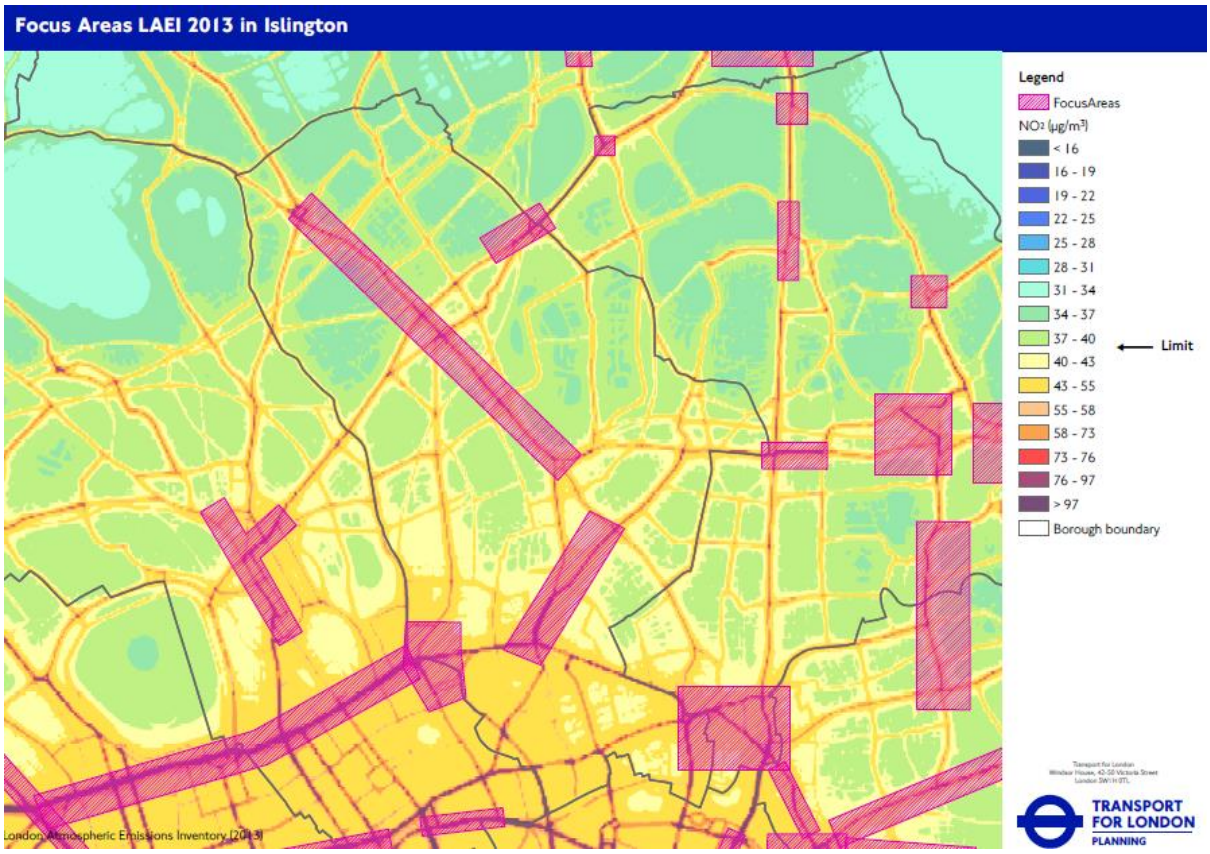
Local authorities have to assess air quality in their areas against set objectives for pollutants. Where it is unlikely that one or more of the objectives will be met, the local authority must declare an Air Quality Management Area (AQMA) and produce an action plan to describe the steps to be taken to meet the air quality objectives. In August 2000, we completed a review showing that despite a steady improvement of air quality in Islington, the objectives for two pollutants - nitrogen dioxide (NO2) and particulate matter of 10 microns diameter (PM10) - were not likely to be achieved. As a consequence we declared an AQMA across a

large part of the borough in 2001, which was expanded to the whole of the borough in 2003. This AQMA is still in place.

The London Borough of Islington is currently exceeding EU limits for the gas Nitrogen Dioxide (NO2) in parts of the borough. We are currently meeting the limits that are set by the EU for all other air pollutants, although we remain focused on Particulate Matter (PM10 and PM2.5) because these pollutants have detrimental impacts on health at any level.

Air quality is not the same throughout the borough, there are areas of better and poorer air quality, often related to proximity to busy roads. The main areas of concern (or Focus Areas) are the A1 Holloway Road from Highbury to Archway, Angel Town Centre, Seven Sisters Road at Finsbury Park, Old Street and the Kings Cross/Caledonian Road area.

The map below shows the annual mean NO2 concentrations in Islington and its surrounding boroughs for 2013 as well as highlighting the focus areas of higher pollution levels mentioned above. This map is created by GLA and TfL using LAEI data.



The London Borough of Islington has been monitoring air quality since 2000 and has ten long term roadside sites (with an additional three for a triplicate study) and eleven long term urban background sites across the borough. These are the sites that are reported on in

this document. Islington also has additional monitoring sites for specific projects as required.

In 2018 NO_2 levels measured were below the annual objective of 40µg/m^3 for all of the background monitoring sites and for the first time three roadside sites also met the objective. The lowest recorded value of 27µg/m^3 was found at the Ecology Centre near the Arsenal Stadium and the highest value of 51µg/m^3 on Roseberry Avenue.

Two of the sites, one roadside and one urban background, also provide data on other pollutants and over shorter timescales. These showed no exceedances of the NO_2 hourly objective of 200µg/m^3. This reflects the general trend over the last seven years of data in this report, with very few hourly exceedances. These sites both show that PM_{10} is below the annual objective of 40µg/m^3 at 20µg/m^3 on the roadside site on Holloway Road and 20µg/m^3 at the background Arsenal site. Both sites also meet the 24 hour objectives for PM_{10} of 50µg/m^3 35 times a year with only three exceedances between them.

More detailed results can be found in the report.

Actions to Improve Air Quality

Islington has an Air Quality Strategy 2014-2017 in place outlining the actions we are committed to take to reduce air pollution the replacement strategy was put out for consultation in 2019. The following report measures our progress against the actions outlined in our strategy, there are many actions but these are grouped into the following categories:

- Lobbying and working with The Mayor of London- air quality crosses borders and as such Islington cannot work alone, we therefore take every opportunity to work with others and encourage them to take actions to improve air quality
- Transport- transport is one of the biggest sources of air pollution in the borough, we therefore have a range of actions to tackle pollution from transport sources, both internally in the council and externally among businesses and individuals
- Planning and Development- it is important to reduce the pollution impacts from development in the borough, through planning and construction which considers air quality
- Energy usage- domestic and commercial energy use is one of the bigger sources of pollution in the borough, it is therefore important to look at ways to decrease pollution from this while also considering other impacts such as carbon emissions and fuel poverty
- Businesses- we work on a range of initiatives with businesses across the borough to reduce their pollution

- Air quality awareness raising initiatives- it is important to ensure people are aware of the impacts of air pollution and actions they can take to reduce their exposure and the amount of pollution they produce
- Public realm- this includes a number of measures to improve the environment in Islington and make it less polluted
- Cleaner air borough- Islington is working to achieve the GLAs Cleaner Air Borough Status, showing we are committed to improving air quality in the Borough

Further details on actions taken in 2018 can be found in the report, however some key highlights can be found below.

Transforming Neighbourhoods: Archway and City Fringe

We are supporting businesses in the borough to improve local air quality, increase active travel, reduce emissions and reduce energy and transport costs. Providing them with a range of free advice and services.

We worked intensively in two neighbourhoods in the borough, Archway and City Fringe (around Old Street in Islington). These are both areas of high pollution and located in our air pollution focus areas.

In 2018 Islington continued to expand the Archway Zero Emission Network (ZEN) and alongside Hackney and Tower Hamlets the award winning City Fringe ZEN. There are now 120 businesses signed up to Archway ZEN, demonstrating their commitment to tackling air pollution. These businesses received fortnightly newsletters around air quality, including offers and case studies. Around 20 received grants for initiatives such as cargo bikes, e-bikes, greening and electric vehicles. There are now 350 Islington businesses signed up to the City Fringe ZEN. Around 250 took part in schemes such as electric bike trials and energy efficiency audits and 30 received grant funding to install energy efficiency measures or showers to allow active travel. Both schemes also ran a number of public engagement events.

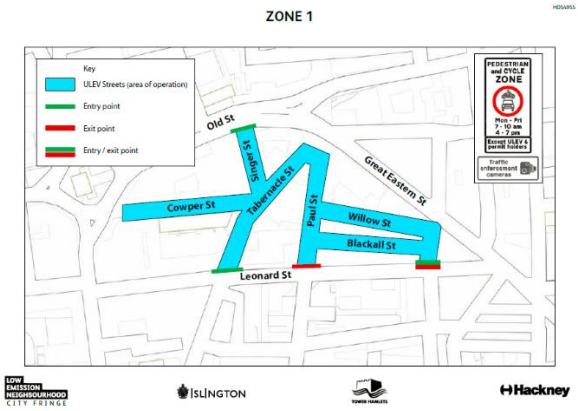
Archway Car Free Day and Electric Vehicle Events

In 2018 Islington also supported the Archway Town Centre Group to deliver:

- Archway Business Low Emission Network (LEN)
    - aiming to make the area more attractive for walking, cycling and electric vehicles and helping businesses reduce their emissions and costs
    - in 2018 and the start of 2019 this scheme purchased a shared electric vehicle and cargo bike, created a Clean Air Walk form Whittington Hospital to Archway Town Centre and installed greening at several strategic locations.
- Healthy Streets for Businesses
    - in 2018 the Archway Cargo Centre was set up to minimise emissions from deliveries by providing extra storage facilities and increasing cargo bike facilities

Archway ZEN business using cargo bike

In 2018, the City Fringe LEN scheme was further developed, including the introduction of an Ultra Low Emission Vehicle Street scheme. This scheme restricts traffic in an area around Shoreditch/Old Street on the Islington and Hackney border, which includes Central Foundation School located on Cowper Street in Islington. During peak times only walking, cycling and low emission vehicles are allowed in the area.



City Fringe LEN ULEV Streets

School Work

Children are one of the groups more vulnerable to air pollution and as such we have worked hard to improve air quality at the boroughs schools and engaged with pupils, parents, guardians and teachers.

In 2018 we began a School Street programme, closing roads outside schools at drop off and pick up time in order to reduce pollution and improve road safety as children made their way to and from school. The scheme uses road signs, engagement activities and enforcement cameras to close the roads. The first school, St John Evangelist Roman Catholic Primary School, started this scheme in November. Positive consultations were carried out at a further six primary schools, with the schemes starting in these schools early 2019.

School Streets at St John Evangelist Roman Catholic School

We also worked with schools in a range of other ways, including:

- Activities as part of national campaigns- we helped schools take part in a range of schemes such as Walk to School Week, Bike Week, Walk to School Month, Road Safety Week and Clean Air Day. For example, on Clean Air Day we ran an active travel and air quality poster competition across all primary schools in the borough, with the entrants displayed in the Islington Museum and winning design made into posters and flyers for all schools.
- Anti idling events- we held 11 anti-idling events outside schools, speaking to drivers about the impacts of pollution and particularly leaving their engine running when stationary

- 129 school Bikeability courses teaching children about safe cycling
- We worked with a number of schools as part of our Archway ZEN scheme, including a grant for a cycle stand, plants for a 'Green Machine' clean air garden to teach around air pollution and the benefits of plants, air quality enhancing climbers and a Car Free Day event.

Clean Air Day Winning Posters

How to Get Involved

You can get more information on air quality on our website www.islington.gov.uk/energy-and-pollution/pollution/air-quality.

You can do your bit to improve air quality. Think about how you travel, decrease your car use especially for short trips and think about whether you could walk, cycle or use public transport instead. If you need to drive think about car sharing, car clubs or low emission vehicles and try not to idle your engine. You can also impact air pollution by improving the energy efficiency of your home or business and avoid using open fires or un-seasoned wood. Come along to one of our air quality events to learn more about schemes in Islington and actions you can take. For example, we will be holding events across the borough on Clean Air Day 20th June 2019 and Car Free Day 22nd September 2019. You can also volunteer for idling events in the borough which include training through Idling Action London.

You can contact the Council Pollution Team on pollution@islington.gov.uk for more information about the strategy, events, getting involved or air quality more widely.

CONTENTS

Tables

Abbreviations

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

Table A. Summary of National Air Quality Standards and Objectives

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

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

1. Air Quality Monitoring

1.1 Locations

Table B. Details of Automatic Monitoring Sites for 2018

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

Table C. Details of Non-Automatic Monitoring Sites for 2018

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?
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

IS005/01	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 NO_2 Ratified and Bias-adjusted Monitoring Results (µg m^{-3})

Site ID	Site name	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2018 % [b]	Annual Mean Concentration (µg m^{-3})						
					2012[c]	2013 [c]	2014[c]	2015 [c]	2016 [c]	2017 [c]	2018 [c]
BIS005/03	Caledonian Road	Roadside	100	100	**50**	**47**	**51**	**58**	**53**	**43**	36
BIS005/02	Roseberry Avenue	Roadside	92	92	**58**	**57**	**58**	**62**	**62**	**54**	**51**
BIS005/06	City Road	Roadside	92	92	**52**	**42**	**49**	**53**	**53**	**48**	**45**
BIS005/07	Old Street	Roadside	100	100	**65**	**60**	**56**	**65**	**55**	**58**	**45**
BIS005/08	Highbury Corner	Roadside	92	92	**60**	**63**	**61**	**67**	**64**	**55**	**48**
BIS005/09	Balls Pond Road	Roadside	100	100	**53**	**56**	**59**	**64**	**58**	**50**	**43**
BIS005/11	Holloway Road	Roadside	100	100	**57**	**57**	**61**	**65**	**57**	**50**	**44**
BIS005/13	Junction Road	Roadside	100	100	**45**	**41**	**46**	**53**	**46**	**42**	36
IS005/01DT1	Archway Close	Roadside	92	92	**63**	**51**	**58**	**55**	**55**	**41**	40
BIS005/04	Percy Circus	Urban Background	92	92	40	38	40	**45**	**46**	40	35
BIS005/05	Myddleton Square	Urban Background	100	100	36	37	39	39	38	39	35
BIS005/01	Arran Walk	Urban background	100	100	32	30	32	39	35	32	30
IS005/03	Sotheby Road	Urban background	83	83	28	32	32	31	37	31	30

Site ID	Site name	Site type	Valid data capture for monitoring period % [a]	Valid data capture 2018 % [b]	Annual Mean Concentration (µg m^{-3})						
					2012[c]	2013 [c]	2014[c]	2015 [c]	2016 [c]	2017 [c]	2018 [c]
BIS005/10	Highbury Fields	Urban Background	100	100	33	31	32	33	34	28	28
BIS005/12	Lady Margaret Rd	Urban background	100	100	34	33	33	35	36	34	31
IS005/02	Zoffany Park	Urban Background	92	92	31	28	28	33	33	29	29
BIS005/14	Elthorne Park	Urban Background	100	100	30	30	30	33	35	31	29
BIS005/15	Turle Road	Urban Background	92	92	32	30	32	33	37	31	32
IS005/04	Upper Street (Waterloo Terrace)	Urban Background	92	92	35	34	37	40	39	39	30
IS2	Holloway Road	Automatic Roadside	100	100	**55**	**54**	**55**	**61**	**60**	**49**	**47**
IS6	Arsenal	Automatic Background	99	99	37	40		29	33	31	27

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

NO_2 annual means in excess of 60 µg m^{-3}, indicating a potential exceedance of the NO_2 hourly mean AQS objective are shown in bold and underlined.

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

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

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

In 2018 all but one site recorded lower annual nitrogen dioxide levels than in 2017. Three roadside sites also recorded values at or below the annual objective level of 40µg/m3 for the first time in the last seven years, while all background sites were below this objective level. Trends per site are varied (see figure 1), however if you look at average values (see figure 2) the last few years have shown a decrease in nitrogen dioxide but the trend over seven years is less clear.

Figure 1. Annual nitrogen dioxide levels over last seven years all sites

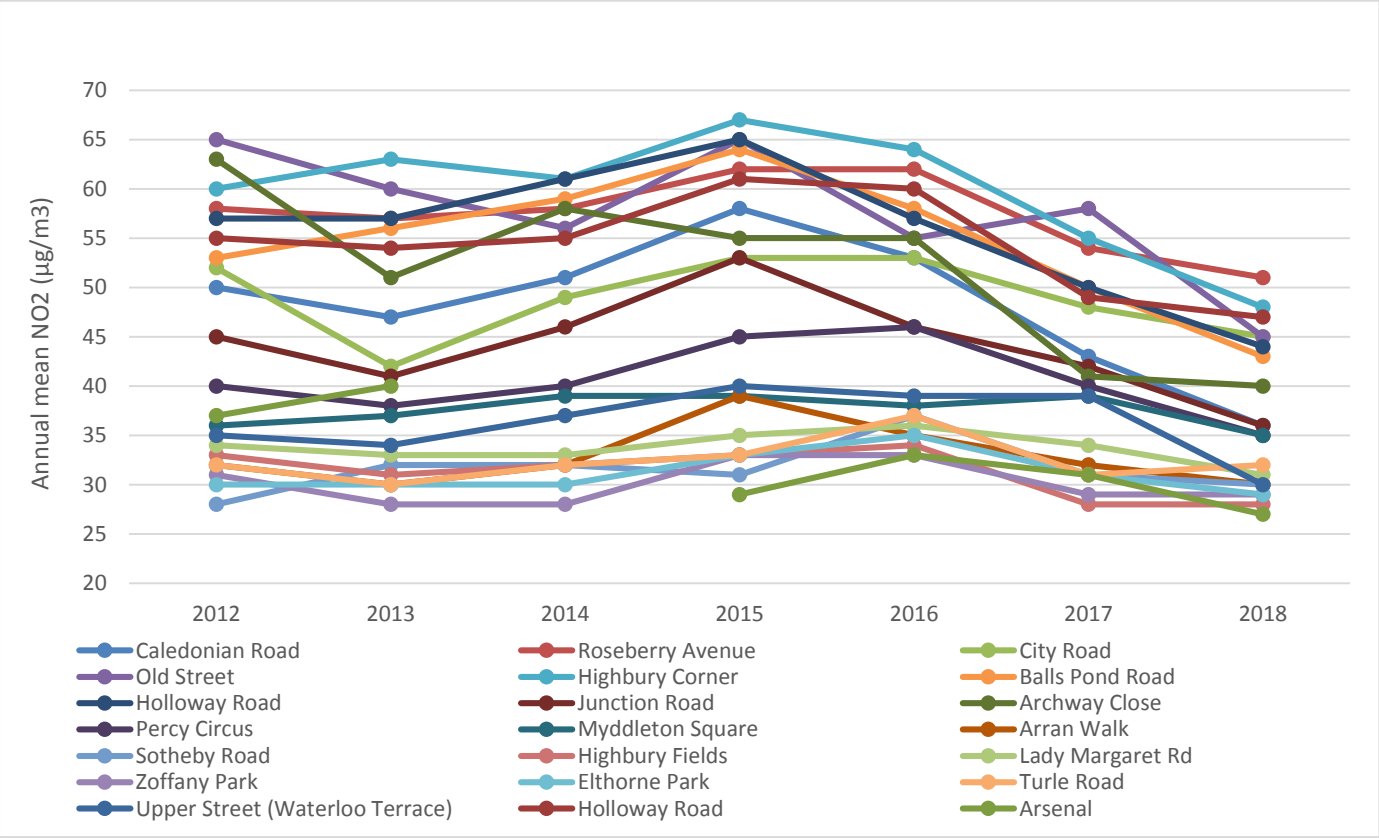


Figure 2. Average annual nitrogen dioxide levels over last seven years automatic and diffusion tube results

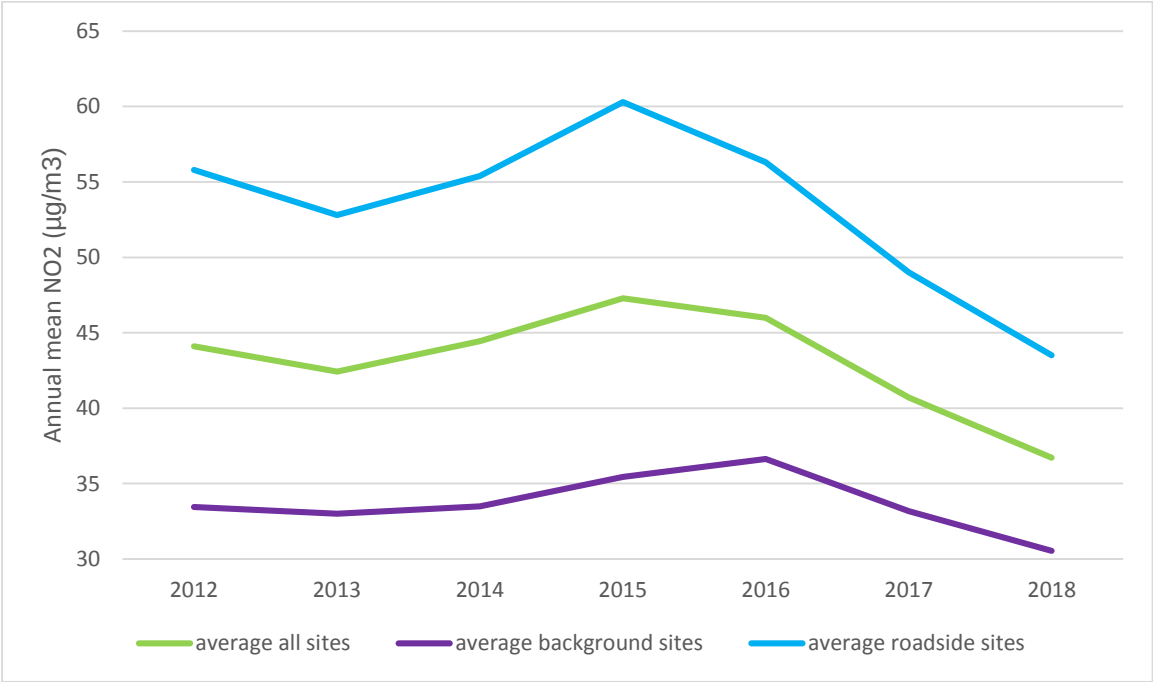


Table E. NO_2 Automatic Monitor Results: Comparison with 1-hour Mean Objective

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2018 % [b]	Number of Hourly Means > 200 µg m^{-3}						
			2012[c]	2013 [c]	2014[c]	2015 [c]	2016 [c]	2017 [c]	2018 [c]
IS2- Holloway	100	100	0	3	0	0	0	0	0
IS6- Arsenal	99	99	1	10	0	0	0	1	0

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

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

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

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

The results of the one-hour mean remain well below the objective of less than 18 times over 200µg m_{-3}, with no exceedances in 2018. This continues the trend of the last seven years.

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

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2018 % [b]	Annual Mean Concentration (µg m^{-3})						
			2012[c]	2013 [c]	2014[c]	2015 [c]	2016 [c]	2017 [c]	2018 [c]
IS2- Holloway	99	99	27	27	21	22	21	21	20
IS6- Arsenal	99	99	24	22	20	19	18	18	20

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

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

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

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

PM_{10} continues to remain below the annual objective of 40 µg m^{-3}.

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 2018 % [b]	Number of Daily Means > 50 µg m^{-3}						
			2012[c]	2013 [c]	2014[c]	2015 [c]	2016 [c]	2017 [c]	2018 [c]
IS2- Holloway	99	99	19	10	6	3	7	6	**2**
IS6- Arsenal	99	99	20	7	5	1	3	3	1

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

The results of the one-hour mean remain well below the objective of less than 35 times over 50µg m^{-3}, with only three exceedances over the two monitoring sites in 2018. This continues the trend of the last seven years.

2. Action to Improve Air Quality

2.1 Air Quality Action Plan Progress

Islington's Action Plan, created as part of the Air Quality Strategy, is organised into eight sections with a range of measures and actions for each of these areas:

- Lobbying and working with The Mayor of London
- Transport
- Planning and Development
- Energy usage
- Businesses
- Air quality awareness raising initiatives
- Public realm
- Cleaner air borough

Table H provides a brief summary of Islington Council's progress against our Air Quality Action Plan in 2018. If actions were completed before 2018 this is stated in the table. Otherwise actions are updated with progress in 2018, including new schemes for 2018 or schemes that have been continued and developed on in 2018. Completely new actions can be found at the bottom of the table.

Table H. Delivery of Air Quality Action Plan Measures

Measure	Action	Progress
Lobbying and working with the Mayor of London		
	Introduction of low emission and alternatively fuelled taxis, together with enforcement of emission standards	Completed previously, the mayor announced funding for zero emission taxis in 2016.
	To apply the next phase of the low emission zone (LEZ) to all buses and coaches.	We responded to the Mayor's final ULEZ and LEZ consultations in February 2018, including support for tighter standards for the LEZ. Results of these consultations showed 74% support for strengthening the London wide standards for heavy vehicles so by October 2020 heavy vehicles, including buses, coaches and lorries, will be subject to stronger emissions standards.
	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	We continued lobbying for diesel free in 2018 and leading by example in Islington through a diesel surcharge for resident and visitor parking. The surcharge of £2 for visitor parking that was agreed in 2017 came into place in 2018. At the end of 2018 a review of the surcharges was started and early 2019 decisions were made to raise the surcharge on visitor parking to £3 and residents permits to £120.
	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.	We responded to the Mayors last ULEZ consultation in February 2018 and then supported the Mayor in the preparing for the introduction of ULEZ in 2019 by conducting a marketing and media campaign in 2018 and beginning of 2019. This included information in local and social media, information on the council website and letters for residents, community and housing groups, and businesses about the scheme as well as local alternative travel options.
	Give a long term commitment to funding to boroughs for air quality initiatives, projects and improvements	Islington continues to bid for funds such as those from TfL LIPs, DEFRA, GLA and internal ward funding and we were successful in several bids in 2018. For example, in 2018 and early 2019 we received funding from the Greener City Fund, GLA audit funding, ISEP and Bunhill ward funding to help towards the costs of a green ivy screen and air quality engagement work around Prior Weston School. In 2018 we also applied for Defra funding to conduct independent tests of air quality sensors and air filtration systems in a school as well as engagement work around the canal. We were awarded this funding in 2019. In 2018 we continued to use funding awarded in previous years to run schemes, e.g. GLA Mayor's Air Quality Funding for Archway ZEN, City Fringe ZEN and City Fringe LEN.
	Review junctions at Old Street, Highbury Corner and Archway with priority given to improvements that will create an environment which is conducive to active	Archway junction work was completed in 2017, with air quality work continuing through Archway ZEN and Archway LEN throughout 2018. Highbury Corner transformation work started in 2018, with dedicated cycle lanes and pedestrian areas, to be completed in 2019. Preparation work started on changes to Old Street in 2018.

	travel and protects our residents from exposure to poor air quality.	
Transport		
Encouraging changes in driver behaviour	School travel plans will be updated to include air quality awareness raising measures and actions to reduce emissions and exposure.	In 2018/19 64 School Travel Plans were approved. A School Travel Plan encourages a change in the travel patterns of school communities to safer, healthier and environmentally friendly methods of active travel.
	Continue to renew the council's fleet over the next 3 years to replace vehicles with the cleanest, affordable technology.	In 2018 the council started a long term trial of a compressed natural gas HGV Roadsweeper and ACT Bus as alternatives to more polluting vehicles. Investigations into a vehicle to grid scheme also began in 2018, which if successful could be used across the council fleet and premises. It is believed that this will be the first multi-vehicle same site system to be live trialled in the UK. 165 new vehicles were ordered to replace polluting vehicles in the council fleet in the 2018/19 financial year. This included replacement of more polluting vehicles (euro 4, 5, III, IV and V diesels) with less polluting vehicles (Euro 6 petrol, Euro VI CNG, Electric, Euro 6 diesel and Euro VI diesel). The process of integrating these into the fleet will be completed in 2019. Upgrades to 45 leased vehicles were also completed in 2018.
	Undertake a targeted campaign to encourage active travel working together with local schools.	For Clean Air Day 2018 we ran a poster competition for all primary school students in the borough to create a poster focused on active travel and air quality. All 69 posters were displayed in the Islington Museum and two winners were picked by local judges – Councillors, teachers and Arsenal Community Hub workers. The two winning posters were made into posters and flyers and given to schools. Walk to School resources packs were shared with all primary schools. 11 Anti-idling events were held at schools in 2018. In 2018 there was an ongoing programme of sustainable travel, active travel, road safety and air quality related campaigns in schools across the borough. Including; theatre in education programme, Walk to School Week, Bike Week, Walk to School Month, Road Safety Week and Brake Beep Beep Days. 60 school and 69 school holiday Bikeability courses were conducted in 2018 to 1380 children. 587 adults also undertook cycle training in 2018 (60 of these as part of This Girl Can). 11 maintenance courses were run with 38 participants (3 of these were All About the Bike projects- working with 15 disadvantaged

		people in partnership with Arsenal in the Community and included a cycle skills session as well). There were 37 Dr Bike events in 2018 during which 610 bikes were checked. We have also worked with a number of schools as part of our Archway ZEN and LEN schemes in 2018 and the beginning of 2019. This includes a grant for a cycle stand, plants for a 'Green Machine' clean air garden to teach around air pollution and the benefits of plants, green screening around a school and a Car Free Day event. We also supported GLA and Prior Weston School with their school audit as well as plans to take forward their audit recommendations. Implementation of these recommendations will take place in 2019.
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.	In 2018 Islington was once again part of the Idling Action London scheme and completed its designated three events, speaking to 117 people. These events were at Hugh Myddleton Primary, Angel and Mildmay. Nine new volunteers were trained and there were a total of 25 attendees across the Idling Action events. We also conducted a further ten of our own events at schools at pick up time in 2018 speaking to an additional 158 people.
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.	The Mayor has proposed an expansion of ULEZ to north and south circular which would include the whole of Islington. We responded to all consultations in 2018 in support of the expansion to cover the whole of the Borough as soon as possible. In 2018 we also supported the Mayor in the preparation for the introduction of ULEZ in 2019 by letting businesses, residents and community groups know about the scheme as well as local alternative travel options.
Reducing emissions from taxis	Review taxi services operating in the borough to create a green ranking scheme	Review completed previously, no update in 2018. However, we responded to TfL Taxi Age Consultation in early 2019 and continued to install and scope new electric charging points in 2018, including sites for taxis.
Emission-based parking surcharges	Continue tiered parking permit charge based on emissions	Permits continue to vary based on emissions and the diesel surcharge for residential permits continues to be in place. The surcharge of £2 for visitor parking that was agreed in 2017 came into place in 2018. At the end of 2018 a review of the surcharges was started and early 2019 decisions were made to raise the surcharge on visitor parking to £3 and residents permits to £120.

	Work with Transport for London (TfL) and partners in developing and responding to TfL's Ultra Low Emission Zone (ULEZ).	In 2018 we responded to the last ULEZ consultation and then supported the Mayor in the preparation for the introduction of ULEZ in 2019. For example we spoke to businesses and community members and sent preparation letters to impacted residents in our borough.
	Review deliveries to council buildings and consolidate to reduce vehicle traffic and emissions.	Islington Council continues to be part of London Boroughs Consolidation Centre and in 2018 this service started using a new courier that uses ultra-low emission vehicles, including electric vehicles and cargo bikes.
Planning and 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	In 2018 a new Islington planning policy was being drafted with a push for major developments to meet Air Quality Positive standard
	Require management plans for new developments including specific travel plans	Completed previously no further update for 2018.
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.	Islington Code of Practice for Construction Sites has been completed. It incorporates NRMM limits and GLA best practice guidance. It is a "live" document to reflect advances in technology or guidance such as the upcoming LLECP "Best in Class" guidance. Islington is also a member of the London Low Emission Construction Partnership, working to support the NRMM scheme, test construction equipment, raise awareness of air quality among the construction industry and form a best in class document for industry.
	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.	Completed previously, need to meet highest BREEAM and code for sustainable homes, no update for 2018.
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.	Islington's Energy Team advise residents and landlords through a dedicated phone line, website and face to face services run by the Energy Strategy and Advice Team. In 2018 the team received 1,884 calls from Islington and 3,474 requests for extra support for vulnerable residents through Islington SHINE. During 2018, a total of 756 home energy visits have provided face to face energy advice and installed small efficiency measures in Islington properties. www.energyadvice.islington.gov.uk.

		The Council also led by example, in 2018 housing finished replacing the communal heating system on the Redbrick estate. This included insulated pipework, replacement of hot water cylinders with Heat Interface Units and new smarter heating controls. All of which are expected to significantly reduce heating demand on the estate.
Cleaner energy	Provide advice on use of non-combustion renewable energy technologies to developers to ensure compliance with carbon reduction targets, minimising emissions.	Completed previously, pollution team continue to review energy strategies, no update in 2018.
	Expand the Bunhill Heat and Power Network to utilise other heat sources.	During 2018 construction work continued on the expansion of the Bunhill heat network, sourcing waste heat from the London Underground.
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 1,884 calls from Islington residents in 2018. 3,474 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.	The City Air initiative was completed in previous years, however we have continued to work in pollution hotspots in the borough such as Archway, Angel and City Fringe. The work on Archway ZEN continued throughout 2018. The Archway ZEN team continued working with local businesses to a total of 210 businesses contacted and 120 signed up to ZEN. Until the end of 2018/19 23 grants had been issued contributing £1-2k to various initiatives including cargo bikes, e-bikes, greening and electric vehicles. Islington supported Archway Town Centre Group to deliver the Archway Business LEN in 2018 (and the beginning of 2019). The interventions for businesses included purchases of shared electric vehicle and cargo bike, greening initiatives including green screens by Whittington Hospital, Archway tube station and a pocket park on Junction Road and the installation of a Clean Air Walk from Whittington Hospital to Archway Town Centre. Islington also worked with the Archway Town Centre Group on the Healthy Streets for Businesses scheme in 2018 with the creation of an Archway cargo centre to minimise the amount of deliveries in the local area by providing extra storage facilities and cargo bike deliveries.

		Angel BID and Old Street Partnership have been coordinating their waste collections to reduce the amount of trucks and suppliers collecting in the local areas.
	Work with neighbouring boroughs to extend existing programmes such as the Zero Emission Network (ZEN) to improve air quality at the borough boundaries	We continue to engage businesses in the award winning City Fringe ZEN, in 2018 this expanded to include 1296 businesses, with 350 in Islington. In Islington 257 offers have been taken up, such as electric bike trials, or energy efficiency audits and 30 grants provided for measures such as showers for staff using active travel to get to work and energy efficiency measures. 11 scooter switches have now also taken place and a scooter toolkit for businesses was started, to be released in 2019. Since the scheme expanded to residents in 2017 721 residents have joined the scheme, with 129 in Islington. As part of the City Fringe LEN scheme the Ultra Low Emission Vehicle Street (ULEV) scheme started in 2018, this scheme restricts traffic in an area around Shoreditch/Old Street on the Islington and Hackney border. During peak times, only walking, cycling and low emission vehicles are allowed in the area.
Air quality awareness raising initiatives		
	Hold an annual car free event.	For Car Free Day 2018 we installed five pop up parklets, with deckchairs, plants, grass and games. They were in Mayton St, Banner St, outside the Sobell Centre and two on Camden Passage, working with angel.london as part of their End of Summer Festival. In Archway we closed Geisbach Road and had a street party complete with family activities, dancing and information about air quality.
	Develop Air Quality Champions for Islington to work with officers to implement measures to improve local areas and reduce emissions.	In 2018 25 volunteers helped with idling events across the borough.
Provision of air quality information	Continue to lead the London wide AirText service and promote to residents.	In 2018 we continued to lead on AirText and promote it where possible (SHINE, energy advice, schools project). From July 2017 to August 2018 there were 71 new Islington subscribers and from September 2018 to March 2019 a further 20. The total number of active Islington subscribers as of August 2018 was 648.
Public Realm		
	Increase cycle parking around the borough, particularly in shopping areas and on housing estates.	We continued to install cycle stands in 2018 and over 100 cycle stands have now been installed. Cycle stands are installed when people request them and we have installed cycle stands around doctors' surgeries.
	Map and advertise safer walking and cycling routes.	Our Defra funded School project was completed in 2018 with a further six walking maps created for schools in 2018- these are five and ten minute walking maps that highlight low pollution routes. A Cleaner Air Route was also created between Angel and Kings Cross to highlight the improvements in air quality on side streets, as opposed to using main roads. This route was launched on Clean Air Day with a

		guided walk including the Mayor, several Councillors and local workers, to highlight the route between the two business hubs. It remains signposted for everyone to use. In early 2019 a Clean Air Walk was also created from Whittington Hospital to Archway Town Centre. A cycle stand map was created for the borough in 2018 and put on the council website. This map is regularly updated with new stands. TfL cycling maps are also displayed and given to the public in Dr Bike sessions.
	Promote walking through the Islington Joint Strategic Needs Assessment to tackle physical inactivity and obesity.	An Air Quality Focus document was developed between the Pollution and Public Health Team in 2018 and added to the JSNA as part of the Social, Economic and Environmental Determinants section https://evidencehub.islington.gov.uk/jsna/Pages/default.aspx. The JSNA retains its Physical Activity Factsheet.
	500 trees to be planted across the borough in 2013/14	A further 350 trees were planted in 2018-19 and a bid submitted for funding to plant more trees. Plans are underway to develop a secure tree funding scheme in the future through clients and grants.
	Research plants to improve air quality and plant with available budget.	Planting was carried out across Archway as part of schemes such as Archway Zen and LEN, including Highgate Hill, St Johns Grove and Pemberton Gardens. In 2018 planting was completed at the Vorley Road Nursery, including an evergreen hedge and six trees. This planting included planting to reduce pollution exposure. In total 26 trees were planted in the Vorley Road scheme and pocket park. Increasing links are being made within the council to allow air quality and pollution planting projects. In 2018 tree surveys were carried out which, along with analysis of tree data, will establish Islington trees value in terms of pollution and water interception as well as better informing where further planting will have the greatest benefit.
	Ensure that contractors undertaking works to the highway use best practice to avoid adding to local air pollution.	New Islington Code of Practice for Construction Site was completed in 2018.
	Work with TfL to ensure that all new road improvements are considerate of walking and cycling and create safer, cleaner spaces for active travel.	Highbury corner gyratory removal works underway in 2018, with new dedicated cycle lanes and pedestrian areas.
	Work with the Canal and River Trust to reduce pollutant concentrations around Regents Canal by changes to mooring rules,	Existing mooring rules remain in place along the canal. Work continued in 2018 on installing the Eco Mooring Zones. Discussions with the Canal and River Trust focused on precise terms and conditions of

	launching best practice guidance for boaters and using enforcement actions where non-compliance continues.	the zone are still ongoing, continuing into early 2019, whilst we finalise locations and receive quotes for the installation. We expect to reach a full agreement and complete installation in late 2019.
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.	Islington was awarded Cleaner Air Borough Status in 2016 and has retained this since. We continue to be committed to improving air quality and achieving this status in the next round of judging.
New Actions		
Cleaner Energy	Energy in the community	Islington's Community Energy Fund, commissions innovative energy projects from organisations with charitable aims. As of the end of 2018 six projects had been completed and a further nine commissioned. These include a range of energy efficiency, renewable and awareness projects. The Council also promoted the Solar Together group buying scheme to residents, which resulted in 27 new solar arrays.
Encouraging changes in driver behaviour	Roll out School Streets across the borough	In November 2018 Islington launched its first School Street scheme, after a positive consultation response, closing the road outside St John Evangelist Catholic Primary School in Angel. A mixture of signs, engagement work and enforcement are being used to stop vehicles using these streets during drop off and pick up time. Six further positive consultations were completed in 2018 with schemes to start early 2018. This scheme will be rolled out to more schools in 2019.

3. Planning Update and Other New Sources of Emissions

Table I. Planning requirements met by planning applications in the London Borough of Islington in 2018

Action	Number	Notes
a) Number of planning applications where an air quality impact assessment was reviewed for air quality impacts	12	AQ assessments are currently required for "Proposals introducing residential use (or other sensitive uses) within areas of particularly significant air quality, and other applications likely to have impact on road traffic; applications where the grant of planning permission would conflict with, or render unworkable, elements of the council's Air Quality Action Plan/ Air Quality Strategy."
b) Number of planning applications required to monitor for construction dust	16	Secured by way of CMP
c) Number of CHPs/Biomass boilers refused on air quality grounds	0	
d) Number of CHPs/Biomass boilers subject to GLA emissions limits and/or other restrictions to reduce emissions	4	
e) Number of developments required to install Ultra-Low NO_x boilers	12	
f) Number of developments where an AQ Neutral building and/or transport assessments undertaken	12	
g) Number of developments where the AQ Neutral building and/or transport assessments not meeting the benchmark and so required to include additional mitigation	1	The details for this site have not currently been approved and we are awaiting further details/off-setting. The off-setting fee levied as per the planning support document would be minimal as it stands.
h) Number of planning applications with S106 agreements including other requirements to improve air quality	0	
Number of planning applications with CIL payments that include a contribution to improve air quality	0	
i) NRMM: Central Activity Zone and Canary Wharf Number of conditions related to NRMM included.	6 registered and compliant	Merton RSP are commencing enforcement of Islington sites from May 2019.

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.	2 registered but uncompliant and being chased	All major sites (i.e. above 10 residential units/1000m2 commercial space) are required to have a CMP/CoPCS response document. This requires NRMM compliance. This is also stipulated with Islington's Code of Practice for Construction Sites.
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.	5 registered and compliant 5 unregistered/uncompliant and being chased	

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.

QA/QC audits are carried out twice per year by Matts Monitors, who also provide emergency 48 hour call out services and supply all consumables for the sites.

There was a leak in the cabin of our IS2 Holloway Road site in June, this was found to be from an upside down air conditioning drain which was promptly fixed and not believed to have impacted results.

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.

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:

- 13 good and four poor tube precision results of the 17 diffusion tube collocation studies conducted over the past three years (2016-2018) taken from latest data updated March 2019 on https://laqm.defra.gov.uk/diffusion-tubes/precision.html
- Latest AIR-PT (formerly WASP) results taken from AIR-PT Rounds 19 to 30. No results were submitted for the lab for five of these periods. However, the three results submitted show 58% lab results in this period were deemed satisfactory (based on a z-score ≤±2), suggesting some potential issues. Data taken from http://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html.

Figure 3. AIR-PT/WASP results (Rounds 19-30)

Table 1: Laboratory summary performance for AIR NO_2 PT rounds AR0019, 21, 22, 24, 25, 27, 28 and 30

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 AR019	AIR PT AR021	AIR PT AR022	AIR PT AR024	AIR PT AR025	AIR PT AR027	AIR PT AR028	AIR PT AR030
Round conducted in the period	April – May 2017	July – August 2017	September – October 2017	January – February 2018	April – May 2018	July – August 2018	September – October 2018	January – February 2019
Aberdeen Scientific Services	100 %	100 %	100 %	100 %	100 %	100 %	100 %	75 %
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 %
SOCOTEC	100 % [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]	87.5 % [1]
Exova (formerly Clyde Analytical)	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Glasgow Scientific Services	50 %	0 %	100 %	100 %	100 %	50 %	100 %	100 %
Gradko International [1]	100 % [1]	100 % [1]	100 % [1]	100 % [1]	100 %	100 %	100 %	75 %
Kent Scientific Services	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Kirklees MBC	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Lambeth Scientific Services	NR [2]	NR [2]	100 %	NR [2]	NR [2]	NR [2]	25 %	50 %
Milton Keynes Council	75 %	0 %	75 %	100 %	75 %	100 %	100 %	100 %
Northampton Borough Council	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]	NR [3]
Somerset Scientific Services	100 %	100 %	75 %	100 %	100 %	100 %	100 %	100 %
South Yorkshire Air Quality Samplers	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Staffordshire County Council	100 %	100 %	100 %	50 %	100 %	100 %	100 %	100 %
Tayside Scientific Services (formerly Dundee CC)	NR [2]	100 %	NR [2]	100 %	NR [2]	100 %	NR [2]	100 %
West Yorkshire Analytical Services	100 %	100 %	100 %	50 %	75 %	100 %	100 %	100 %

[1] Participant subscribed to two sets of test results (2 x 4 test samples) in each AIR PT round.
[2] NR No results reported
[3] Northampton Borough Council, Kent Scientific Services, Cardiff Scientific Services, Kirklees MBC and Exova (formerly Clyde Analytical) no longer carry out NO2 diffusion tube monitoring and therefore did not submit results.

A bias adjustment of 1.03 for 2018 has been derived for Lambeth Scientific Services from the latest version of the national bias adjustment calculator version 03/19 available at **http://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html**. See Figure 4 for results.

Figure 4. National Bias Adjustment Lambeth Scientific Services 2018

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 03/19

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of June 2019
LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List — If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List — If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List — If a year is not shown, we have no data[2]

Step 4: Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[3] shown in blue at the foot of the final column.

If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953

Analysed By[1]	Method (To undo your selection, choose (All) from the pop-up list)	Year[2] (To undo your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[4]	Bias Adjustment Factor (A) (Cm/Dm)
Lambeth Scientific Services	50% TEA in acetone	2018	KS	Marylebone Road Intercomparison	12	81	85	-4.3%	G	**1.04**
Lambeth Scientific Services	50% TEA in acetone	2018	SU	Reigate and Banstead BC	12	24	25	-4.8%	G	**1.05**
Lambeth Scientific Services	50% TEA in acetone	2018	SU	Reigate and Banstead BC	12	22	19	14.1%	G	**0.88**
Lambeth Scientific Services	50% TEA in acetone	2018	B	Reigate and Banstead BC	12	16	16	0.3%	P	**1.00**
Lambeth Scientific Services	50% TEA in acetone	2018	R	Reigate and Banstead BC (Note tubes set up	10	30	31	-4.2%	G	**1.04**
Lambeth Scientific Services	50% TEA in acetone	2018	R	Elmbridge Borough Council	12	29	33	-11.8%	G	**1.13**
Lambeth Scientific Services	50% TEA in acetone	2018	R	Elmbridge Borough Council	12	33	38	-11.2%	G	**1.13**
Lambeth Scientific Services	50% TEA in acetone	2018		**Overall Factor[3] (7 studies)**				Use		**1.03**

Bias adjustment factors used in previous years can be found in table J.

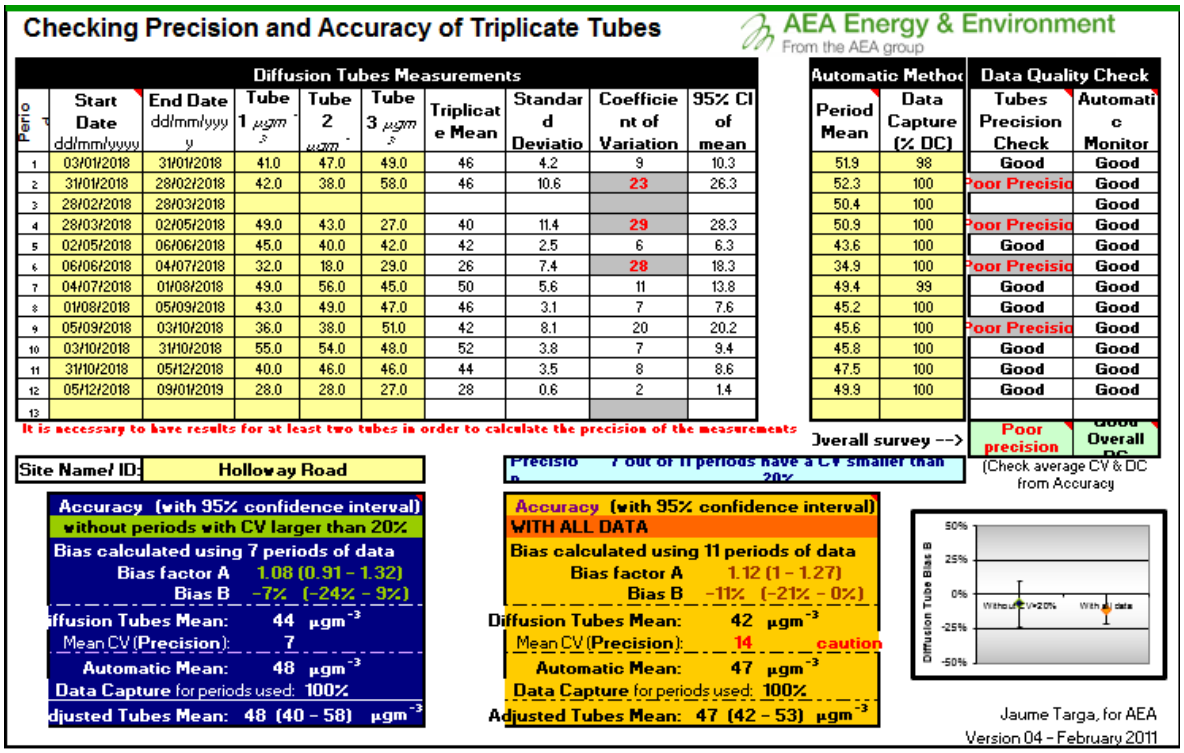
Table J. Bias Adjustment Factors used in previous years

	2010	2011	2012	2013	2014	2015	2016	2017
Bias adjustment factor	0.86	1	0.83	0.8	0.87	1.24	1.17	1.02

Factor from Local Co-location Studies

A local collocation study was completed using data from the Holloway Road site ID IS2. The bias adjustment factor applied to the diffusion tubes from this is 1.12. See Figure 5 for results of the collocation study.

Figure 5. Precision and accuracy of collocation study at Holloway Road



Checking Precision and Accuracy of Triplicate Tubes

AEA Energy & Environment
From the AEA group

Diffusion Tubes Measurements

Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 µgm⁻³	Tube 2 µgm⁻³	Tube 3 µgm⁻³	Triplicate Mean	Standard Deviation	Coefficient of Variation	95% CI of mean
1	03/01/2018	31/01/2018	41.0	47.0	49.0	46	4.2	9	10.3
2	31/01/2018	28/02/2018	42.0	38.0	58.0	46	10.6	23	26.3
3	28/02/2018	28/03/2018							
4	28/03/2018	02/05/2018	49.0	43.0	27.0	40	11.4	29	28.3
5	02/05/2018	06/06/2018	45.0	40.0	42.0	42	2.5	6	6.3
6	06/06/2018	04/07/2018	32.0	18.0	29.0	26	7.4	28	18.3
7	04/07/2018	01/08/2018	49.0	56.0	45.0	50	5.6	11	13.8
8	01/08/2018	05/09/2018	43.0	49.0	47.0	46	3.1	7	7.6
9	05/09/2018	03/10/2018	36.0	38.0	51.0	42	8.1	20	20.2
10	03/10/2018	31/10/2018	55.0	54.0	48.0	52	3.8	7	9.4
11	31/10/2018	05/12/2018	40.0	46.0	46.0	44	3.5	8	8.6
12	05/12/2018	09/01/2019	28.0	28.0	27.0	28	0.6	2	1.4
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

Automatic Method		Data Quality Check	
Period Mean	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor
51.9	98	Good	Good
52.3	100	Poor Precisio	Good
50.4	100		Good
50.9	100	Poor Precisio	Good
43.6	100	Good	Good
34.9	100	Poor Precisio	Good
49.4	99	Good	Good
45.2	100	Good	Good
45.6	100	Poor Precisio	Good
45.8	100	Good	Good
47.5	100	Good	Good
49.9	100	Good	Good
Overall survey -->		Poor precision	Good Overall DC

(Check average CV & DC from Accuracy)

Site Name/ ID: Holloway Road

Precisio... 7 out of 11 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval)
without periods with CV larger than 20%
Bias calculated using 7 periods of data
Bias factor A 1.08 (0.91 - 1.32)
Bias B -7% (-24% - 9%)
Diffusion Tubes Mean: 44 µgm⁻³
Mean CV (Precision): 7
Automatic Mean: 48 µgm⁻³
Data Capture for periods used: 100%
Adjusted Tubes Mean: 48 (40 - 58) µgm⁻³

Accuracy (with 95% confidence interval)
WITH ALL DATA
Bias calculated using 11 periods of data
Bias factor A 1.12 (1 - 1.27)
Bias B -11% (-21% - 0%)
Diffusion Tubes Mean: 42 µgm⁻³
Mean CV (Precision): 14 caution
Automatic Mean: 47 µgm⁻³
Data Capture for periods used: 100%
Adjusted Tubes Mean: 47 (42 - 53) µgm⁻³

Jaume Targa, for AEA
Version 04 - February 2011

Discussion of Choice of Factor to Use

The bias adjustment factor of 1.12, gathered from the local collocation study on Holloway Road, was used for 2018. We considered the local collocation study a better representation of the borough and is also a more conservative value compared to the national value of 1.03. Furthermore, this location is one of the most polluted thoroughfares in the London Borough of Islington.

Appendix B Full Monthly Diffusion Tube Results for 2018

Table K. NO_2 Diffusion Tube Results

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2018 % [b]	Annual Mean NO_2													
			Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual mean – raw data	Annual mean – bias adjusted [c]
BIS005/03	100	100	**44**	**44**	33	20	33	29	35	26	29	27	**43**	26	32	36
BIS005/02	92	92		39	**65**	**47**	**43**	**52**	**58**	27	**42**	**45**	**54**	28	**45**	**51**
BIS005/06	92	92	**51**	**45**	**41**		**42**	32	**46**	**42**	37	39	**43**	26	40	**45**
BIS005/07	100	100	**41**	**49**	**54**	**45**	**60**	31	40	24	29	**44**	39	29	40	**45**
BIS005/08	92	92	**49**	**48**	37		40	**50**	**68**	**41**	38	38	36	28	**43**	**48**
BIS005/09	100	100	33	36	**52**	22	**58**	34	**59**	23	**44**	35	39	26	38	**43**
BIS005/11	100	100	**46**	**48**	**46**	26	**46**	15	35	41	45	53	42	27	39	**44**
BIS005/13	100	100	39	35	18	22	33	33	**41**	27	38	36	38	23	32	36
IS005/01	92	92	**42**	**46**	25	21	**46**	23	**54**	24		**44**	39	27	36	40
BIS005/04	92	92	36	35	**53**		30	28	25	24	35	28	26	23	31	35
BIS005/05	100	100	**41**	33	40	27	24	25	27	**42**	32	29	32	20	31	35
BIS005/01	100	100	25	36	35	28	21	19	24	**45**	19	30	24	18	27	30
IS005/03	83	83	30	34	33	**43**	20	16	22		25		25	17	27	30
BIS005/10	100	100	30	29	31	40	22	16	23	20	30	22	19	17	25	28
BIS005/12	100	100	28	34	32	26	30	19	25	21	32	35	24	21	27	31

Site ID	Valid data capture for monitoring period % [a]	Valid data capture 2018 % [b]	Annual Mean NO_2													
			Jan	Feb	March	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual mean – raw data	Annual mean – bias adjusted [c]
IS005/02	92	92	31	36	34	32	21	17	22	21	18		30	18	25	29
BIS005/14	100	100	29	33	45	35	22	13	19	23	20	27	28	17	26	29
BIS005/15	92	92	24	26	33	52	22	21	20	22		45	26	20	28	32
IS005/04	92	92	27	41	37	19	23	22	24	28	28	28		20	27	30

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

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

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

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