ISLINGTON JSNA: FOCUS ON

AIR QUALITY

JANUARY 2019

Poor air quality is detrimental to human health and harmful to ecosystems. Exposure to outdoor air pollution has a range of both short- and long-term adverse effects on human health, and those with pre-existing conditions are at a heightened risk. Fine particulate matter in particular causes increased mortality and reduced life expectancy.

Air pollution is caused when gases or solid particles are released into the air in large enough quantities to harm the health of people, animals, or plants. The main sources of air pollution in Islington come from traffic fumes, brake and tyre wear, gas boilers, and increasingly wood burning stoves.

Whilst particulate matter in Islington meets European Union limit values, exceedances of oxides of nitrogen remain problematic.

Facts and figures

- 9,400 estimated premature deaths in London attributable to air pollution (2010)[1]
- An estimated 88 attributable deaths in Islington due to small particles ($PM_{2.5}$) (2010)[1]
- An estimated 164 attributable deaths in Islington due to nitrogen dioxide (NO_2) (2010)[1]

Measures for reducing inequalities

- Reducing air pollution around schools will reduce exposure among children, particularly in the most polluted areas.
- The 20% most deprived areas in London had 8.6% more PM_{10} and 8.1% more NO_x compared to the 20% least deprived areas.[3] Reducing air pollution in the most polluted areas will help close this gap.

Population groups

- Children (including those still in the womb) are more susceptible to air pollution because their organs are still developing and, taking body size into account, breathe more air more quickly.
- Older people are more vulnerable to air pollution, mainly because of the cumulative impact of breathing poor quality air over a lifetime, and because they are more likely to have long-term health conditions.
- People with long-term respiratory or circulatory conditions

National & local strategies

- DEFRA Clean Air Strategy 2018 (draft)
- The Mayor of London's London Environment Strategy (2018) integrates air quality with green infrastructure, noise, climate change and waste.
- Islington Air Quality Strategy 2018 (draft)
- Environment Act 1995
- National Clean Air Strategy 2000

Islington is the most densely populated borough in London. Densely populated areas with heavy traffic experience higher pollution levels than less densely populated areas. A key source of pollution is from road traffic as the A1 runs through the heart of the borough and is commonly used as a thoroughfare to travel through to the city.

Islington has 2 automatic monitoring stations that monitor particulates (PM_{10}) and nitrogen dioxide (NO_2): a roadside monitor at Holloway Road and a background monitor at Arsenal, and 19 non-automatic sites measuring NO_2 (9 roadside and 10 urban background).

Islington has consistently achieved the objective for an annual mean of 40µg/m^3 or less for background NO_2, but **not met the annual mean objective for roadside NO_2**. However, both background and roadside NO_2 show a **downward trend**.

Islington has consistently met the objective for an hourly mean of 200µg/m^3 of NO_2 not to be exceeded more than 18 times year, with just one exceedance in 2017.

Islington has consistently achieved the objective of an annual mean of 40µg/m^3 or less for both background and roadside PM_{10}, with both showing a downward trend.

Islington has consistently met the objective for a daily mean of 50µg/m^3 of NO_2 not to be exceeded more than 35 times year, with exceedances showing a downward trend to 6 roadside and 3 background in 2017.
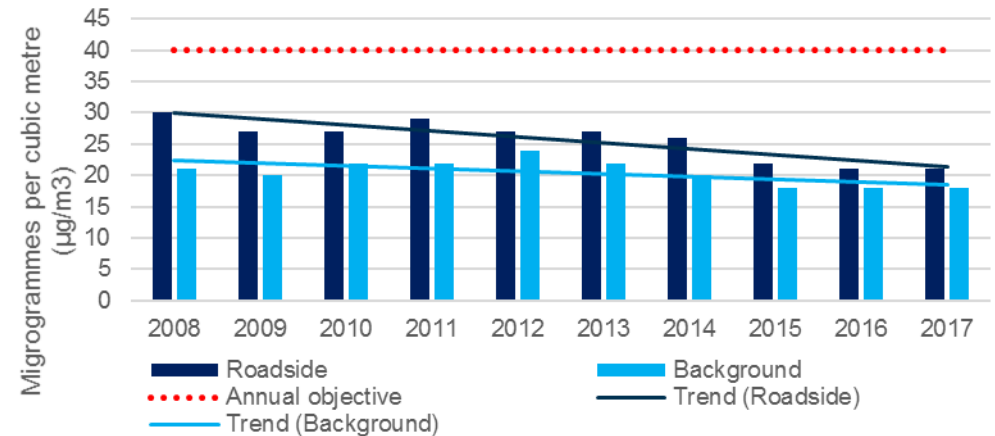
Nitrogen dioxide (NO_2)

Nitrogen dioxide annual mean, Islington roadside and background, 2008 to 2017
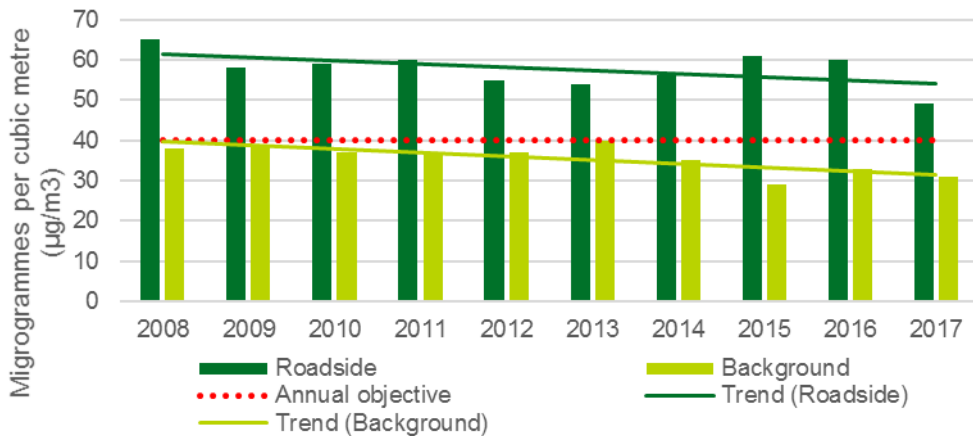
Particulate matter (PM_{10})

Particulate matter annual mean, Islington roadside and background, 2008 to 2017

Air pollution is a major environmental risk to health. There is no evidence for a safe level of various air pollutants, and adverse health effects are felt well below the legal EU limits that apply to England.[4]

The lower the levels of air pollution, the better the cardiovascular and respiratory health of the population will be, both long- and short-term. By reducing air pollution levels, local authorities can reduce the burden of disease from stroke, heart disease, lung cancer, and both chronic and acute respiratory diseases, including asthma.

Certain groups are more vulnerable to air pollution, such as older people. Islington's population is ageing, with a 29% increase in people aged over 65 and 35% increase in people aged over 80 by 2028.[5]

Therefore Islington needs to continue reducing pollution in the borough. Including:

- Reducing nitrogen dioxide levels to at the least meet the 40µg/m3 objective across the borough and continuing to decrease particulate matter levels
- Meeting any new standards/policies e.g. the Government's Draft Clean Air Strategy aims to halve the population living in areas with PM2.5 above WHO guideline levels of 10µg/m3 by 2025. While the Mayor's London Environment Strategy commits to meet WHO guidelines by 2030 e.g. 20µg/m3 a year for PM10 and 10µg/m3 a year for PM2.5
- Monitor and reduce other pollutants as appropriate e.g. ozone

In August 2000, Islington 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 Islington 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.

As such Islington has an air quality strategy in place outlining the steps we will be taking to meet the air quality objectives and we report on our progress every year.

Local authorities have a central role to play in improving air quality. They have a wealth of knowledge about the communities they serve as well as responsibility for a number of key levers such as parking, planning and local roads.

However local authorities can't improve air quality on their own, other influential factors include:

- International level e.g. legal pollution objectives, vehicle standards
- National level e.g. national policies and schemes
- Regional level e.g. local policies and schemes such as healthy streets, congestion charging, ultra low emission zones and investment in public transport
- Other local authorities

Islington continues to work with these groups groups to improve air quality. For example, encouraging changes to vehicle and fuel tax, local authority powers and earlier introduction of the ULEZ. We are also updating our own air quality strategy, looking for new opportunities with teams across the Council and will continue to bid for funding.

Pollutant	Health impacts	Sources
Particulate matter (PM_{10} and $PM_{2.5}$)	Long-term exposure to particles contributes to the risk of developing cardiovascular and respiratory diseases, as well as of lung cancer. $PM_{2.5}$ is understood to have greater health impacts because its smaller size means that it can travel deeper into the lungs and pass into the bloodstream. Exposure to high concentrations during short-term pollution episodes can exacerbate lung and heart conditions, significantly affecting quality of life, and increase visits to general practitioners, hospital admissions, and deaths.	The greatest source of particulate matter (PM_{10}) produced within Islington comes from road traffic, which accounts for 75% of PM_{10} emissions locally. PM emitted from road sources includes brake and tyre wear as well as particulates in exhaust gases. Domestic and commercial gas boilers each contribute around 4% of local PM_{10} emissions.[6]
Oxides of nitrogen (NO_X) made up of nitrogen oxide (NO) and nitrogen dioxide (NO_2)	NO_2 is an irritant gas, which, at high concentrations, causes inflammation of the airways. Studies have shown significant links between long term exposure to NO2 with adverse effects on health, including decreased lung function, increased respiratory symptoms such as coughing, increased incidence and prevalence of asthma, increased cancer incidence, reduced life expectancy and deaths.	The greatest sources of NO_2 originating in Islington are from road traffic (49%), commercial gas boilers (17%) and domestic gas boilers (13%). [6]
Ozone	Ozone is a respiratory irritant and short-term exposure to high ambient concentrations can cause inflammation of the respiratory tract and irritation of the eyes, nose, and throat. High levels may exacerbate asthma or trigger asthma attacks in susceptible people	Ozone is a secondary pollutant produced by the effect of sunlight on NOx and VOCs from vehicles and industry. Ozone concentrations are greatest in the summer on hot, sunny, windless days.

What works?

While overarching regulations like vehicle emissions standards are controlled by governments and the EU and new vehicle designs by industry, local authorities have many powers that have been shown to contribute to reducing air pollution. The following are recommended in the Mayor of London's Air Quality Action Matrix*:

- Emissions from developments and buildings:
  - Reducing emissions from construction sites and enforcing relevant policies e.g. around NRMM
  - Planning policies relevant to air quality e.g. air quality neutral, green space in design
  - Smoke control zones that are appropriately identified, promoted and enforced
  - Energy efficiency schemes in place
- Public Health and awareness raising
  - Public health involvement in the air quality agenda e.g. in JSNA
  - Transport team briefed on air quality and their responsibilities
  - School involvement e.g. through TfL STARS
- Delivery servicing and freight
  - Air quality taken into account in procurement process
- Borough fleet actions
  - Cleaning of Councils own fleet
  - drivers training
- Localised solutions
  - Green infrastructure
  - LENs
- Cleaner transport
  - Infrastructure and schemes for low emission vehicles e.g. loading bays, charging points
  - Anti idling campaigns
  - Pedestrianisation of roads permanently or for set days
  - Variation of parking fees to incentivise cleaner vehicles
  - Provision of infrastructure to support walking and cycling

* Accurate as of 06/11/18, https://www.london.gov.uk/what-we-do/environment/pollution-and-air-quality/working-london-boroughs

| Key facts | Setting the scene | Future need | What influences? | What works? | Assets & services | Targets & outcomes | The Voice | Gaps | Further info |

ASSETS & SERVICES

Examples of some current or recent schemes

airText	We helped create this London-wide pollution alert system, to help the public prepare for high pollution. It provides alerts to vulnerable people, informing them of what action to take to be less exposed on high pollution days.
Car Free Day & National Clean Air Day	These events along with others such as walk to school and cycle to work weeks are used as promotional vehicles and to focus attention on air pollution and actions such as active travel options that reduce pollution. Events have included road closures, lung function tests, pedal powered cinema, low pollution walking routes, Dr Bike mechanics, police security marking, cycle demonstrations and route planning with Sustrans etc.
Anti-idling	A number of anti-idling events have been conducted across Islington. These events encourage drivers to turn off their engines when they are parked up to help improve local air pollution.
City Fringe ZEN	We are supporting over 1,000 businesses to improve local air quality, increase active travel and reduce energy and transport costs. Members have access to a range of free advice and services. This innovate scheme improves air quality and business efficiency across Islington, Hackney and Tower Hamlets. For Islington the area covered is Bunhill Ward.
City Fringe LEN	This project aims to deliver a superb urban environment, supporting residents and businesses to undertake sustainable travel, and address local air quality issues. One key area of work is in changing parking spaces into parklets to allow residents and workers to enjoy the locality whilst using pollution incepting planting to clean the air.
Ultra-Low Emission Vehicle (ULEV) Streets	This scheme has closed roads to vehicles not classed as ultra-low emission at peak times on Tabernacle, Singer and Cowper Street as part of a nine-month trial starting September 2018. This is part of the City Fringe LEN initiative with Hackney and Tower Hamlets. This scheme will reduce air and noise pollution and make it easier, more enjoyable and safer to walk and cycle in these areas.
Archway ZEN	This project is aiming to help businesses and the community in the Archway area improve their air quality.
Archway Business LEN	Working with business groups in Archway to improve signage to encourage more active travel journeys and to green the environment.
Clean Air Villages	A project in Archway and Old Street working with businesses and communities to make deliveries and servicing more efficient through individual and collective action. This is being run in conjunction with Cross River Partnership and four other boroughs.
Vehicle Reduction	A new project operating in Archway, Angel and Old Street to deliver various measures to reduce vehicle movements e.g. waste compactors, waste consolidation and electric cargo bike deliveries.
Air quality monitoring	The council conducts monitoring at locations across the borough. On top of the two main monitoring stations at Holloway Road and Gillespie Park there are over 130 NOx tubes including at every school in the borough.
School Streets	The council has instigated a programme of closing or restricting access to roads outside schools at pick up and drop off times – this is being rolled out across the borough.
School Audits	Following on from the Mayor of London funded audit of Prior Weston School and the implementation of the audit recommendations, the council is embarking on a project to deliver air quality audits at all schools in the borough.

Key facts	Setting the scene	Future need	What influences?	What works?	Assets & services	Targets & outcomes	The Voice	Gaps	Further info

Although the EU has set legally binding limits of air pollution across member states including the EU, evidence has emerged that the burden of air pollution on health is significant at relatively low concentrations, there is no safe lower limit and health benefits will result from any reduction in concentrations.

EU limit values and World Health Organisation guidelines, and achievement in Islington

Pollutant	Period	EU Limit	WHO	Acheivement
PM_{10}	Annual mean	$40\mu g/m^3$	$20\mu g/m3$	🟩
PM_{10}	Daily mean (exceedances)	$50\mu g/m^3$ (35)	$50\mu g/m^3$ (3)	🟩
$PM_{2.5}$	Annual mean	$25\mu g/m^3$	$10\mu g/m^3$	🟩
$PM_{2.5}$	Daily mean (exceedances)	N/A	$25\mu g/m^3$ (3)	🟥
NO_2	Annual mean	$40\mu g/m^3$	$40\mu g/m^3$	🟥
NO_2	1-hour mean (exceedances)	$200\mu g/m^3$ (3)	$200\mu g/m^3$ (-)	🟩
O_3	8 hr daily max (exceedances*)	$120 \mu g/m^3$(25)	$100\mu g/m^3$	🟩
* days/year, calculated over 3-year mean				

- London wide air quality polling in 2018 found:
  - 91% were aware of air quality as an issue (up from 83% in 2017 and 88% in 2017)
  - 82% agreed tackling air quality should be a priority
  - 53% felt their health had been impacted by air pollution (up from 47% in 2017)
  - Improved tax incentives (21%), environmental considerations (22%), better charging infrastructure (17%) and government grants (17%) were stated as what would incentivise people to buy electric vehicles
  - There was an increase in cycling from 29% in 2016 to 35% in 2018, over a third felt if there were less cars on the road they would cycle (or cycle more)
  - 49% thought you were least exposed to pollution in a car
  - https://www.londoncouncils.gov.uk/our-key-themes/environment/air-quality-london/air-quality-public-polling/2018-air-quality-polling

Islington has not undertaken any borough wide polling, however surveys have been conducted as part of particular schemes:
- A survey of users and businesses in Archway as part of the Archway ZEN project found:
  - Traffic congestion and parking, as well as pollution and air quality, were reported as some of the main challenges for the area
  - 61% community members walked to the area and only 5% used a car, this compared to perceptions of businesses who thought 46% of their customers walked and 15% drove.
  - When asked what would improve the area 64-65% stated green infrastructure would have a high impact, 40-49% thought less road traffic and in third place was cycle lanes and parking. 22-36% thought electric vehicle charging would have no impact.
  - 35% are taking actions already to reduce their exposure to air pollution e.g. taking side streets
- A number of school pupils and parents were surveyed before school engagement projects began at 10 schools in the borough
  - The most popular modes of transport were walking (39-66%) and car (10-30%)
  - 84-85% were worried about local air quality
  - Only 30% were aware of current Council air quality schemes and only 15% of airText
  - 55-67% felt there was something they could do to lower their exposure
  - 80% agreed that quieter back streets can reduce pollution, 31% agreed pollution can be worse in a car than cycling

Key facts	Setting the scene	Future need	What influences?	What works?	Assets & services	Targets & outcomes	The Voice	Gaps	Further info

Air quality is a cross cutting issue which impacts on multiple and diverse policy areas across the council. It requires:

- Closer and stronger communication and coordination across the Council
- Improving/targeting public awareness and changing attitudes
- Funding and resources for initiatives and enforcement
- Improved powers e.g. in relation to smoke control

Furthermore pollution has sources outside of local authority control, for example:

- Pollution is "transboundary"- meaning it has international, national and regional sources all of which will impact pollution in a borough
- Through traffic- a large percentage of traffic in Islington is from outside the borough and/or is just passing through. The main roads are also under TfL control.
- Diesel sources (freight, buses, taxis)- vehicles are not controlled by Islington policies but factors such as vehicle emissions standards, bus policies or ULEZ decisions

Moving forward these provide a challenge for local authorities and require involvement and/or new policies from wider organisations. Islington must continue to work with these organisations for example, replying to National Government and Mayoral consultations, attending local authority air quality cluster group meetings, working with community groups, education institutes and other professional bodies.

- Islington Council — https://www.islington.gov.uk/energy-and-pollution/pollution/air-quality
- *air*TEXT pollution forecast — www.airtext.info
- London Air Quality Network — www.londonair.org.uk
- The Mayor's Environment Strategy — https://www.london.gov.uk/what-we-do/environment/london-environment-strategy
- The Mayor of London's air quality pages — https://www.london.gov.uk/what-we-do/environment/pollution-and-air-quality
- Department for Environment Food and Rural Affairs, About Air Pollution — www.uk-air.defra.gov.uk/air-pollution
- World Health Organisation, Air Quality and Health — www.who.int/mediacentre/factsheets/fs313/en/index.html
- Committee on the Medical Effects of Air Pollutants — www.comeap.org.uk
- Every breath we take: the lifelong impact of air pollution; report by the RCP and RCPCH. — https://www.rcplondon.ac.uk/projects/outputs/every-breath-we-take-lifelong-impact-air-pollution
- **References**

1. Walton H. Dajnak D. Beevers S. et al. King's College London Understanding the Health Impacts of Air Pollution in London. 2015
2. NICE guidance NG70 Air pollution: outdoor air quality and health. 2017
3. Fecht D. Fischer P. Fortunato L. et al. Associations between air pollution and socioeconomic characteristics, ethnicity and age profile of neighbourhoods in England and the Netherlands. Environmental Pol-lution 2015;198:201-210
4. Di Q. Dai L. Wang Y. et al. Association of Short-term Exposure to Air Pollution with Mortality in Older Adults. JAMA. 2017;318(24):2446–2456. doi:10.1001/jama.2017.17923
5. GLA Population projections (Jul 2017) - 2016-based population projections using a central trend-based projection. https://data.london.gov.uk/dataset/gla-population-projections-custom-age-tables
6. Attree M. and Williams M. Air Quality Modelling for the London Borough of Islington. CERC, 2014
7. London Councils, 2018 Air quality polling. Available at https://www.londoncouncils.gov.uk/our-key-themes/environment/air-quality-london/air-quality-public-polling/2018-air-quality-polling

About Islington's JSNA

Islington's Evidence Hub brings together information held across the organisations into one accessible place. It provides access to evidence, intelligence and data on the current and anticipated needs of Islington's population and is designed to be used by a broad range of audiences including practitioners, researchers, commissioners, policy makers, Councillors, students and the general public.

This factsheet was produced by Ian Sandford, Public Health Strategist, and Jo Shaw, Pollution Officer, and approved for publication by Paul Clift, Environmental Health Manager (Pollution) in January 2019.

Contact: JSNA@Islington.gov.uk