Islington Air Quality Annual Status Report 2022

Contact details

London Borough of Islington
Environmental Pollution, Policy and Projects Team
Waste and Recycling Centre
1 Cottage Road
London
N7 8TP
T: 020 7527 2000
E: pollution@islington.gov.uk

Foreword

As a council, we're determined to create a more equal Islington, where everyone has the same opportunity to succeed and thrive. We firmly believe that to achieve that, we must also create a greener, healthier future for everyone. The air we breathe forms a key part of this. That's why we have an air quality action plan in place and have produced this annual air quality report to show progress against our action plan.

We're working tirelessly to ensure that present and future generations have clean air to breathe here in Islington. We know that improving air quality carries so many benefits – it'll make our borough a more pleasant place to live, work, and visit, it'll improve the health, wellbeing and quality of life of local people of all ages, and it'll help Islington play its part in tackling climate change. Air pollution affects us at just about every stage of life, starting in the womb, continuing through childhood, adolescence and young adulthood into old age[1]. In periods of high pollution some people with existing heart and respiratory conditions, such as asthma, may find their condition gets worse. Over the long-term air pollution can increase the risk of many respiratory and cardiovascular diseases, can reduce the lung development of children and is also increasingly being linked to a range of other health conditions such as cognitive development or decline.

We're leading the way in tackling air pollution, and the positive impact of our work is reflected in this report, with long-term data showing pollution levels are almost half what they were seven years ago.

Air quality is influenced by a range of factors, such as emissions from different pollution sources both within and outside the borough, as well as changes in weather or local building layout. The biggest sources of pollution in the borough come from activities like road transport, heating homes and businesses, and commercial cooking. Pollution sources outside the borough include natural sources like soil erosion or salt spray, industrial pollution from northern Europe, as well as similar sources to those seen in the borough. Pollution levels also vary over a day, month or year, and are influenced by changes in weather, for instance still air in periods of high pressure will cause pollution levels to build up, and also local factors such as building layout which affect how air pollution is dispersed in an area. It is therefore difficult sometimes to work out what has caused a localised or short-term change in air pollution.

Notwithstanding this, this report shows that we are making significant steps in reducing pollution from many different sources and the long-term trends in pollution levels across the borough show significant improvements.

The report uses data from 2022, a year when we took a number of significant, pioneering steps towards creating a greener, healthier borough, with a focus on the

[1] https://www.rcplondon.ac.uk/projects/outputs/every-breath-we-take-lifelong-impact-air-pollution

impacts of the actions we have taken starting with the most vulnerable residents in Islington, including:

1. Protecting our most vulnerable residents by working with Islington's care homes and schools to understand and reduce air pollution, supporting those that are most affected by the negative impacts of air pollution and reducing their exposure to polluted air.
2. Supporting the NHS by delivering air quality training for health professionals, so that they can provide informed guidance to local patients with conditions affected by poor air quality.
3. Continuing to deliver cleaner, greener, more welcoming streets for local people, through the continuation of our people friendly streets programme.
4. Delivering the pioneering eco-mooring zone on Regents Canal, to help reduce emissions from boats, improve the health of boaters and those that live along and use the towpaths.
5. Leading on a multi-borough scheme to reduce pollution from solid-fuel burning, one of the larger sources of particulate matter pollution in London.
6. Leading by example through the delivery of fleet and facility improvements and supporting business and residents via our roll out of electric vehicle charging points, enabling further reductions in polluting fossil fuelled powered vehicles.

Our air quality action plan is also pivotal in achieving a range of wider council priorities, for example the Islington Together Plan 2030 mission of making Islington greener and healthier. Air pollution is one of the greatest environmental risks to health. By reducing air pollution levels, we can reduce the burden of a range of respiratory and cardiovascular diseases and reduce health inequality experienced due to the uneven impacts of air pollution. Actions detailed in this report, to reduce air pollution, such as reducing wood burning or improving energy efficiency in our homes, assist in delivering the Vision 2030 (Net Zero Carbon) Strategy priority of improving energy efficiency and reducing carbon emissions from buildings. Air quality improvements are also supported in the Islington Transport Strategy 2020-2041 commitment to the roll out of electric vehicles and encouraging a shift to active travel.

This report highlights the huge benefits of our collective efforts and shows that air quality across the borough is continuing to improve. We know, though, that there's still so much for us to do – to boost the health, wellbeing, and life chances of local people, and to ensure that Islington plays its part in tackling air pollution and climate change. We are working to ensure we are meeting not just the national objectives but also ultimately the lower World Health Organisation guideline levels, which will offer the greatest health benefits and need a concerted effort from many partners to achieve. That's why, over the coming months and years, we're going to continue to work hand-in-hand with local people to create a greener, healthier Islington for all, and to help unlock the huge potential of our borough.

Summary

This report details the results of our air quality monitoring in 2022, as well as actions taken in 2022 to improve air quality and includes the following sections:

- Results of our long-term air pollution monitoring conducted across the borough.
- Actions taken in 2022 to improve air quality, with progress assessed against our air quality action plan.
- Quality control processes completed to make the data as accurate as possible.
- Results of all other air pollution monitoring conducted across the borough.
- A low traffic neighbourhood data analysis.

As a result of the actions taken in and around Islington in 2022, supported by the council, significant improvements have been made to reduce pollution and improve air quality, most notably:

- Nitrogen dioxide (NO_2) pollution levels recorded by our long-term monitors show that these levels have halved in the seven years covered by this report.
- Monitors outside all schools, nurseries and care homes met the annual objective level for NO_2.
- All long-term monitoring met the annual objective level for NO_2 for the third year running.
- All other pollutant objectives were met.

Air pollution does not respect borders, so we are committed to working with our partners including other councils, as well as taking action ourselves, to lower pollution levels and reduce all sources of pollution in the borough and where possible sources of pollution which occur outside the borough. We do this in conjunction with delivering council priorities and policies such as:

- Islington Together 2030 - which sets out how we'll create a more equal borough for everyone over the next seven years. The World Health Organisation (WHO) has declared that air pollution is one of the greatest environmental risks to health. The Marmot Review 10 years on report is clear that pollution levels are, on average, worse in areas of higher deprivation and quotes the Chief Medical Officer's report which describes worse impacts for deprived communities and places, showing these places have 'a higher exposure to air pollution and a greater burden of poor health increasing susceptibility to the impact of pollution'. By reducing air pollution levels, we can reduce the burden of a range of respiratory and cardiovascular diseases, and reduce health inequalities experienced due to the uneven impacts of air pollution where pollution levels and exposure is higher in more deprived areas.
- Vision 2030: Building a Net Zero Carbon Islington by 2030 - sets out our vision of a fair and green future for local people and our plan for a net zero

carbon Islington by 2030. Actions in our air quality action plan, such as reducing wood burning or improving energy efficiency in our homes, also assist in delivering one of the Vision 2030 (Net Zero Carbon) Strategy priorities of improving energy efficiency and reducing carbon emissions from buildings. Many actions taken by the council, listed in Table I , that reduce or eliminate NO_2 also reduce CO_2 and other carbon emissions. Tackling local air pollution sources has significant benefits to tackling climate change.

- Islington Transport Strategy 2020-2041 – sets out the vision, strategic objectives, and policies for Islington's transport environment for the period up to 2041, transforming the boroughs transport environment to meet the council's wider social, environmental and economic goals. Road transport is the biggest sources of pollution in the borough, many of the actions listed in Table I relate to reducing pollution from transport sources for this reason. For instance, our air quality action plan supports the commitment to roll out electric vehicles and encourage a shift to active travel.

There are many sources of air pollution, from both within and outside of the borough. The London Atmospheric Emissions Inventory 2019 identifies the main sources of pollution within Islington to be:

- NOx – nitrogen oxide
    - Road Transport 41%
    - Commercial Heat/ Power 38%
    - Domestic Heat/ Power 10%
- PM_{10} - particulate matter of less than 10 microgram in size
    - Road Transport 25%
    - Construction 22%
    - Commercial Cooking 20%
- $PM_{2.5}$ - particulate matter of less than 2.5 microgram in size
    - Commercial Cooking 36%
    - Road Transport 24%
    - Domestic Biomass/ Wood Burning 10%

Pollution levels within the borough will also be impacted by sources from outside Islington, some of those will be similar sources to those seen in Islington like road transport and commercial cooking above, but also include natural sources like sea salt and industrial pollution from northern Europe.

Pollution levels will vary from month to month or year to year, based on factors such as changes in weather or global atmospheric conditions. For instance, periods of high pressure, often experienced in winter, make the air a lot stiller so pollution levels will build up as the air cannot disperse. While periods with lots of sun change interactions of pollutants leading to an increase in ozone and decrease in NOx.

Local factors can also cause very localised changes in air pollution, not seen in wider areas. For example, building layout can affect how air pollution is dispersed in an area leading to localised build ups in pollution.

Pollution levels also vary throughout the day, for example at rush hour, leading to small term spikes in pollution levels, not seen throughout the rest of the day.

Due to the range of factors that influence air pollution, as described above, understanding what has caused a change in pollution levels, especially a small one, can be particularly difficult. This is because it could be due to changes in a number of different sources at one time, weather changes, or a short-term or local change rather than a longer term change.

However, this report shows that there have been significant and sustained reductions in air pollution across the borough. In 2022 the annual NO_2 figure for all our long-term sites averaged at 24 µg/m^3 for the third year in a row. This is well below the annual objective level for NO_2 of 40 µg/m^3. Our background sites, which are sites away from a main source of pollution, have been below this objective level for a long time, however 2018 was the first time the objective was met at some of our roadside sites and 2020 was the first year it was met at all roadside sites. Pollution is improving in the borough over the longer term, with this report showing an average 48% decrease in NO_2 levels from 2016 to 2022 at our long-term sites. Greatest changes were seen at our roadside sites, with an average 49% decrease compared to 46% decrease at our background sites. We also met all other national objective levels for NO_2 and PM_{10}. This long-term improvement in air pollution demonstrates the positive impact air quality policies such as those in Islington and more widely, are having on the borough's air quality.

Additional monitoring for other schemes showed:

- Zero schools, nurseries or care homes measured above the annual objective level of 40 µg/m^3.
- All LTN areas show improvements in pollution levels since 2018 when our monitoring network was expanded, with lower average pollution levels in 2022 compared to pre 2020 data for all LTNs.

A number of actions were taken to improve air quality in 2022, tackling the main sources of pollution and lowering exposure to all air pollution. Below we have highlighted a few of these actions, with a focus on actions taken to reduce impacts of pollution starting with the most vulnerable residents in the borough:

- Protecting our most vulnerable residents by working with Islington's care homes and schools on air quality audits, looking at ways to reduce pollution or exposure at these sites and helping them to implement changes such as additional greening or air quality monitoring.
- Supporting the NHS by running a pioneering project, training health professionals at general practitioner (GP) practices across the borough about air quality, to help them advise vulnerable patients with conditions impacted by air pollution about how to reduce their emissions of and exposure to air pollution. The training we helped develop was subsequently shared nationwide to train GPs.
- Continuing to deliver cleaner, greener, more welcoming streets for local people through the People Friendly Streets scheme, including additional

School Streets and low traffic neighbourhoods and consultations on a number of public realm improvements.

- Delivering the pioneering eco-mooring zone on Regents Canal, to help reduce emissions from boats in Islington produced from diesel generators or solid fuel burning and improve the health of boaters, and those that live along and use the towpaths.
- Leading with Camden on a multi-borough scheme reducing pollution from solid fuel burning, which is one of the biggest sources of $PM_{2.5}$ in London, by commissioning new research and running a communications campaign.
- Leading by example by making numerous council fleet and facility improvements, particularly including a move to electric vehicles or infrastructure, enabling a further reduction in polluting fossil fuel powered vehicles.

Contents

Legal basis of report

This report provides a detailed overview of air quality in Islington during 2022. It has been produced to meet the requirements of the London Local Air Quality Management (LLAQM) statutory process[2].

[2] LLAQM Policy and Technical Guidance 2019 (LLAQM.TG(19))

Tables

Abbreviations and National Standards

Table A. Abbreviations

Abbreviation	Description
AIR-PT	Air and Stack Emissions Proficiency Test
AQ	Air Quality
AQMA	Air Quality Management Area
AQO	Air Quality Objective
AQS	Air Quality Standard
BID	Business Improvement District
CAD	Clean Air Day
CAV4	Clean Air Villages Four
CHP	Combined Heat and Power
CIMO	Construction Impact Monitoring Officers
CNG	Compressed Natural Gas
Conc	Concentration
CRP	Cross River Partnership
Defra	Department for Environment, Food and Rural Affairs
EV	Electric Vehicle
GLA	Greater London Authority
LAQM	Local Air Quality Management
LEN	Low Emission Neighbourhood
LLAQM	London Local Air Quality Management
LTN	Low Traffic Neighbourhood
MAQF	Mayor's Air Quality Fund
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxide
NRMM	Non-Road Mobile Machinery
PFS	People-friendly Streets
PM_{10}	Particulate Matter less than 10 microgram in diameter

Abbreviation	Description
$PM_{2.5}$	Particulate Matter less than 2.5 microgram in diameter
QA/QC	Quality Assurance and Quality Control
SHINE	Seasonal Health Intervention Network
STARS	Sustainable Travel: Active, Responsible, Safe
TEOM	Tapered Element Oscillating Microbalances
TfL	Transport for London
TG	Technical Guidance
ULEZ	Ultra Low Emission Zone
WHO	World Health Organisation
ZEN	Zero Emission Neighbourhood

Table B. Summary of National Air Quality Standards and Objectives

Pollutant	Standard / 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
Nitrogen dioxide (NO_2)	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
Particles (PM_{10})	40 µg/m^3	Annual mean	31 Dec 2004
Particles ($PM_{2.5}$)	20 µg/m^3	Annual mean	2020
Particles ($PM_{2.5}$)	Target of 15% reduction in concentration at urban background locations	3-year mean	Between 2010 and 2021
Sulphur dioxide (SO_2)	266 µg/m^3 not to be exceeded more than 35 times a year	15-minute mean	31 Dec 2005
Sulphur dioxide (SO_2)	350 µg/m^3 not to be exceeded more than 24 times a year	1-hour mean	31 Dec 2004
Sulphur dioxide (SO_2)	125 µg/m^3 mot to be exceeded more than 3 times a year	24-hour mean	31 Dec 2004

Notes: (1) Date by which to be achieved by and maintained thereafter

1. Introduction

1.1. What is air pollution?

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.

The pollutants causing most concern in London and Islington are:

- Particulate matter – tiny bits of solid material made of a range of substances suspended in the air. These can be a range of different sizes, with the main sizes looked at in this report particles that are 10 µm or less in size (PM_{10}) and particles that are 2.5 µm or less in size ($PM_{2.5}$).
- Nitrogen dioxide (NO_2) – one of a group of gases called nitrogen oxides.

1.2. Health impacts of pollution

Breathing in polluted air over prolonged periods of time is known to increase the risk of developing a range of diseases, including heart and lung disease and cancer, and increase the risk of death. In addition to risks around heart and lung disease, there is evidence that long-term air pollution exposure is also linked to an increased risk of dementia. Even short periods of breathing in polluted air can have negative health impacts, with increases in admissions to hospital for those with heart or lung diseases during period of high pollution levels (Public Health England (PHE), 2018; Committee on the Medical Effects of Air Pollutants, 2023).

Unfortunately, we know that some population groups are more affected by air pollution than others, including children, older people, those who are pregnant and those who live in more deprived areas. This is due to either increased vulnerability and higher levels of exposure to air pollution, or a combination of the two (Public Health England (PHE), 2018 and Marmot Review 10 years on report and Air Pollution and Inequalities in London: 2019 | London City Hall).

Recognising the significant and unequal impacts of air pollution on health and wellbeing, the council is working hard to reduce pollution levels and improve air quality across the borough.

This Annual Status Report, consistent with the requirements outlined by the Government and the Mayor of London, provides an overview of levels of air pollution across the borough and outlines actions being taken to reduce air pollution levels.

The council is working hard to improve air quality and reduce the impact of air pollution on everyone in the borough.

1.3. How is air quality measured

1.3.1. Types of monitors

There are three main types of monitors that are generally used by local authorities to monitor air quality:

- Continuous automatic reference monitors- these are the most accurate monitors, and measure a range of different pollutants, 24 hours a day. However they are expensive and fixed in location so cannot be widely deployed.
- Diffusion tubes- these small tubes provide monthly readings of the pollutant nitrogen dioxide. While not as accurate as the automatic monitors they can be widely deployed to provide trends over a long time period and are a nationally approved technique.
- Sensors- these can monitor a range of pollutants in a continuous manner like reference monitors and lie between reference monitors and diffusion tubes in terms of costs and size. However, they have more variable in terms of accuracy levels and quality control processes and are not yet approved for official monitoring duties such as this annual report.

1.3.2 Making data accurate- quality control

In order to make air pollution data as accurate and reliable as possible we follow a number of steps as outlined in LLAQM.TG(19):

- Accredited suppliers and maintenance
    - Reference monitors should have regular checks and services by accredited organisations, with issues fixed promptly.
    - Diffusion tubes should be supplied by accredited laboratories that follow any national and regional guidelines.
- Data control
    - Location of monitors should be carefully considered to reduce chances of erroneous results e.g. free from vegetation.
    - While deploying and collecting monitors guidelines on good practice should be followed and any local changes or issues with the tube noted.
    - All data needs to be checked for anomalous results e.g. abnormally high and especially low results need to be checked and removed if they appear to be inaccurate and not a true reflection of air pollution at the location.
    - Certain reference monitors need correction factors applied to correct for known inaccuracies.

    - Laboratories supplying diffusion tube data must take place in schemes checking their accuracy and reliability every year. If results flag any issues these must be highlighted in reports and considered when interpreting results.
- Bias adjustment- all diffusion tubes will have an annual bias adjustment factor applied to their results for that year. This is a factor taken from either local or national co-location studies, where three diffusion tubes are placed next to a reference monitor and results compared. The more accurate reference monitors are used to improve the results of the diffusion tubes.
- Annualisation- if a monitoring site has less than 75% data capture for the year then an annualisation process is applied. This compares the results of the site with missing data to a reference monitor, located away from any major sources of pollution, that has data results for the whole year. A correction factor is then applied to account for periods of missing data.

Despite all of these quality control processes on monitoring results, there will remain a level of uncertainty in air quality results, especially from diffusion tubes. This means care must be taken in interpretation of results when there have only been small or short term changes in pollution.

More information on the process taken this year can be found in Appendix A of this report.

1.4. Air quality in Islington

1.4.1. Policies

Our Air Quality Strategy 2019-23 outlines the actions we plan to take to improve air quality in Islington. There are many actions, but these are grouped into the following categories:

- Protecting the vulnerable
- Keeping Islington moving
- Better air - better health - better environment

Our air quality strategy works in conjunction with other borough strategies such as our Islington Together 2030 plan, our Vision 2030: Building a Net Zero Carbon Islington by 2030 and the Islington Transport Strategy 2020-2041.

1.4.2. Monitoring sites

We have been monitoring air quality since 2000, using 23 long term diffusion tube sites, including ten roadside sites (with an additional three monitors located together for a triplicate study, as outlined in Appendix A) and eleven urban background sites across the borough. We also have two automatic continuous monitors in place, one on Holloway Road and one at the Ecology Centre, which monitor additional pollutants 24 hours a day. These long term diffusion tubes and automatic monitors are the sites that are reported on in the main part of this document and allow us to

measure long term trends in air quality in the borough. It is these monitors that show a halving of NO_2 pollution over the past seven years.

We also have hundreds of additional diffusion tube monitoring sites for specific projects, and we have added the results for these monitoring sites in the appendix of this document.

1.4.3. Longer term trends

There are set objectives for many known air pollutants. Where it is unlikely that one or more of the objectives will be met in their borough, a 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.

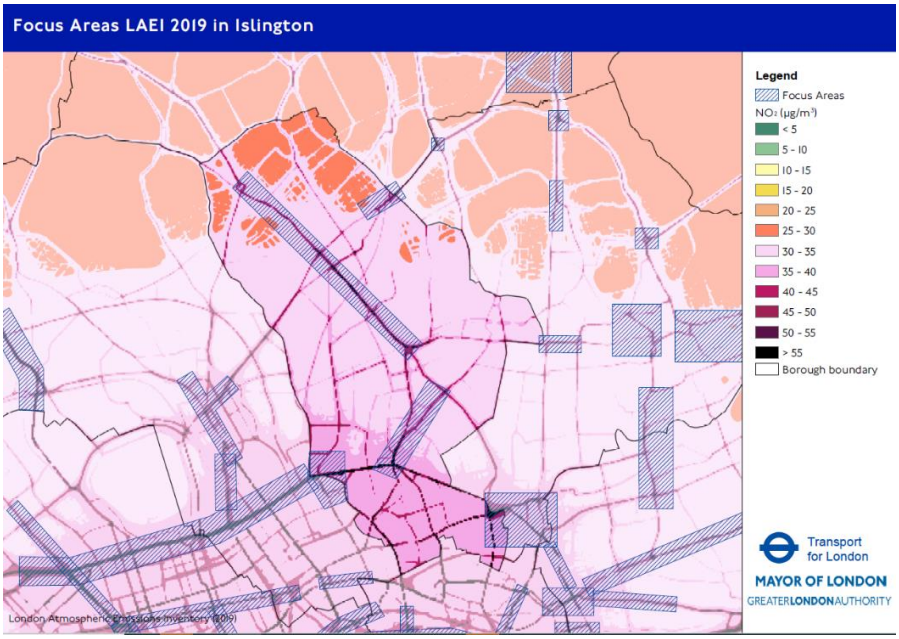
In August 2000, the council completed a review showing that despite a steady improvement of air quality in Islington, the objectives for two pollutants - nitrogen dioxide (NO_2) and particulate matter of 10 microgram diameter (PM_{10}) - were not likely to be achieved. We therefore declared an AQMA across 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.

Until 2019 we were exceeding the annual objective level for NO_2 in parts of the borough and meeting the annual objective levels for all other air pollutants. However, we continue to monitor and take action on particulate matter because this pollutant has a detrimental impact on health at any level.

1.4.4. Differences in pollution across the borough

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 modelled mean NO_2 concentrations in Islington and its surrounding boroughs for 2019 as well as highlighting the focus areas of higher pollution levels mentioned above. This map is created by greater London Authority (GLA) and Transport for London (TfL) using London Atmospheric Emissions Inventory data.



Due to our extensive monitoring of air pollution in the borough we have been able to identify and take action at pollution hot spots. Where we find areas that have high levels of pollution, we are committed to taking action to make the borough cleaner, greener and healthier. For example, we identified higher NO_2 levels at MacDonald Road in Archway next to the bus stand (see Table T in Appendix C for results) and as a result worked with bus companies training drivers, lobbied the Mayor of London about pollution from buses and bus stands and introduced additional monitoring. We have seen a significant reduction in pollution levels in this location but they are still too high.

In 2022 the council monitored pollution levels of 57 µg/m^3 and 60 µg/m^3 on MacDonald Road, whilst still higher than the annual objective of 40 µg/m^3 this is much lower than the values found in 2021 of 81 µg/m^3 and 82 µg/m^3. The council also changed our idling enforcement approach, with a borough-wide traffic management order introduced in 2022. This reinforced the prohibition of vehicle engine idling on our roads, increased fines and made enforcement easier. The council continues to meet with TfL and lobby to replace diesel busses that use this location with zero emission buses ahead of the Mayor's target to replace all buses with electric by 2034.

1.4.5. Sources of Pollution

The London Atmospheric Emissions Inventory 2019 is the latest study looking at sources of pollution in London. The main sources of pollution, according to this study, for three of the main pollutants are:

- NOx – Road Transport 41%, Commercial Heat/ Power 38%, Domestic Heat/ Power 10%
- PM_{10} – Road Transport 25%, Construction 22%, Commercial Cooking 20%
- $PM_{2.5}$ – Commercial Cooking 36%, Road Transport 24%, Domestic Biomass/ Wood Burning 10%

Islington is committed to working with others, as well as taking actions ourselves, to reduce all sources of pollution in the borough.

1.5. World Health Organisation Guidelines

In September 2021 the World Health Organisation (WHO), using new evidence, published an update to their guidance on air pollution levels for a range of air pollutants. Table B and Tables E-H in this report show how we are comparing to the national air quality objective levels, however the new WHO guidelines suggest lower air pollution levels. The council is working with its partners to work out a pathway towards achieving these levels and will be bringing forward a new strategy with actions designed to take us closer to and ultimately achieve the WHO 2021 air quality guideline levels.

1.6. How to Get Involved

You can get more information on air quality on our website.

You can do your bit to improve air quality. Think about how you travel, decrease your car use, especially for short trips where possible. 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 fires and stoves or unseasoned wood.

You can eliminate the local air pollution caused by your gas boiler by switching to a heat pump, for which the government is currently providing grants of up to £6,000. Use the Ecofurb tool to see what other changes you could make to your home to reduce its emissions and lower your energy bills. Further information on reducing your home's environmental impact, including any grants available, can be found on our Together Greener website.

You can contact the council's Pollution Team on pollution@islington.gov.uk for further air quality information and guidance.

2. Key Findings in 2022

The main report details our monitoring results and actions taken across the borough to improve air quality in 2022, however key findings and some analysis of results can be found below.

2.1. Monitoring Results

2.1.1. Diffusion tube results- annual nitrogen dioxide (NO_2)

In 2022, the annual NO_2 figure for all our long-term sites averaged at 24 µg/m^3 for the third year in a row. This is well below the annual objective level for NO_2 of 40 µg/m^3.

Our background sites have been below this objective level for a long time, however 2018 was the first time the objective was met at some of our roadside sites and 2020 was the first year it was met at all roadside sites. The results in 2020 and potentially 2021 were likely impacted by Covid-19, so while the results between 2020, 2021 and 2022 were very similar, 2022 looks to be continuing longer term trends of reduced NO_2 levels.

Pollution is improving across the borough over the longer term, with the report showing an average 48% decrease in NO_2 levels from 2016 to 2022 at our long-term sites (with a range of 33-58% decrease).

We continued to monitor pollution outside every school, nursery and care home in the borough in 2022. The results for schools and nurseries can be found below and in Appendix C of this report:

- Zero schools measured over the annual objective level of 40 µg/m^3 and the average was 22 µg/m^3 in 2022.
- Zero nurseries measured over the annual objective level of 40 µg/m^3 and the average was 22 µg/m^3 in 2022.
- Zero care homes measured over the annual objective level of 40 µg/m^3 and the average was 21 µg/m^3 in 2022.

2.1.2. Reference monitor results- particulate matter (PM) and short-term nitrogen dioxide

Two of these monitoring 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 level of 200 µg/m^3.
- PM_{10} below the annual objective level of 40 µg/m^3, at 18 µg/m^3 on the roadside site on Holloway Road and 17 µg/m^3 at the background Arsenal site.

- Both sites meet the 24 hour objective level for PM_{10} of 50 µg/m^3, exceeding this value only five times between them in 2022, well below the objective level which allows 35 exceedances of 50 µg/m^3 a year for each site.
- All of these results reflect long-term trends as outlined in tables F to H.

2.2. Actions to Improve Air Quality

2.2.1. Working with vulnerable groups

We continued work to protect vulnerable groups in Islington in 2022. For example:

- Conducting five air quality audits of schools, highlighting key sources of pollution and recommending measures the school can take to reduce pollution impacts. Four schools also worked with Groundwork London to help implement recommendations.
- Anti-idling events were run with Montem Primary School and Whitehall Park Primary.
- We completed a UK first project, training health professionals in GP practices in the borough on air quality.
- We started a project conducting air quality audits at care homes in the borough, with three care homes visited in 2022.
- We lead a solid fuel burning research and communications campaign with Camden Council on behalf of 13 other London local authorities, with the initial research elements started in 2022.

2.2.2. People-friendly streets

London's streets belong to everyone, but in recent years motor traffic volumes have been increasing. Between 2013 and 2019 an additional 1 billion miles were driven in London[3], mostly on local streets, as sat navs made it easier for people to find cut throughs. Local people have told us they want their streets to be friendlier places that

[3] https://roadtraffic.dft.gov.uk/regions/6

are easier for everyone to use, to enjoy being outside in clean air, to make it safer for walking, wheeling, cycling, using buggies and wheelchairs, and to relax or play.

The introduction of low traffic neighbourhoods (LTNs), School Streets and cycleways under our ambitious people-friendly streets (PFS) programme has created more space for those who want to enjoy Islington as they walk or cycle. This way we are starting to make Islington a more equal place for everyone.

As part of the PFS programme in 2022 we:

- Implemented a new School Street at Highbury Quadrant, bringing the total up to 35 in Islington, and extended Whitehall Park School Street.
- Consulted on environmental improvement schemes at primary schools on main roads.
- Introduced St Mary's Church LTN in February 2022 and made St Peter's LTN permanent.
- Initial engagement was also conducted for a Liveable Neighbourhood at Mildmay.
- Retained the Cycleway 38 trial on Liverpool Road following consultation and consulted on further cycling infrastructure improvements across the borough.
- Conducted several consultations on proposals to reduce traffic and improve the public realm, including one at Charlton Place and Camden Passage and another at Bath Street and Peerless Street.
- Consulted on new greening measures on Pauntley Street.

Work on the People Friendly Streets Programme continued throughout 2023, including; implementation of planned schemes, development and consultation on additional schemes and making existing schemes permanent.

The updates for 2023 will be reported on in more detail in the 2023 report.

Extensive monitoring was conducted for PFS schemes throughout 2022. Air quality results, alongside a range of other indicators, were released in six-month (interim) and 12 month (pre-consultation) reports for each LTN. The full reports, including results for all indicators can be found on the LTN section of the council website. The annual air quality figures for all sites, including those used in the LTN analysis, can also be found in this report in Appendix C and D. A summary of air quality results can be found below:

- All LTN areas show improvements in pollution levels over the longer term, with lower average pollution levels in 2022 compared to pre 2020 data for all LTNs.
- Studies[4] have shown that Covid-19 led to a large decrease in pollution levels in London in 2020 and to a lesser degree in 2021. While there was a large decrease in pollution levels over the past five years at many LTN locations, if a comparison is made between the year before and after the installation of some LTNs, when Covid was impacting results, a small increase has been measured for some LTNs. These increases are within the error margins of the monitors and are similar to long term borough monitoring across the rest of the borough which showed the same overall pollution levels in 2020, 2021 and 2022, with all years significantly lower than 2019. Increases seen in some LTNs are therefore likely due to wider changes in pollution levels due to factors such as national lockdowns which made pollution levels in 2020 significantly lower. However, we will continue to monitor these locations to identify long term trends.
- Appendix D compares results in LTNs to longer term data trends where monitoring is available.

2.2.3. Electrification of the canal and roads

- In 2022 we continued working with the Canal and River Trust on our Eco Mooring Zone scheme along the Regent's Canal. The scheme was fully functional and used throughout 2022. The two-year evaluation of the zone will follow in 2023.
- An Eco Mooring Ranger continued to work in the area and ensure that boaters followed the rules of the zone. A report on our project with Imperial College London, monitoring indoor air pollution on boats, was published in September 2022.
- Electric vehicle charging points continued to be installed across 2022, with 417 delivered by March 2023.

2.2.4. Leading by example: council fleet

We have made numerous fleet and facility improvements in 2022, enabling a further reduction in diesel powered vehicles, including:

- Delivery of a UK first electric Iveco 17-27 seater minibus used by accessible community transport to support vulnerable residents.
- Addition of a number of electric street sweepers, as well as further electric vans and cars.
- Continued installation of electric charging infrastructure in council premises, with 46 charging points now installed. Work has been completed at: 222

[4] https://www.london.gov.uk/sites/default/files/london_response_to_aqeg_call_for_evidence_april_2020.pdf

Upper Street (Municipal offices), Pritchard Court, Islington Town Hall, Ecology Centre, Fairbridge Road and the Waste and Recycling Centre. Installation is underway or has been scoped at further sites.

- Work continues at the Waste and Recycling Centre to allow significant increases in electric charging to support all of Islington's Heavy Good Vehicle fleet.
- 21% of Islington's fleet is now zero emission or zero emission capable.
- New solar panels have been installed at several sites where vehicle charging takes place since 2022, including new arrays of 426kW at the Waste and Recycling Centre, 39kW at Fairbridge Road depot and 5kW at the Ecology Centre. This is in addition to the previously installed 230kW at the Waste and Recycling Centre and 30kW at the Municipal Offices.

3. Air Quality Monitoring

3.1 Locations

Table C. Details of Automatic Monitoring Sites for 2022

Site ID	Site Name	X Easting	Y Northing	Site Type	In AQMA?	Distance 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	NO_2, PM_{10}	TEOM
IS6	Arsenal	531328	186067	Urban Background	Y	1	N/A	2.5	NO_2, PM_{10}	TEOM

Table D. Details of Non-Automatic Monitoring Sites for 2022

Site ID	Site Name	X Easting	Y Northing	Site Type	In AQMA?	Distance 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	530708	183510	Roadside	Y	0	1	2.5	NO_2	N
BIS005/02	Rosebery Avenue	531327	182592	Roadside	Y	0	1	2.5	NO_2	N
BIS005/06	City Road	532556	182739	Roadside	Y	1	3	2.5	NO_2	N
BIS005/07	Old Street	532632	182449	Kerbside	Y	0	<0.5	2.5	NO_2	N
BIS005/08	Highbury Corner	531672	184739	Roadside	Y	2	2	2.5	NO_2	N

Site ID	Site Name	X Easting	Y Northing	Site Type	In AQMA ?	Distance 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)
BIS005/09	Balls Pond Road	532883	184816	Kerbside	Y	0	<0.5	2.5	NO_2	N
BIS005/11	Holloway Road	531024	185367	Roadside	Y	0	1.5	2.5	NO_2	N
BIS005/13	Junction Road	529202	186090	Roadside	Y	0	1	2.5	NO_2	N
IS005/01	Navigator Square	529401	186855	Roadside	Y	0	12	2.5	NO_2	N
H1	Holloway Road	530650	185750	Roadside	Y	1	3	3	NO_2	Y
H2	Holloway Road	530650	185750	Roadside	Y	1	3	3	NO_2	Y
H3	Holloway Road	530650	185750	Roadside	Y	1	3	3	NO_2	Y
BIS005/04	Percy Circus	530921	182861	Urban Background	Y	0	N/A	2.5	NO_2	N
BIS005/05	Myddelton Square	531315	182991	Urban Background	Y	0	N/A	2.5	NO_2	N
BIS005/01	Arran Walk	532317	184472	Urban Background	Y	1	N/A	2.5	NO_2	N
IS005/03	Sotheby Road	532256	185983	Urban Background	Y	0	N/A	2.5	NO_2	N
BIS005/10	Highbury Fields	531748	185442	Urban Background	Y	0	N/A	2.5	NO_2	N
BIS005/12	Lady Margaret Rd	529320	185795	Urban Background	Y	0	N/A	2.5	NO_2	N
IS005/02	Zoffany Park	529883	187015	Urban Background	Y	0	N/A	2.5	NO_2	N

Site ID	Site Name	X Easting	Y Northing	Site Type	In AQMA ?	Distance 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)
BIS005/14	Elthorne Park	530000	187402	Urban Background	Y	0	N/A	2.5	NO_2	N
BIS005/15	Turle Road/Wray Crescent	530477	186942	Urban Background	Y	0	N/A	2.5	NO_2	N
IS005/04	Upper Street (Waterloo Terrace)	531625	184100	Urban Background	Y	0	N/A	2.5	NO_2	N

Notes:

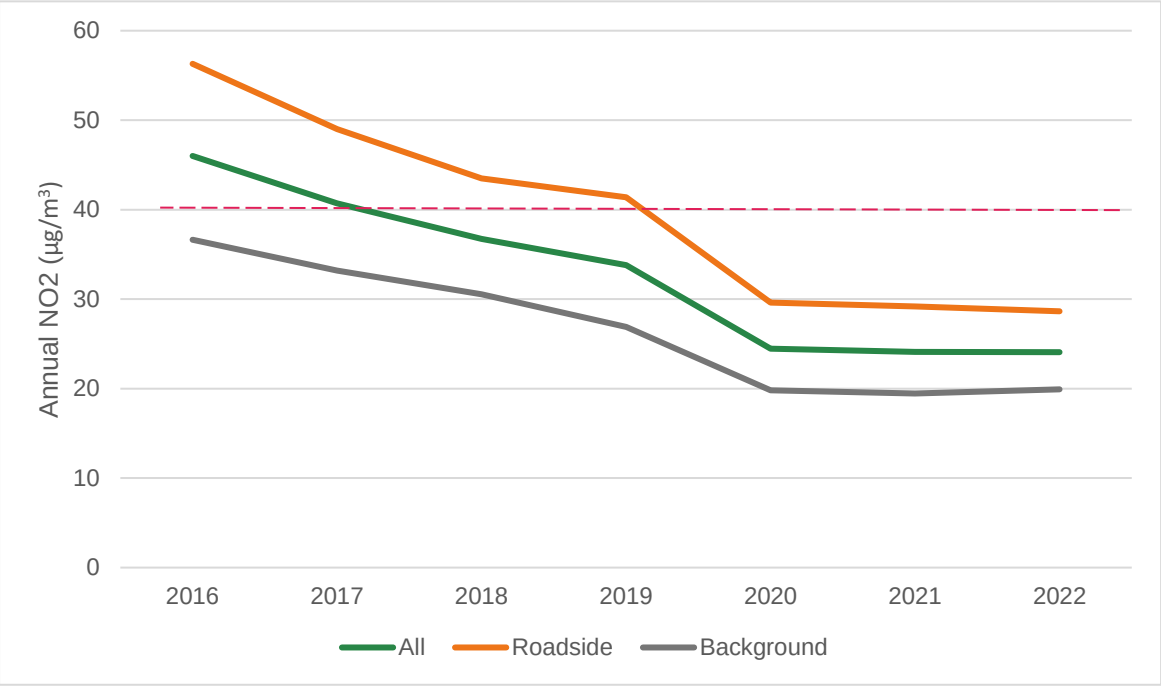
The location of monitor IS005/01 at Navigator Square varied with road layout changes delivered as part of changes to the Archway gyratory over several years (2016-18), the new location has remained the same from 2019 to 2022, however results might not be directly comparable to longer term data. The Navigator Square monitor IS005/01 was formerly called Archway Close, but the name changed with change in road layout. H1-3 are used for the co-location study.

3.2 Comparison of Monitoring Results with AQOs

In 2022 all sites recorded values below the annual objective level of 40µg/m^3, including both roadside and urban background sites, for the third time. Some sites showed higher values and some lower in 2022 than 2021, with an overall average for all sites of 24µg/m^3 for 2020-2022. Values on average remained higher at roadside sites than background sites. Looking at longer trends, values have been decreasing since 2016, these levels have halved in the seven years covered by this report. However, values for

2020 and potentially 2021 were impacted by Covid-19, so while not all sites showed lower values in 2022 compared to 2021, many did, and all showed values lower than 2019 and continuing the trend of reduced NO_2 levels.

Figure 1. Average annual nitrogen dioxide levels over last seven years diffusion tubes and automatic sites



The results presented are after adjustments for “annualisation” and for distance to a location of relevant public exposure (if required), the details of which are described in Appendix A.

Table E. Annual Mean NO_2 Ratified and Bias-adjusted Monitoring Results

Site ID	Site name	Site type	Valid data capture for monitoring period %[(a)]	Valid data capture 2022 %[(b)]	2016	2017	2018	2019	2020	2021	2022
BIS005/03	Caledonian Road	Roadside	92	92	**53**	**43**	36	39	29	29	26
BIS005/02	Roseberry Avenue	Roadside	92	92	**62**	**54**	**51**	**44**	31	30	30
BIS005/06	City Road	Roadside	92	92	**53**	**48**	**45**	**45 (43)**	33	29	28
BIS005/07	Old Street	Roadside	83	83	**55**	**58**	**45**	**41**	29	27	30
BIS005/08	Highbury Corner	Roadside	92	92	**64**	**55**	**48**	**44 (47)**	31	33	33
BIS005/09	Balls Pond Road	Roadside	100	100	**58**	**50**	**43**	**44**	32	33	31
BIS005/11	Holloway Road	Roadside	92	92	**57**	**50**	**44**	**41**	27	28	31
BIS005/13	Junction Road	Roadside	58	58	**46**	**42**	36	34	27	24	21
IS005/01	Navigator Square	Roadside	83	83	**55**	**41**	40	**42**	26	30	29
BIS005/04	Percy Circus	Urban Background	100	100	**46**	40	35	32	23	22	19
BIS005/05	Myddelton Square	Urban Background	100	100	38	39	35	28	21	20	20
BIS005/01	Arran Walk	Urban background	100	100	35	32	30	26	17	18	19
IS005/03	Sotheby Road	Urban background	100	100	37	31	30	25	18	18	19
BIS005/10	Highbury Fields	Urban Background	100	100	34	28	28	26	19	19	18

Site ID	Site name	Site type	Valid data capture for monitoring period %[a]	Valid data capture 2022 %[b]	2016	2017	2018	2019	2020	2021	2022
BIS005/12	Lady Margaret Rd	Urban background	92	92	36	34	31	28	24	19	24
IS005/02	Zoffany Park	Urban Background	100	100	33	29	29	27	18	19	21
BIS005/14	Elthorne Park	Urban Background	100	100	35	31	29	26	18	19	19
BIS005/15	Turle Road	Urban Background	92	92	37	31	32	26	19	21	18
IS005/04	Upper Street (Waterloo Terrace)	Urban Background	100	100	39	39	30	27	21	19	21
IS2	Holloway Road	Automatic Roadside	100	100	**60**	**49**	**47**	40	31	29	28
IS6	Arsenal	Automatic Background	100	100	33	31	27	25	20	20	20
H1	Holloway Road	Roadside triplicate	92	92	**60**	**50**	**47**	40	31	29	28
H2	Holloway Road	Roadside triplicate	100	100	**63**	**52**	**47**	**41**	31	29	29
H3	Holloway Road	Roadside triplicate	92	92	**58**	**51**	**48**	40	30	29	28

Notes:

- The location of monitor IS005/01 at Navigator Square varied with road layout changes 2016-18, and now has a new permanent location, however results might not be directly comparable to longer term data.
- The annual mean concentrations are presented as µg/m^3.

- Exceedances 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**.
- Means for diffusion tubes have been corrected for bias.
- All means have been "annualised" in accordance with LLAQM Technical Guidance if valid data capture for the calendar year is less than 75% and greater than 25%.
- Results have been distance corrected where applicable.
- (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%).

Table F. NO_2 Automatic Monitoring Results: Comparison with 1-hour Mean Objective, Number of 1-Hour Means > 200 µg/m^3

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 2022. This continues the trend of the last seven years.

Site ID	Valid data capture for monitoring period %([a])	Valid data capture 2022 %([b])	2016	2017	2018	2019	2020	2021	2022
IS2-Holloway	100	100	0	0	0	0	0	0	0
IS6-Arsenal	100	100	0	1	0	0	0	0	0

Notes:

- Results are presented as the number of 1-hour periods where concentrations greater than 200 µg/m^3 have been recorded.
- Exceedance of the NO_2 short-term AQO of 200 µg/m^3 over the permitted 18 hours per year are shown in **bold**.
- If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.
- (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%).

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

PM_{10} continues to remain below the annual objective of 40 µg/m^3 in 2022, continuing longer term trends.

Site ID	Valid data capture for monitoring period %([a])	Valid data capture 2022 %([b])	2016	2017	2018	2019	2020	2021	2022
IS2- Holloway	99	99	21	21	20	20	18	19	18
IS6- Arsenal	97	97	18	18	20	19	17	19	17

Notes:

- The annual mean concentrations are presented as µg/m^3.
- Exceedances of the PM_{10} annual mean AQO of 40 µg/m^3 are shown in **bold**.
- All means have been “annualised” in accordance with LLAQM Technical Guidance, if valid data capture is less than 75% and more than 25%.
- (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%).

Table H. PM_{10} Automatic Monitoring Results: Comparison with 24-Hour Mean Objective, Number of PM_{10} 24-Hour Means > 50 µg/m^3

Exceedances of the 24 hour mean remain well below the objective level of less than 35 times over 50µg/m^3 in the year, with only five exceedances for the two locations in 2022.

Site ID	Valid data capture for monitoring period %[a]	Valid data capture 2022 %[b]	2016	2017	2018	2019	2020	2021	2022
IS2- Holloway	99	99	7	6	2	7	2	1	2
IS6- Arsenal	97	97	3	3	1	9	2	2	3

Notes:

- Exceedances of the PM_{10} 24-hour mean objective (50 µg/m^3 over the permitted 35 days per year) are shown in **bold.**
- Where the period of valid data is less than 85% of a full year, the 90.4th percentile is provided in brackets.
- (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%).

4. Actions to Improve Air Quality

4.1 Air Quality Action Plan Progress

The London Local Air Quality Management (LLAQM) process requires that a snapshot of progress against actions for the calendar year 2022 is provided.

Table I provides a brief summary of Islington's progress against the Air Quality Action Plan actions as set out in our Air Quality Strategy for 2019-23, showing progress made in 2022 (and in some cases 2022/23 financial year running from April 2022 to March 2023 if this is how data is normally recorded). Continued progress in 2023 will be reported on in our annual report for 2023.

Table I. Delivery of Air Quality Action Plan Measures

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
1	Minimise traffic at sensitive locations during busy times	Public health and awareness raising Cleaner Transport	Pilot scheme to restrict the use of motor vehicles during drop off/pick up times near school entrances to minimise emissions and increase the number of pupils and their carers walking/cycling/scooting to school. Expand to further schools / nurseries etc. Support Play Streets. Monitor air quality outside schools and nurseries and assess the ways of publishing the details when data ratified.	35 School Streets were delivered by end 2022. A new School Street was implemented in September 2022 at Highbury Quadrant. Further School Streets were implemented in 2023. Three environmental improvements schemes were consulted on in 2022 for primary schools on main roads; Robert Blair, St Joseph, and Montem Primary. Implementation continued in 2023. By the end 2022/23 there were 23 Play Streets in place across the borough, an increase of four since 2021. The council continued monitoring air quality outside every school, nursery, and care home in the borough in 2022, with results provided in this report. Breathe London sensors remained in place outside three schools in the borough, giving real time readings available online.

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
2	Schools air quality audits	Public health and awareness raising	Approach Islington schools that have been selected by The Mayor to conduct air quality audits and support them to install the recommended measures when the auditing is finalised. Audit all schools in the borough.	A further five schools were audited in 2022, totalling 14, with reports provided to each school. Groundwork London worked with four schools in the borough to develop air quality action plans, provide site-specific design support for green infrastructure, curriculum support focused on raising awareness around air quality and help with fundraising to deliver air quality projects and audit recommendations.
3	Improve knowledge about local air pollution near the schools and schools active travel campaign	Public health and awareness raising	Following the grant of funding from Department for Environment, Food and Rural Affairs (Defra) for ten local schools offering air quality monitoring, continued working with schools to advise pupils, carers, staff and visitors on current pollution levels near the schools, forecast pollution levels using airTEXT, information on air pollution including causes, impacts, ways to lower exposure and low pollution walking maps to get to school. Work with schools on joint engagement programme to encourage active travel and raise awareness of poor air quality. Use the Theatre in Education programme to offer schools advice on sustainable travel, active travel and air quality for all pupils from key stages 1 to 3. Use Defra funded school screen air pollution awareness project to promote active travel as a way to reduce pollution and exposure. Other activities include promotion of Walk to School Week, Bikeability training for pupils and anti-idling action events.	Anti-idling action events and lessons were held at two schools in 2022 – Montem Primary and Whitehall Park Primary. In 2022-23, the council trained 1,895 children on our school and holiday Bikeability courses. The council also engaged with schools through the STARS scheme throughout 2022. As of July 2022, 20 schools achieved gold, 23 bronze and a further five engaged with the programme. In 2023 even more schools engaged with the scheme and will be reported in the ASR for 2023. It is worth noting that in 2023 STARS changed name as it was incorporated into the wider TfL Travel for Life programme. TfL STARS - Getting young London moving.
4	Work closely with Islington's Health and	Public health and awareness raising	Islington's Health and Wellbeing Board published Islington's Joint Health and Wellbeing Strategy in 2016 and one of the priorities includes prevention and management of long-term conditions. The	The council worked on a number of initiatives to promote a healthier and more active community in 2022, as evidenced by the range of measures described throughout this action plan, such as PFS.

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
	Wellbeing Board.		council will support promoting healthier and more active families through various initiatives including developing healthy environments and access to physical activity and active travel.	The council also completed our pioneering scheme to train health practitioners in GP surgeries about air quality so they can offer advice to their patients. With 17 health practitioners from 15 practices trained and participating throughout 2022. The council began a Defra funded project in 2022 to conduct air quality engagement and deliver audits at care homes in the borough, with the aim to improve knowledge and implement measures that can improve air quality and reduce exposure to pollution for this high-risk population. Three care home sites were visited in 2022.
5	Schools travel plans	Public health and awareness raising	Work with schools to offer school travel plans including AQ information and actions to reduce emissions and exposure to encourage a change in travel patterns. Encourage schools to review, update and engage with the STARS programme and work towards accreditation. Support all schools to achieve the highest accreditation.	See row 3 for more information about work on STARS conducted in 2022.
6	National lead on airTEXT service and promote the service to residents.	Public health and awareness raising	Continue leading on and working with other local authorities and GLA to ensure that our residents can get free alerts when high air pollution levels are predicted. Promote the scheme through SHINE, school awareness programmes and other media. Work with Whittington Health professionals on promoting the service to asthma sufferers.	Islington continues to lead on and take part in the airTEXT scheme. At the end of 2022 there were 843 active airTEXT subscribers in Islington, an increase of 61 since the end of 2021. AirTEXT and other alert and route checking services are promoted on our website and leaflets, as well as through schemes such as our GP training scheme, Clean Air for Schools Toolkit and in school audit reports. AirTEXT was promoted through the Seasonal Health Intervention Network (SHINE) service, leading to 116 sign ups in London of which 72 were in Islington in 2022.
7	Reduction in idling vehicles	Public health and awareness raising	Work with other boroughs on London wide campaign to target idling vehicles and increase awareness of air pollution from idling vehicles.	The council continued working with Idling Action London until the project finished in March 2022 and then became part of legacy steering group to discuss future of idling initiatives across London across 2022.

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
		Cleaner Transport	Produce promotional materials including anti-idling signage, website, leaflets and work with schools, hospitals, businesses on wider engagement of their staff.	In June 2022, the council changed our idling enforcement approach, with a borough-wide traffic management order introduced. This reinforced the prohibition of vehicle engine idling on our roads, increased fines and made enforcement easier. It allows Civil Enforcement Officers to approach drivers where they observe engine idling and request that they switch the engine off whilst stationary. 11 Penalty Charge Notices were issued for engine idling by officers by end 2022/23 financial year. The council conducted two anti-idling events near schools in 2022, as well as an anti-idling event near Angel Health Centre for Car Free Day. The council continued working with Islington Clean Air Parents, providing them with anti-idling posters to put up at schools and other hot spots. The council also continued to promote anti-idling messages via internal comms to ensure our own drivers are leading by example.
8	AQ awareness events	Public health and awareness raising	Islington regularly participates in national awareness initiatives including Clean Air Day, Car Free Day, Walk to Work scheme and others to increase the understanding of air quality problems. We'll work in partnership with other local authorities and organisations to continue raising awareness about air pollution effects and how to minimise them.	In 2022 the council organised three anti-idling events, including two at schools and one on Car Free Day near Angel Health Centre. The council also ran two anti-idling campaigns through social media, one associated with Clean Air Day (CAD) promoting changes in idling enforcement as well as one in Autumn where there tends to be an increase in idling. The council promoted a video of GPs taking part in our training scheme for CAD in 2022.
9	Encourage active participation of residents in AQ actions	Public health and awareness raising	Recruit volunteers for various campaigns and projects including anti-idling initiative and keep them informed about any upcoming events. Invite volunteers for various public information events, including AQ conference etc. Aim to train staff at various organisations within the borough about AQ	During our two school anti-idling events at Montem Primary and Whitehall Park Primary children from the schools participated in the event talking to drivers to switch off the engine.

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
			messages and support them to spread the message to colleagues, friends and families.	The Clean Air Villages (CAV4) project continued until June 2022. The council worked with businesses in the Angel area who took part in a sustainability forum to share their experiences and promote air quality messages. The council began a Defra funded project to conduct air quality engagement and deliver audits at care homes in the borough in 2022. This included an aim to improve knowledge of staff and managers at care homes to help reduce exposure to pollution for a high-risk population. As part of our GP training scheme health practitioners became air quality champions and shared learnings across their practices more widely, using material provided through the scheme to help.
10	Look for funding and work with world class academic institutions	All dependent on scheme	Islington is amongst the leading boroughs tackling air pollution through various initiatives and will aim to work with various universities on further research on air quality.	In 2022 the council published two reports on work conducted with Imperial College London – one analysing pollution inside four canal boats and one mapping solid fuel burning across the borough as part of a Defra funded initiative. In 2022 the council received Defra funding for a London Wood Burning scheme which we lead with Camden Council on behalf of 13 other boroughs. This scheme includes three research elements which were started in 2022 - a survey of wood burning practices and perspectives in the participating boroughs, measurements of solid fuel burning at participants homes and a health impact assessment.
11	Improvements to heating systems	Emissions from developments and buildings	Improve heating systems through replacement of inefficient boilers as part cyclical improvement work. Carry out the improvement works on domestic properties as well as school and business premises. Offer the grant support scheme to vulnerable private sector residents. Apply the most effective measures whenever possible, including through external schemes such as RE:NEW, RE:FIT, Mayor of London Warmer Homes and	Three householders were assisted through the council's Safe and Warm funding in 2022. Through our SHINE service for vulnerable residents, the council referred 105 Islington households to the Warmer Homes scheme for improvements to heating and/or insulation from April 2022 to March 2023. From April 2022 to March 2023 around 1,739 new high efficiency boilers or full system changes were completed in domestic council managed/tenanted properties.

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
			Section 106 Carbon Offset Funding when improving insulation and replacing boilers.	
12	Promotion of energy efficiency	Emissions from developments and buildings	Provide energy saving advice to residents within the borough. Refer vulnerable residents to SHINE services including airTEXT. Work with businesses in Zero Emission Network (ZEN) areas on energy efficiency audits to minimise the emission and cost.	Islington residents continued to receive energy-saving advice in 2022, including referrals to additional services through SHINE (which makes sure referrals get all the help they need to stay warm, save money and stay healthy in their homes), including 72 signups for airTEXT. In 2022 we were successful in two Public Sector Decarbonisation Scheme (PSDS) projects, an air source heat pump and solar PV at the Waste and Recycling Centre and a ground source heat pump, double glazing, buildings management system, mechanical ventilation, and heat recovery at New River College. Installation started on these in 2023 and will be included in our report for 2023.
13	Apply tiered parking charges for short-term parking spaces	Cleaner Transport	Applied surcharge on parking diesel vehicles in short-term parking spaces from January 2018. Continue tiered parking permits based on fuel emissions. Review parking policies to take into consideration impacts on air quality and health.	A surcharge for diesel and a charge for petrol and petrol hybrid based on carbon emissions remained in place in 2022. Consultation on further charges was also conducted in 2022 and charge increases implemented in January 2023.
14	Renew our fleet and replace vehicles with the cleanest possible technology	Borough Fleet Cleaner Transport	Conduct the review of the fleet to identify which vehicles may be operated as electric, biomethane, hydrogen, compressed natural gas (CNG), euro VI and ultra-low emission and consider the changes during next procurements. Procure first CNG powered welfare bus and assess the possibility of replacing wider fleet including heavy goods vehicles. Investigate possibilities of retrofitting the most polluting vehicles where no other option is viable. Review the council's vehicles usage. Analyse the possibility of car park spaces to be converted into bike storages where feasible.	The Fleet electrification programme has continued to transform Islington's fleet by replacing more internal combustion engine vehicles with electric vehicles (EV). In 2022 the council delivered a UK first with the purchase of an electric Iveco 17-27 seater minibus to be used by accessible community transport to support vulnerable residents. Alongside this a number of electric street sweepers joined the fleet ranging from 2.4t to 4.5t. The remaining electric vehicles comprise of various different vans and cars ranging from 4.25t Fiat E-ducato tippers to Peugeot E2008 car. Meanwhile the delivery of charging infrastructure continued to move at pace. Works to install charging units have been completed at 222 Upper Street,

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
				Pritchard court, Islington Town Hall, Newington Barrow Way, Ecology Centre, Fairbridge Road and the Waste & Recycling Centre. Other sites that have either been scoped or where work is due to be completed include Central library, Brewery Rd and Downham Rd. By the end 2022/23 there were 46 EV charge points installed across council offices ranging from 7kw AC to 100kw DC chargers to provide a range of fast and rapid charges. The capacity upgrade to the Waste & Recycling Centre to allow the widespread adoption of EV charge points was started in 2022. The upgrade will allow more significant charging to be introduced at the site and will support all of Islington's Heavy Goods Vehicle fleet. 26 additional charge points were installed at the site in 2022.
15	Adopt transport reduction strategy	Cleaner Transport	Explore reduction of traffic and co-ordinate the work with TfL so that both strategies work together. Propose re-designing of key streets where reducing traffic is essential to protect vulnerable road users. Working with TfL to investigate options of road user charging including workplace parking levies and work with the Mayor of London to strengthen these developments.	In 2022 the council made St Peter's LTN permanent and introduced St Mary's Church. Further LTNs were implemented and made permanent in 2023 and will be reported in the ASR for 2023. In October 2022 the council consulted on proposals to reduce traffic and introduce environmental improvements in Bath Street and Peerless Street. The scheme introduced a traffic filter on Bath Street at the junction with Old Street. Implementation continued into 2023. Action on School Streets was also taken in 2022, as outlined in row 1.
16	Freight consolidation scheme	Delivering servicing and freight	Work with other London boroughs on freight consolidation and discuss with our partner Camden Council inviting local businesses to join the scheme to minimise supply deliveries reducing vehicle traffic and emissions.	The freight consolidation scheme continued to run deliveries into the borough via the hub throughout 2022. The council have formed an Islington Freight and Sustainable Transport Working Group and are involved in Freight and Land meetings held with GLA and other London boroughs.
17	Increase cycle parking around the borough	Cleaner Transport	Install 400 cycle parking hangers around the borough to improve safety and modal shift to greener transport.	100 bike hangars were installed in 2022/23, however one was subsequently removed due to damage. This provides a network of 499 hangars borough wide (with capacity for 2,994 bikes). 83 Sheffield cycle stands were installed across

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
		Localised Solution		the borough in 2022/23, creating an additional 166 parking spaces for cyclists. Priority areas for these stands included residential areas that are near cycleways and LTNs, on street cycle parking near town centres and high streets, cycle parking near schools and cycle parking near train stations. In addition, 61 new secure cycle storage facilities were installed on estates throughout the borough from April 2022 to March 2023, offering secure storage for 514 more bikes.
18	Improve cycle network routes and connections of quiet ways through the borough	Cleaner Transport Localised Solution	Work with cycling groups to review and connect viable low traffic exposure routes to increase cycle confidence, safety and low pollution exposure. Review all one-way roads to consider giving two-way cycle advantage. Improve signage along cycle routes.	The Cycleway 38 trial on Liverpool Road was retained in 2022 following monitoring and consultation. Implementation of improvements continued into 2023. During 2022 planning and designs for two cycle crossings were completed with consultations conducted in March/April 2023: one at Essex Road / Canonbury Street / Rotherfield Street to connect two LTNs; and one at Northchurch Road, crossing Southgate Road to connect an Islington LTN to a low traffic cycle route in Hackney. In 2022 one-way streets in the Canonbury West LTN were assessed for feasibility of permitting two-way cycling. Wayfinding was improved for the rebranded Cycleway 11 route between Angel and Farringdon in 2022/23. Transport for London secured funding to deliver Cycleway 50 in Islington in 2022 and implementation continued into 2023.
19	Improve public transport facilities in the borough	Cleaner Transport	Work with TfL on bus reliability programme. Improve facilities at public transport hubs, including cycle storage outside stations. Examine council's roads space and improve reallocations of road space to prioritise pedestrians/cyclist over car parking. Support the delivery of Crossrail 2 to	As a result of ongoing air quality monitoring at bus stands in the borough throughout 2022, the council worked with TfL and bus operators to minimise idling and lobbied the Mayor of London to help minimise pollution at bus stands. In 2022 we strongly objected to two TfL consultations on changes to bus services. In January 2022 we responded to plans to restructure / withdraw

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
			relieve crowding on existing lines such as Victoria and Piccadilly lines. Lobby for expanding night tube services in Islington and retaining night bus services in the borough. Continue to request provision of an all zero-emission fleet at the Metroline bus garage as soon as possible.	routes that would affect Holloway Road and connections to Newington Green. In August 2022 we successfully objected to the proposed changes detailed in TfL's Central London Bus Review that would have impacted many Islington residents and bus users London wide. See row 17 for details of reallocating road space for cycle parking.
20	Enhance and plan the infrastructure of electric charging points across the borough	Cleaner Transport	Enhance the current network of electric charging points in the borough including rapid, fast and lamppost chargers and plan future expansion to prepare for increasing demand.	Electric vehicle charging points continued to be installed across 2022, with 417 delivered by March 2023. Work with network operators to install a network of 600 new charging points to encourage residents, businesses and visitors to swap to electric vehicles to cut pollution continued in 2023.
21	Increase car clubs' availability in the borough	Cleaner Transport	Support car clubs to increase availability of vehicles in the borough particularly ULEV and zero exhaust emissions vehicles, including vans.	In 2022 the council continued to support multiple car club operators with different business models, to provide competition and offer variety to best meet the needs of all residents.
22	Support geographical expansion of ULEZ	Cleaner Transport	Engage with TfL, GLA and other London boroughs on the expansion of ULEZ. Respond to various consultations to point out the benefits of extending ULEZ to whole of Islington as soon as possible. Lobby Mayor of London to tighten the criteria for ULEZ to reduce exclusions. To push for a strengthening of the ULEZ so that it becomes a zero emission (exhaust) zone.	The ULEZ expansion to cover the whole of Islington happened in 2021 and remained in place throughout 2022. In 2022 the council responded to the ULEZ consultation to expand ULEZ further across London, which subsequently went ahead in August 2023.
23	Call on Mayor to put into practice diesel free London by 2025	Cleaner Transport	Support Mayor of London to review all aspects and policies to implement diesel free London by 2025 to address the public health crisis caused by air pollution. Develop a diesel free strategy for Islington as part of trend in diesel free direction,	The fleet electrification programme continued through 2022 by adding more electric vehicles to the fleet and replacing older higher polluting internal combustion engine vehicles. Alongside this the council continued to roll out infrastructure across council sites to provide a broad EV charging network to support the council fleet.

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
			including diesel and petrol vehicles sale ban in 2040. Explore the option of phasing out parking permits to diesel vehicles in Islington before 2025 to support diesel free London.	See row 13 in this table for information on the council's diesel surcharge, row 14 for information on fleet changes and row 20 for information on the installation of public electric vehicle charging points.
24	Promote active travel and Clean Air Walking Routes	Cleaner transport Public health and awareness raising	Work with TfL on planned improvement works to ensure all new road improvements are considerate of walking and cycling, creating safer and cleaner spaces for active travel, including all current and future works such as Highbury Corner, Old Street and Clerkenwell Green. Consider trialling smarter travel scheme incentives. Provision of personalised travel information. Improvements to footpaths, signage and directions to encourage people to walk. Promote active travel as part of Active 10 and other National Health Service (NHS) initiatives. Create map of Clean Air Routes and promote within the borough. Increase, develop and expand Clean Air Walking Routes.	In 2022/23, the council provided 1,895 children and 226 adults with cycle training courses, 31 Dr Bike sessions, six maintenance classes, two All About the Bike sessions and seven led rides were held. A number of new cycle parking facilities were installed, and changes made to cycle lanes (see rows 17 and 18 in this table for more information). Details of the School Streets programme are given in row 1, details of our PFS scheme in row 15 and cycle schemes in row 18. A new greening project was delivered at Cleveland Road / Almorah Road and Prebend Street / Packington Street to promote walkability within LTNs in the 2022/23 financial year. Improvements were made to three zebra crossings on Liverpool Road.
25	Healthy Streets implementation	Cleaner transport Public health and awareness raising Local Solutions	Work towards implementing the Healthy Streets Approach to encourage walking and cycling and protect children from poor air quality.	The Healthy Streets Scorecard, which ranks boroughs on the action taken to create healthier streets, places Islington as highest-scoring borough in its 2022 results, excluding the City of London. Further work on School Streets and Play Streets were conducted in 2022 (see row 1 of this table for details). The council also continued work on LTNs in the borough (see row 15 in this table for more details).

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
				The first Liveable Neighbourhood at Mildmay went through first engagement phase in November 2022, with a co-design phase on proposals in March / April 2023. Work continued in 2023. A first phase of engagement was carried out jointly with the City of London in the Bunhill, Barbican and Golden Lane area, on a healthy neighbourhood approach in 2022. Work continued in 2023.
26	Identify barriers for cycling to work and for leisure	Cleaner transport Public health and awareness raising	Look at barriers for cycling within council own employees and local businesses. Identify need for further cycle training, confidence building, facilities and cycle provision. Investigate and negotiate staff membership for bike hire. Consider personalised travel planning for employees.	The pool bike scheme for council staff continued throughout 2022, with 18 bookable cycles at five council office locations. Council staff can also access a Cycle to Work scheme. The council have supported and encouraged businesses to take up the use of cargo bikes for deliveries in 2022, with information about cargo bike couriers, subsidised use, advice about securing grants and the provision of two OurBike shared-use cargo bikes (located in Caledonian Road and Exmouth Market).
27	Promote smarter driving training	Cleaner transport Borough Fleet	Ensure all employees driving council vehicles are familiar with eco driving techniques. Promote eco driving amongst general public to drive down pollution from brake and tyre wear etc.	Work continued with our telematics provider to enable us to more closely monitor driver behaviour and assist in effectively managing road risk in 2022. This includes a focus on safe and efficient driving by reducing idling, for example. The driver handbook has been updated to reflect any changes to legislation and disseminated to council drivers. See row 14 for information on fleet changes.
28	Angel (from Angel station to Essex Road station)	Localised Solutions All possible GLA themes dependent on	Cooperation with Angel BID to involve local business in minimising air pollution, new electric charging infrastructure, improving the bus fleet that uses the routes in and around Angel, work with local schools on behaviour change, monitoring, auditing and implementing greening measures where feasible.	The CAV4 project continued until June 2022. The council worked with Angel BID and Cross River Partnership (CRP) in Angel on a circular economy project to consider reduced waste at the local market. Reduced staff numbers in offices as a lingering impact of the Covid pandemic meant a trial was not considered to be worthwhile, instead sustainable messages on air quality and freight were offered to all businesses in the area.

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
		work in focus area		For Car Free Day the council organised an anti-idling event outside Angel Health Centre and the surrounding area. A project to improve Chapel Market is underway and being delivered in partnership with the GLA, with funding provided by the Mayor of London's Good Growth Fund and the council. The project seeks to enhance features of the existing affordable, diverse and inclusive market whilst strengthening the offer through a wider choice of goods and services. It will seek to facilitate a new generation of traders from the local community and deliver an uplift in the public realm to make the street a more attractive and healthier place to shop, linger and enjoy. Implementation of this project continued throughout 2022 and 2023, with expected delivery in Spring 2024. In August 2022 the council consulted on proposals to reduce traffic and improve the public realm at Charlton Place and Camden Passage. The proposal is a timed restrictions and new pedestrian space which was delivered in February / April 2023.
29	Holloway Road (Highbury Corner to Archway)	Localised Solutions All possible GLA themes dependent on work in focus area	Improvements to Highbury Corner gyratory, requirement for bus fleet to meet highest standards as soon as possible, increasing amount of pollution absorbing plants, behaviour change campaign to promote active travel as well as use of side routes when cycling and walking, continue and increase ZEN promotion in Archway through offering various opportunities for businesses to participate and decrease pollution. Install delivery lockers to minimise home deliveries.	In December 2022 the council consulted on new green screens at Pauntley Street to mitigate the impacts of Archway Road onto nearby streets. The scheme was implemented in February 2023.
30	Finsbury Park (including parts of Hackney and Haringey)	Localised Solutions	Working closely with TfL and neighbouring boroughs on possible improvements to cycle routes, collaboration with Town Centre management, increasing greening, mitigation	The council began work with St Anne's Care Home in 2022 to engage with the site, its staff and residents to improve knowledge and understanding of pollution and how to improve air quality at the site.

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
		All possible GLA themes dependent on work in focus area	requirement for all new developments in the area to minimise impacts of air pollution during construction stages and modelled future impacts.	Transport for London secured funding to deliver Cycleway 50 in Islington and began constructing an experimental scheme on TfL-managed roads between Finsbury Park and the Nag's Head in February 2023.
31	Old Street/ Shoreditch (including parts of Hackney and Tower Hamlets)	Localised Solutions All possible GLA themes dependent on work in focus area	Proposed Old Street gyratory improvements, active travel promotion as part of new walking/cycling routes, ongoing City Fringe ZEN and Low Emission Neighbourhood (LEN) offers to businesses and residents to make various air quality positive actions, ULEV streets, green screens possibilities near sensitive locations such as schools, hospitals, school audits, close working partnership with City of London and Hackney, increase of electric charging facilities.	Support for the TfL scheme to remove the Old Street gyratory and regenerate the area continued, with segregated cycle ways and a new entrance to the underground station being installed in 2022. Work on the Old Street gyratory improvements continued throughout 2023. Work continued on the City Fringe ZEN scheme in 2022 but on a much smaller scale as funding ended in March 2022. Two new businesses and six new residents joined in Islington, with four emission reducing measures (such as trials of cargo bikes) taken up by businesses and nine taken up by residents in Islington. In 2022, 141 different people took 333 journeys, covering a distance of 2,292 km, using the UK's first on-street, on-demand cargo bike sharing scheme set up as part of the ZEN. In October 2022 the council consulted on proposals to reduce traffic and introduce environmental improvements in Bath Street and Peerless Street. The scheme will introduce a traffic filter on Bath Street at the junction with Old Street. Construction commenced in February 2023. A first phase of engagement was carried out jointly with the City of London in the Bunhill, Barbican and Golden Lane area south of Old Street and west of City Road, on a healthy neighbourhood approach.
32	King's Cross/ Caledonian Road (including parts of Camden)	Localised Solutions All possible GLA themes	Proposed gyratory improvements of existing road network, work closely with London Borough of Camden on minimising the impacts from developments bordering with Islington, improvements to electric charging facilities in the	In 2022 the council worked on a range of wider schemes with these boroughs e.g. Wood Burning, Idling Action London and City Fringe ZEN. In 2022 the council lobbied TfL for safety improvements to the King's Cross gyratory.

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
	Dalston Lane (Mainly Hackney) King's Cross/Euston/ Marylebone Road (Mainly Camden)	dependent on work in focus area	area, increasing cycle facilities and green infrastructure. Ongoing work with Hackney Council and supporting their actions whenever possible, monitoring construction activity in close proximity to Dalston Lane to ensure further pollution impact is avoided or mitigated through various conditions. Close working partnership with Camden and TfL on projects to minimise the impact from moving and stationary traffic in the area, increased construction impact monitoring and calls for reducing impacts through planning conditions, ongoing work with local communities, businesses and schools, improving charging facilities to encourage use of electric vehicles for personal and business use.	See row 20 for further details about the council's Electric Vehicle Charging Point programme.
33	Increase greening of the borough with pollution capturing and absorbing plants	Localised solutions	Ensure adequate, appropriate and well-located green space and infrastructure is planned for all new developments. When choosing the species and locations, consider eventual canopy size and possible local pollution hotspots e.g. junctions, busy roads. Look at options for planting greenery close to local schools, nurseries, hospitals, GP surgeries and other places near vulnerable residents.	2022/23 policies require new developments to protect and enhance biodiversity and minimise impacts on trees, shrubs and other vegetation of significance. The Draft Islington Local Plan examination progressed during 2022, with consultation taking place on changes to the plan. The draft 2022 plan includes greater requirements for greening, with five separate policies created. For example, an urban greening factor to ensure sufficient greening, protection of biodiversity, and clear requirements for the incorporation of green roofs and vertical greening. Islington's Biodiversity Action Plan 2020 to 2025 continued to be in place throughout 2022.

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
				Planting projects were planned for housing sites, with locations for more meadows for biodiversity management reviewed in 2022. Islington Greener Together was launched in 2022 to support local people to create, plant and care for new green spaces, allowing residents, businesses and community groups to apply for council funding to bring their ideas to life, with projects to start in 2023.
34	Increase greening of the borough with pollution capturing and absorbing plants	Localised solutions	Increase canopy cover of the borough in line with London and borough targets, using existing spaces and new developments.	451 trees were planted on public land in the tree planting season November 2022 to March 2023. A new post to deliver tree planting was secured in 2022/23 with grant funding from the Woodland Accelerator Fund. The tree planting and engagement post is a fixed term post from May 2023. The tree planting specification was re-written in 2022. This updated document will improve planting and maintenance detail with the aim of improving establishment rates and reducing mortality in transplanted trees. Tree planting continued throughout 2023 at an enhanced rate.
35	Reduce pollution on Islington waterways	Localised solutions Emissions from developments and buildings Transport Solutions	Work with Canal and River Trust to reduce pollutants concentrations around Regent's Canal by Implementing Eco Zones in the area. Look at possibility of using the canal for freight servicing e.g. waste collection.	The Eco Zone was fully functional in 2022, with moorings being used throughout. The two-year evaluation of the zone will follow in 2023. An Eco Mooring Ranger continued to work in the area and ensure that boaters followed the rules of the zone. A report from our project with Imperial College London, monitoring indoor air pollution on boats, was published in September 2022. The council continued to share our learnings with other local authorities interested in installation of charging points along the canal throughout 2022.

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
36	Power generation identification	Emissions from developments and buildings	Map the locations of generators (CHP, back-up generators, etc.) and review power sources in the city to remove excess pollution away from residents. Review standard planning conditions regarding power generators. Utilise the heat from London Underground network to provide cheaper and greener heat to local residents in Bunhill ward and look for further opportunities for heat networks and local secondary heat.	The new heat network design scheme GreenSCIES, which started in 2020, finished in 2022 and the council are investigating potential to develop on this project in the future. Our 'Vison 2030: Building a Net Zero Carbon Islington by 2030' climate strategy includes an action to audit non-road mobile machinery (NRMM) in the borough. In 2022 the council began the initial investigation and review of council owned NRMM. This involved contacting teams across the council and recording the locations and types of NRMM.
37	Bid for available external funding	Monitoring and other core statutory duties	Apply for air quality funding to resource air quality improvements actions and projects in Islington.	In 2022 the council continued to use funding to implement a range of schemes as outlined in this report such as LTNs, Schools Streets and fleet improvements. The following projects were funded through the Mayor's Air Quality Fund (MAQF) 2019-22, with work finishing in 2022: • Healthy Streets Everyday (Islington lead borough) • Idling Action London (City of London and Camden lead) • NRMM Zone enforcement (Merton lead) • ZEN Phase 3 (Hackney lead) In 2022 the council started or continued work on the following Defra schemes; • Air quality training for GP surgeries across the borough • Air quality audits of care homes, funding recommended measures and conducting a communications campaign • Co-leading, with Camden, a 15 borough scheme researching impacts of solid fuel burning and running a cross brough communications campaign • A multi borough clean air logistics scheme lead by Westminster and CRP bringing freight by river with onward delivery via zero emission networks • Testing air quality filters in a school and the ability of sensors to monitor this (with additional contributions from Engie)

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
				• Monitoring and mapping solid fuel burning at domestic properties in the borough • Clean Air Villages scheme working with businesses in the Angel area • Canal Eco Zone scheme (with additional council and Canal and River Trust funding) The council also bid for additional Defra funding in 2022, with funding successfully received for the following schemes to start in 2023: • Creation of an online air quality database showing live data to aid with air quality and LTN engagement, alongside citizen science and wider community engagement • A multi borough clean air logistics scheme lead by Westminster and CRP The £1.4M Chapel Market project is being funded with £1M from the Mayor of London's Good Growth Fund and match funding from Islington council. Work continued on this project in 2022.
38	Set up internal coordination meeting	Monitoring and other core statutory duties	Pull together key internal stake holders to coordinate work that impacts on air quality across the borough.	Work with a range of internal teams continued throughout 2022 and air quality has been integrated into a range of council strategies including Vision 2030: Net Zero Carbon, the Draft Local Plan and the Transport Strategy.
39	Lobby central government	Monitoring and other core statutory duties	Lobby central government to review Clean Air Act to provide legally enforceable right to clean air with new powers to regulate all emission sources (canals, solid fuels, etc.) and empower local authorities. Challenge government to ensure the current air pollution limits remain valid or even tougher after leaving European Union. Pressure government to reconsider and develop national scrappage scheme. Urge HM Treasury to end red diesel subsidies.	The council continued to respond to relevant air quality and pollution consultations in 2022 and also met with Defra to discuss our work along canals, as well as wider air quality issues such as smoke control powers.

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
40	Ban of diesel vehicles	Cleaner transport	Support any early intervention in the direction of banning diesel and petrol vehicles to minimise air pollution emitted to the atmosphere.	See row 13 in this table for information on the council's diesel surcharge and row 20 for information on the installation of public electric vehicle charging points. The fleet electrification programme continued throughout 2022, alongside continued roll out of infrastructure, see row 14 for more details. Details of the School Streets programme restricting vehicle use at pick up and drop off are given in row 1.
41	WHO Air Quality Standards	Monitoring and other core statutory duties	Work towards adopting the WHO obligations and/or standards, including air quality limits. Work to developing an evidence based and defined targets for Particulate Matters in line with the WHO objectives.	A range of actions were taken in 2022, mentioned throughout this report, which will help us to work towards WHO levels. We also started work on our new air quality action plan in 2022, investigating inclusion of new WHO targets introduced in 2021.
42	Work towards eliminating diesel generators	Cleaner transport	Work towards eliminating all diesel-powered generators, including vehicles from parks and open spaces.	The Grounds Maintenance team has committed to the council's 2030 net zero carbon target and as such have set a 10% annual target to replace petrol equipment with battery horticultural machinery. In 2022/23 we investigated options and funding to make building alterations to allow battery equipment charging and rollout. In 2022 the Ground Maintenance Team acquired two new electric cargo bikes to replace use of vehicles.
43	Lobbying on anti-idling	Cleaner transport	Advocate for stronger anti-idling enforcement powers.	A new Islington Traffic Management Order was introduced in June 2022 which enables our Civil Enforcement Officers to issue Penalty Charge Notices at £80 (reduced to £40 if paid within 14 days) if caught idling. This reinforced the prohibition of vehicle engine idling on our roads, increased fines and made enforcement easier. Reports of engine idling can be made to our Enforcement Hotline 020 7527 7624. 11 Penalty Charge Notices have been issued for engine idling in 2022.
44	Air quality positive standards	Emissions from developments and buildings	Require all major developments, minor new build developments and larger minor extensions to submit air quality assessment to meet London's air	The London Plan and Draft Local Plan require proposals to be at least air quality neutral. Major developments, minor new build developments, and larger minor extensions all have to submit an Air Quality Assessment.

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
			quality standards. Proposals mitigate or prevent adverse impacts on air quality and investigate and implement all reasonable opportunities to improve air quality. Developments in locations of poor air quality should be designed to mitigate the impact of poor air quality to within acceptable limits. Require developments in excess of 200 net additional residential units or 10,000sqm net additional gross external floor space to be Air Quality Positive and implement measures on-site to actively reduce air pollution as far as possible.	London Plan Policy T7 aims to reduce emissions and harmful air pollution from freight; it supports the use of zero-emission last-mile solutions (such as cargo cycles) and requires provision to be made for electric vehicle charging points for freight vehicles. The London Plan includes a policy (SI 1) which requires masterplans and development briefs for large-scale development proposals subject to an Environmental Impact Assessment to consider how local air quality can be improved across the area of the proposal as part of an air quality positive approach. Draft Local Plan policy S7 requires developments in excess of 150 net additional residential units or 10,000sqm net additional gross external floor space to be Air Quality Positive. The Draft Islington Local Plan examination progressed during 2022.
45	Enforce NRMM Explore possibility for allocation funds from s106 at offsetting air quality impacts from developments Improving air quality from construction	Emissions from developments and buildings	Promote, educate, raise awareness and enforce NRMM through work of our Construction monitoring officers (CIMOs). Work with other boroughs to submit the bid to the MAQF to continue raising awareness of NRMM policies after funding expires in March 2019. Explore the options for obtaining AQ monitors at new development sites of particular size as part of requirements through planning obligation especially near local schools or other sensitive areas. Research opportunities to use the funding for air quality improvements at schools following the audits. Require all developments to comply with Islington's Code of Practice for Construction Sites and guidance on reducing local air pollution. CIMOs to check compliance to improve air quality from construction sites. Ensure that contractors	Our CIMOs continue to patrol the borough to proactively monitor construction sites with a focus on all major construction sites. Smaller sites are inspected on a more reactive basis. Utilising AQ monitoring equipment provided by developers we continue to monitor air quality and dust at construction sites, where relevant, and especially at sensitive locations such as schools. In addition, we are exploring funding for AQ monitoring. As part of the London wide NRMM scheme, funded through the MAQF, 19 sites in Islington were audited in 2022. Of the 19 that were active, all but one site was compliant with NRMM legislation. The uncompliant site had non-compliant plant which was removed. The Draft Islington Local Plan examination progressed during 2022, when modifications were consulted on. This plan includes policy S2 which requires all developments to submit a sustainable design and construction statement to show how they will meet sustainable design policies. This allows a proper assessment of schemes at application stage and to secure any benefits through planning obligations and/or conditions. While policy T5 requires development

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
			undertaking works to the highways use best practice to avoid adding to local air pollution.	proposals, especially major developments or sites that may cause disruption during construction, to adhere to best practice construction techniques to limit impacts on air quality and reduce noise and vibrations from construction and the transportation of construction waste. Information must be provided on impacts and mitigation measures, including a Construction Logistics Plan. This Draft Local Plan also states that sites must comply with best practice for construction, including Islington's Code of Practice for Construction Sites.
46	Research pollution mitigation measures	Emissions from developments and buildings	Continue working with King's College London and other local authorities in London Low Emission Construction Partnership (LLECP) on researching, developing and trialling construction equipment which is less polluting and promote the scheme, its findings and recommendations among developers operating in the borough. Look for further funding after funding finishes in 2019 and ensure the legacy of research continues beyond 2019. Maintain air pollution consideration in Environmental Impact Assessment for procurement to ensure that improving AQ is considered by suppliers.	LLECP finished in 2019 and is reported on in previous ASR. However, we continue to be involved in research and action at construction sites where possible. This includes the NRMM scheme, see rows 37 and 45. Additionally, in 2022 we worked with University of East London and Groundwork on a project researching the effects of road washing on construction dust on a section of road in the borough close to construction sites.
47	Continue reviewing all Part B installations in the borough	Emissions from developments and buildings	Ensure that all Part B installations e.g. dry cleaners, service stations etc. in Islington maintain the highest standards of air pollution emissions control.	The council continued to monitor and regulate Part B installations in 2022.
48	Provide advice on and encourage use of non-combustion renewable	Emissions from developments and buildings	Provide wide range of services including advice on renewable energy technologies, planning, energy management etc. to ensure the best available technologies are used. Require all developments, through planning policy, to maximise opportunities for on-site electricity and heat production from solar	The Draft Islington Local Plan examination progressed during 2022, with modifications consulted on. This Draft Local Plan strengthens the requirements to reduce energy demand. Development proposals are required to identify opportunities to maximise

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
	energy technologies to developers		panels, and other renewable technologies where appropriate.	renewable energy production on-site, including through solar panels and air source heat pumps.
49	Adopt an integrated approach to energy supply which maximises both air quality and climate change benefits	Emissions from developments and buildings	Ensure that the heating systems of new developments do not have significant impact on local air quality by prioritising heating systems that will result in low or zero emissions of both carbon dioxide and NOx including heat networks, secondary heat or other low or zero emission sources. Require Combined Heat and Power (CHP) and ultra-low NOx gas boiler communal or district heating systems to be designed to ensure they emit very low levels of NOx and have no significant impact on local air quality.	The Draft Islington Local Plan examination progressed during 2022, with modifications consulted on. Modifications to the Draft Local Plan in 2022 include a change to require minor new-build developments with individual heating systems to use low carbon heating, as opposed to ultra-low NOx boilers which was the requirement before the modification. The policy now states that air source heat pumps will be the most appropriate heat source for individual heating systems. The modifications also clarify that the use of low emission CHP will only be considered by the council in exceptional circumstances.
50	Cycle storage for new developments	Emissions from developments and buildings Cleaner transport	Work towards all new developments being required to ensure adequate cycle storage in each new home.	The Draft Islington Local Plan examination progressed during 2022, with modifications consulted on. This included updated requirements for cycle parking including accessible cycle parking. A number of new cycle parking sites were installed in 2022 (see row 17 of this table for more information).
51	Work with community business groups to develop and improve schemes	Public health and awareness raising Localised solutions	Engage with local businesses in ZEN Archway and City Fringe to improve local air quality, reduce energy and transport costs and identify barriers to minimising pollution. Continue to develop the work beyond ZEN areas and expand the schemes into the whole borough whenever possible. Deliver a superb urban environment by working on the LEN initiative together with other partners. Support Archway Town Centre Management in their bid to create a LEN in Archway and look for further areas of possible improvements. Escalate promotion of TfL's Deliveries Reduction Fund and help business	Work was completed on the Archway business LEN in 2019, however we continued to engage with businesses through other schemes throughout 2022. The CAV4 project continued until June 2022 (see row 24 for more information). CRP also continued offering webinars on the wide range of topics around air quality and minimising freight deliveries. Work also continued on City Fringe ZEN in 2022 (see row 31 in this table for more information). We continued to conduct business energy audits throughout 2022 to identify any possibly carbon reduction & sustainability improvements. These include

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
			groups to apply for funding to increase consolidation of deliveries.	conversations about actions that can improve air quality, such as indoor ventilation, air circulation, smart transportation and cycle schemes.
52	Require new developments to maximise the provision of green space, as well as maximising urban greening including green walls and biodiversity-based green roofs	Localised solutions Emissions from developments and buildings	Work with developers and businesses to ensure adequate, appropriate and well-located green space and infrastructure is included in new developments particularly near sensitive sites, e.g. nurseries, schools, care homes etc. Require developments to maximise provision of urban greening through planning policy requirements and planning conditions.	The Draft Islington Local Plan examination progressed during 2022, with modifications consulted on. This Draft Local Plan has increased the level of policy detail in regard to greening and includes information on; green roofs and vertical greening, biodiversity, sustainable drainage and cooling impacts as well as consideration of architectural and historic features. This reflects the importance of urban greening, including green roofs and walls in our sustainability objectives.
53	Review Smoke control Area Develop communications plan related to the use of smoke free fuels and appliances	Emissions from developments and buildings	New structure for Smoke control area to cover whole borough has been adopted in 2018 removing all previous exemptions. Promote and enforce new Smoke Control Area. Increase awareness related to the use of smoke free fuels in open fires and wood-burning stoves as recommended by central government.	Work on wood burning at the canals in the borough continued in 2022 (see row 35 for more information). In 2022 we started work on the London Wood Burning Project. We are leading this scheme with Camden on behalf of 13 other boroughs. In 2022 we started the research elements - a survey of wood burning practices and perspectives in the participating boroughs, measurements of solid fuel burning inside and outside participants homes and a health impact assessment. We will then run a communications campaign in 2023/24. We also published reports on monitoring indoor air pollution on boats and a Solid Fuel Mapping scheme in 2022/23, both conducted by Imperial College London.
54	Improve publicity of pollution data	Public health and awareness raising	Develop options for real time AQ monitoring data to be included on Islington's website.	Monitoring and reporting continued throughout 2022, including use of diffusion tubes, reference monitors and sensors. Our reference monitor data was available live on the London Air website. The council continued to monitor air

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
	and its availability to the public Low-cost sensors to measure air pollution		Introduce low-cost sensors alongside existing NOx tubes to gain better understanding of local air pollution and exposure to polluted air.	quality at all schools, nurseries and care homes in the borough in 2022, with the results found in this report. Extensive air quality monitoring continued to take place as part of the people-friendly streets schemes, with results presented in specific reports. In 2022 we continued to use low-cost sensors to assist in monitoring work along the canal, in low traffic neighbourhoods and outside schools. Three schools in the borough also have sensors as part of the Breathe London scheme. We submitted a successful bid to Defra for funding for a monitoring and citizen science scheme to create an online data platform displaying live air quality and transport data to help with engagement in air quality and LTNs. This project will start in 2023.
55	Public Health to be briefed and involved in air quality issues	Public health and awareness raising	Provide briefing to Public Health senior management about progress on tackling poor air quality issues and improvements. Require Director of Public Health to sign off the Annual Status Report and Air Quality Action Plan. Involve Public Health team in supporting engagement with local stakeholders.	In 2022 we completed a UK-first Defra funded project training GPs and other health practitioners about air quality and ways to discuss this with patients. In this pilot study we created a training module as well as material for GPs to use with patients. In conjunction with this we created a borough wide comms campaign and video with GPs. We worked with Public Health on messaging and reaching across networks to reach as many people as possible. We started a scheme with care homes in the borough, conducting air quality audits looking at ways they can reduce emissions and exposure (with funding for measures to be installed in 2023/24). We worked with Public Health to help identify and communicate with care home sites in the borough and to understand the best means to engage and carry out support work to improve air quality at each of the care home sites.
56	Working with internal teams	Potentially all themes	Work closely with other internal teams such as transport, energy, procurement, senior management, councillors to ensure new and existing strategies and policies are assessed for	As evidenced throughout this report, teams across the council worked individually and together in 2022 on schemes that will help improve air quality. For example: transport planning, traffic and parking, planning, energy, net zero carbon, public health and communications. This includes strategies and

Row	Measure	LLAQM Action Matrix Theme	Action	Progress
			public exposure to pollution and actions taken to mitigate it where possible.	projects that required the support and guidance from senior management and councillors.
57	Working with external stakeholders	Potentially all themes	Work with the range of external organisations, including other London boroughs, GLA, the NHS, scientists, other partners and residents to encourage actions to reduce pollution and increase awareness.	As evidenced throughout this report, in 2022 we worked with a number of external organisations including London boroughs, GLA, NHS, Defra, community groups, charities and academics.
58	Maximising delivery and servicing by non-motorised and sustainable travel modes	Emissions from developments and buildings Delivery servicing and freight	Work toward all new developments for employment, including industrial and retail to maximise delivery and servicing by modes that do not generate air pollutants.	The Draft Islington Local Plan examination progressed during 2022, with modifications consulted on. This draft plan includes policies requiring delivery and servicing arrangements to investigate potential for non-motorised and sustainable transport modes, such as cargo cycles deliveries to improve air quality. See row 26 for further information on cargo cycles.

5. Planning Update and Other New Sources of Emissions

Table J. Planning requirements met by planning applications in Islington in 2022

Condition	Number
Number of planning applications where an air quality impact assessment was reviewed for air quality impacts	15
Number of planning applications required to monitor for construction dust	15
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	0
Number of developments required to install Ultra-Low NO_x boilers	0
Number of developments where an AQ Neutral building and/or transport assessments undertaken	15
Number of developments where the 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	0
Number of planning applications with CIL payments that include a contribution to improve air quality	0
NRMM: Central Activity Zone, Canary Wharf and Opportunity Areas in Islington Number of conditions related to NRMM included. Number of developments registered and compliant. Number of audits % of sites unregistered prior to audit Please include confirmation that you have checked that the development has been registered with the GLA through the relevant NRMM website and that all NRMM used on-site is compliant with Stage IV of the Directive and/or exemptions to the policy.	15 conditions included 7 registered and compliant 0 unregistered / uncompliant and being chased. 7 audits 0% sites unregistered prior to audit
NRMM: Greater London (excluding Central Activity Zone, Canary Wharf and Opportunity Areas) in Islington Number of conditions related to NRMM included. Number of developments registered and compliant. Number of audits % of sites unregistered prior to audit 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.	16 conditions included 12 registered and compliant 0 unregistered / uncompliant and being chased. 12 audits 0% sites unregistered prior to audit

NRMM regulations are stipulated within Construction Management Plans for redevelopments. They are inspected by London Borough of Merton's team in conjunction with Islington's Environmental Pollution, Policy and Project Team.

5.1 New or significantly changed industrial or other sources

None

6. Additional Activities to Improve Air Quality

This section provides mandatory updates requested by GLA to ensure all boroughs report on these air quality activities in their annual report. These activities are also included in Table I above which summarises all actions taken in Islington in 2022.

6.1 London Borough of Islington Fleet

The council has 82 zero emission vehicles and 29 zero emission capable vehicles, which combined represents 21% of the total fleet. More details on changes to fleet made in 2022/23 can be found in table I.

6.2 NRMM Enforcement Project

We will continue to support ongoing NRMM enforcement work and await more details of the continuing scheme in 2023-24.

We have also included an action on NRMM in our strategy Vision 2030: Building a Net Zero Carbon Islington by 2030. In 2022 we began the initial investigation and review of council owned NRMM (excluding Greenspace and Cemeteries). This involved contacting teams across the council and recording the locations and types of NRMM.

6.3 Air Quality Alerts

Islington continues to lead on and take part in the airTEXT scheme. At the end of 2022 there were 843 active airTEXT subscribers in Islington, an increase of 61 since the end of 2021. We also promote other alert systems when relevant, such as the GLA alerts.

Appendix A Details of Monitoring Site Quality QA/QC

More information on the monitoring approach used by Islington and corrections made for accuracy of the monitoring data can be found in the introduction of this report in section 1.3.2.

A.1 Automatic Monitoring Sites

The authority is a member of the London Air Quality Network. Routine calibrations are carried out by Imperial 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.

The following issues were recorded by our engineers, leading to only short periods of missing data:

- Empty gas cylinder at Arsenal site
- Ozone smell at Arsenal site

The air con was also changed at the Arsenal site.

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 TG (19).

A.2 Diffusion Tubes

The laboratory supplying and analysing the diffusion tubes are Lambeth Scientific Services, Inter comparison field number NPL002 and LGC number AR0375, a United Kingdom Accreditation Service accredited laboratory. They use a preparation method of 50% triethanolamine (TEA) 50% Acetone and follow Practical Guidance when preparing samples.

The results of the labs QA/QC checks are as follows:

- 19 good and four poor tube precision results of the 24 diffusion tube co-location studies conducted over the past three years (2020-2021) taken from the latest data in April 2022.
- Latest AIR-PT results taken from AIR-PT Rounds 37 to 50. Of the two rounds conducted in 2022, 50% and 75% results were deemed satisfactory (based on a z-score ≤±2). See Table K for full results over all of the rounds 37-50 for Lambeth Scientific Services taken from the AIR-PT documents.

Table K. AIR-PT/WASP results (Rounds 37-50)

Air PT Round	AIR PT AR037 May–June 2020	AIR PT AR039 July – Aug 2020	AIR PT AR040 Sept – Oct 2020	AIR PT AR042 Jan–Feb 2021	AIR PT AR043 May – June 2021	AIR PT AR045 July – Aug 2021	AIR PT AR046 Sept – Oct 2021	AIR PT AR049 Jan – Feb 2022	AIR PT AR050 May – June 2022
Lambeth Scientific Services	NR	NR	100%	100%	100%	75%	75%	50%	75%

NR means no results recorded.

A bias adjustment of 0.95 for 2022 has been derived for Lambeth Scientific Services from the latest version of the national bias adjustment calculator version 03/23. See Table L for full results of Lambeth Scientific in 2022 from this calculator, with preparation 50% TEA in acetone for all sites.

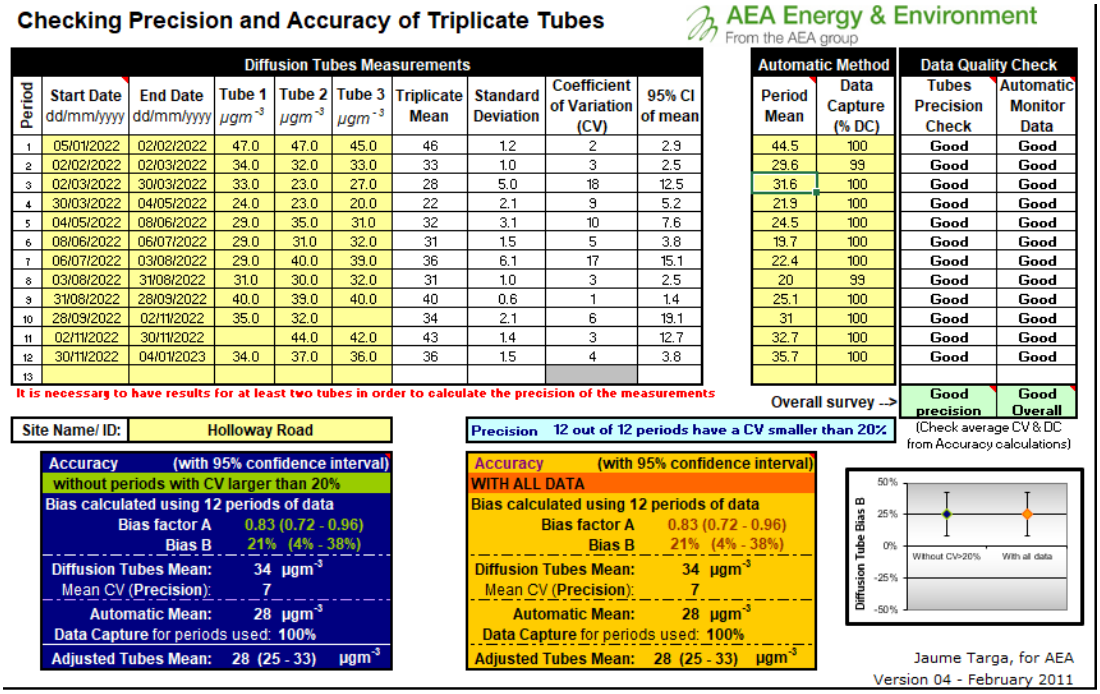
Table L. National Bias Adjustment Lambeth Scientific Services 2022

Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc (µg/m^3)	Automatic Monitor Mean Conc (µg/m^3)	Bias	Tube Precision	Bias Adjustment Factor
Roadside	Surrey Heath Borough Council	11	22	29	-24%	Good	1.32
Urban Background	Spelthorne Borough Council	12	23	20	16.3%	Good	0.86
Urban Background	Spelthorne Borough Council	10	26	24	8.7%	Poor	0.92
Kerbside	Marylebone Road Intercomparison	12	53	42	25.4%	Good	0.8
	Average of all sites						0.95

Factor from Local Co-location Studies

A local co-location study was completed using data from the Holloway Road site ID IS2. The bias adjustment factor applied to the diffusion tubes from this is 0.83. See Figure 2 for full results of the co-location study.

Figure 2. Precision and accuracy of co-location 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 (CV)	95% CI of mean
1	05/01/2022	02/02/2022	47.0	47.0	45.0	46	1.2	2	2.9
2	02/02/2022	02/03/2022	34.0	32.0	33.0	33	1.0	3	2.5
3	02/03/2022	30/03/2022	33.0	23.0	27.0	28	5.0	18	12.5
4	30/03/2022	04/05/2022	24.0	23.0	20.0	22	2.1	9	5.2
5	04/05/2022	08/06/2022	29.0	35.0	31.0	32	3.1	10	7.6
6	08/06/2022	06/07/2022	29.0	31.0	32.0	31	1.5	5	3.8
7	06/07/2022	03/08/2022	29.0	40.0	39.0	36	6.1	17	15.1
8	03/08/2022	31/08/2022	31.0	30.0	32.0	31	1.0	3	2.5
9	31/08/2022	28/09/2022	40.0	39.0	40.0	40	0.6	1	1.4
10	28/09/2022	02/11/2022	35.0	32.0		34	2.1	6	19.1
11	02/11/2022	30/11/2022		44.0	42.0	43	1.4	3	12.7
12	30/11/2022	04/01/2023	34.0	37.0	36.0	36	1.5	4	3.8
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 Data
44.5	100	Good	Good
29.6	99	Good	Good
31.6	100	Good	Good
21.9	100	Good	Good
24.5	100	Good	Good
19.7	100	Good	Good
22.4	100	Good	Good
20	99	Good	Good
25.1	100	Good	Good
31	100	Good	Good
32.7	100	Good	Good
35.7	100	Good	Good
Overall survey -->		Good precision	Good Overall

(Check average CV & DC from Accuracy calculations)

Site Name/ ID: Holloway Road

Precision 12 out of 12 periods have a CV smaller than 20%

Accuracy (with 95% confidence interval)
without periods with CV larger than 20%
Bias calculated using 12 periods of data
Bias factor A 0.83 (0.72 - 0.96)
Bias B 21% (4% - 38%)
Diffusion Tubes Mean: 34 µgm^{-3}
Mean CV (Precision): 7
Automatic Mean: 28 µgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 28 (25 - 33) µgm^{-3}

Accuracy (with 95% confidence interval)
WITH ALL DATA
Bias calculated using 12 periods of data
Bias factor A 0.83 (0.72 - 0.96)
Bias B 21% (4% - 38%)
Diffusion Tubes Mean: 34 µgm^{-3}
Mean CV (Precision): 7
Automatic Mean: 28 µgm^{-3}
Data Capture for periods used: 100%
Adjusted Tubes Mean: 28 (25 - 33) µgm^{-3}

Jaume Targa, for AEA
Version 04 - February 2011

Discussion of Choice of Factor to Use

The bias adjustment factor of 0.83, explained at section 1.3.2 of this report and gathered from the local co-location study on Holloway Road, was used for 2022. This was chosen to maintain consistency with previous years, which have all used local co-location studies, as seen in table M. Furthermore, the national bias adjustment factor was based on four studies in 2022, one of which had poor precision.

The national bias adjustment factor was slightly more conservative, however comparing results between the two factors none of our long-term sites would have been above objective levels using the national factor and only an additional eight of the almost 250 additional sites would have been above annual objective levels if the national factor had been used.

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

Table M. Bias Adjustment Factor

Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	Local	Not applicable	0.83
2021	Local	Not applicable	0.88
2020	Local	Not applicable	0.94
2019	Local	Not applicable	0.88
2018	Local	Not applicable	1.12
2017	Local	Not applicable	1.02
2016	Local	Not applicable	1.17

A.3 Adjustments to the Ratified Monitoring Data

Short-term to Long-term Data Adjustment

Annualisation, explained at section 1.3.2 of this report, was carried out for one of our long-term sites reported on in the main body of this report BIS005/13 Junction Road. It was also carried out for 19 further sites. Two sites were used to create the annualisation factor- IS6 background site in Islington and CT3 background site in City of London. These sites were chosen as they were local sites with fully ratified data. The LAQM tool was used, and the process followed LLAQM.TG (19) methodology.

Table N. Short-term to Long-term Data Adjustment

Site ID	Annualisation Factor IS6 Arsenal	Annualisation Factor CT3 Aldgate School	Average Annualisation Factor	Raw Data Annual Mean (µg/m^3)	Annualised Annual Mean (µg/m^3)
BIS005/13	0.909	0.900	0.904	27.714	25.064
Z13	1.011	0.979	0.995	32.857	32.704
Z16	0.904	0.924	0.914	31.250	28.558
N4	0.994	0.996	0.995	25.750	25.617
N10	0.924	0.941	0.933	24.667	23.009
N11	0.930	0.907	0.918	25.857	23.748
N24	0.974	0.949	0.962	35.875	34.495
LEN02	0.994	1.000	0.997	38.500	38.378
LEN05	1.179	1.194	1.186	41.000	48.634
LEN08	0.976	0.975	0.976	41.875	40.859
S8	1.011	1.007	1.009	40.286	40.631
S50	0.836	0.846	0.841	32.167	27.048
S68	0.831	0.865	0.848	18.167	15.410
S71	0.982	0.991	0.987	30.375	29.967
S76	0.831	0.865	0.848	21.167	17.954
S78	0.884	0.914	0.899	34.286	30.829
V2	0.996	1.001	0.999	37.625	37.570
CHP3	1.029	1.064	1.046	30.500	31.913
PF45	1.010	1.026	1.018	25.750	26.222
CH11	1.062	1.048	1.055	25.714	27.132

Distance Adjustment

Following LLAQM.TG (19) guidance no adjustment was required.

Appendix B Full Monthly Diffusion Tube Results for 2022

Table O NO_2 Diffusion Tube Results

Site ID	Valid data capture for monitoring period %[a]	Valid data capture 2022 %[b]	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual mean – raw data	Annual mean – bias adjusted
BIS005/03	92	92	36	30	35	27	27	29	32	28		28	40	35	32	26
BIS005/02	92	92	**44**	30	29	39	37	36	**43**	38	**43**	23		36	36	30
BIS005/06	92	92	**45**	30	27	26	32	23	40	38	35		33	**41**	34	28
BIS005/07	83	83	**45**	32	33	22	33	34		**44**	**41**		40	32	36	30
BIS005/08	92	92	**47**	36	38	31	32	37	**50**	39	**41**		**41**	40	39	33
BIS005/09	100	100	**42**	37	**47**	28	33	36	**41**	**49**	**51**	22	**44**	24	38	31
BIS005/11	92	92	**49**	39	37		30	34	36	37	37	24	**42**	40	37	31
BIS005/13	58	58	**45**		23			24	28			13	32	29	28	21
IS005/01	83	83	**45**	38	**44**	20	24	32	39	33			40	36	35	29
BIS005/04	100	100	39	25	22	19	18	19	23	23	23	24	28	18	23	19
BIS005/05	100	100	39	24	24	16	21	20	29	23	21	21	27	29	25	20
BIS005/01	100	100	37	25	23	19	16	18	19	22	19	21	28	31	23	19
IS005/03	100	100	39	20	17	18	15	11	25	23	31	23	27	31	23	19
BIS005/10	100	100	37	22	21	17	17	17	19	19	22	22	30	12	21	18
BIS005/12	92	92	**42**	**44**	**57**	32	18	17	20	22	24	12	30		29	24
IS005/02	100	100	34	38	40	21	16	16	17	21	22	21	27	30	25	21
BIS005/14	100	100	32	26	23	18	16	17	20	20	22	31	24	28	23	19
BIS005/15	92	92	29	15	25	18	14	14	14		23	34	25	26	22	18
IS005/04	100	100	**41**	33	31	18	16	18	21	21	18	24	32	31	25	21
H1	92	92	**47**	34	33	24	29	29	29	31	40	35		34	33	28
H2	100	100	**47**	32	23	23	35	31	40	30	39	32	**44**	37	34	29
H3	92	92	**45**	33	27	20	31	32	39	32	40		**42**	36	34	28

Notes:

- Concentrations are presented as µg/m^3.
- Exceedances 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.
- All means have been "annualised" in accordance with LLAQM Technical Guidance if valid data capture for the calendar year is less than 75% and greater than 25%.
- (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%).

Appendix C Other Monitoring Results

Data for schools, nurseries and schemes that had monitoring for 2022 can be found below.

Table P. School Annual Mean NO_2 Ratified and Bias-adjusted Monitoring Results 2018-2022 (µg/m^3)

Site ID	Site name	X Easting	Y Northing	Valid data capture 2022(a)	2018	2019	2020	2021	2022
S2	Duncombe Primary School – outside school	530108	186995	100	29	26	18	19	20
S3	Hungerford Primary School / The Bridge Primary	529992	185015	92	33	30	25	19	22
S4	Tufnell Park Primary School – outside old school entrance Dalmeny Road	529800	185647	100	29	25	20	17	21
S6	Ambler Primary School outside school Blackstock Road	531690	186589	92	33	**41**	28	28	23
S7	New North Academy	532209	183959	92	30	28	21	22	22
S8	St Joseph's Primary School outside school	528974	187139	58	34	34	29	29	34
S9	Drayton Park Primary School- Arvon Road entrance	531449	185374	75	30	29	19	19	27
S10	Gillespie Primary School outside school	531805	186305	100	30	28	20	20	21
S11	Yerbury Primary School- outside school	529715	186316	92	40	28	20	19	20
S12	Ashmount Primary School 2- Hornsey Rise Gardens	530030	187715	100	26	24	21	19	20
S13	Prior Weston Primary School/ Richard Cloudesley Primary	532429	182057	100	35	31	22	21	24
S14	Whitehall Park School	529425	187621	100	**42**	**42**	34	29	25

Site ID	Site name	X Easting	Y Northing	Valid data capture 2022(a)	2018	2019	2020	2021	2022
S15	Hargrave Park Primary School	529067	186619	100	27	28	19	19	22
S16	Clerkenwell Parochial CE Primary School	531193	182772	100	33	33	23	24	24
S17	Hugh Myddelton School	531477	182640	100	35	32	23	23	23
S18	Moreland Primary School / City of London Primary Academy	531924	182824	92	32	34	24	22	23
S19	St Peter & St Paul Catholic Primary School	531830	182395	100	32	34	22	20	22
S20	St Luke's CE Primary School	532459	182593	92	31	29	21	22	21
S22	Robert Blair Primary School	530315	184567	100	37	34	28	26	24
S23	Sacred Heart Catholic Primary School	530927	185147	83	32	30	20	19	19
S24	St Mary Magdalene Academy – outside school Lough Road / New River College	531037	184761	92	27	28	20	20	20
S25	Laycock Primary School	531533	184564	92	30	28	21	19	22
S26	Thornhill Primary School	531205	184130	83	29	27	22	22	20
S27	St Andrew's (Barnsbury) C of E Primary School	530817	183837	92	26	25	19	18	19
S28	Vittoria Primary School	530965	183484	100	25	26	20	20	20
S29	Blessed Sacrament Catholic School	530581	183657	100	28	30	22	21	21
S30	Copenhagen Primary School	530544	183579	100	30	29	24	21	22
S31	Winton Primary School	530610	183178	100	32	30	23	21	22
S32	Christ the King Primary School / Arts and Media School Islington	530731	186939	100	29	24	18	19	19
S33	St Mark's CE Primary School	530414	186619	100	26	28	22	20	21

Site ID	Site name	X Easting	Y Northing	Valid data capture 2022(a)	2018	2019	2020	2021	2022
S34	Pooles Park Primary School	530988	186813	100	34	29	22	21	24
S35	Montem Primary School/ Samuel Rhodes Primary School	530731	186327	100	40	34	26	26	24
S36	Grafton Primary School	530495	186164	100	31	30	21	19	22
S37	Pakeman Primary School	530789	186100	100	33	27	21	21	21
S38	St John’s Highbury Vale C of E Primary	531788	186057	100	29	25	20	19	19
S39	St Joan of Arc Primary School	532040	185930	100	28	26	20	21	19
S40	Highbury Quadrant Primary School	532366	185588	100	30	29	20	20	22
S41	Newington Green Primary School - outside school	532996	185431	75	35	33	24	24	23
S42	St Jude and St Paul's C of E Primary School	533309	185006	75	28	26	19	20	21
S43	Canonbury Primary School	531757	184585	92	35	31	23	23	24
S44	William Tyndale Primary School	531652	184313	92	34	30	24	23	21
S45	St Mary’s C of E Primary School	531906	183993	92	31	28	21	22	22
S46	Rotherfield Primary School	532468	184012	83	29	30	23	20	20
S47	St John Evangelist RC Primary School	531588	183335	92	31	32	23	20	20
S48	Hanover Primary School	532017	183287	92	33	30	21	20	20
S49	Ambler Primary School Nursery Entrance Romily Road	531632	186489	92	30	26	18	18	21
S50	Ashmount Primary School 1 Crouch Hill	530291	187808	50	32	33	24	26	22
S51	Drayton Park Primary School- Drayton Park entrance	531406	185373	83	30	32	26	23	21

Site ID	Site name	X Easting	Y Northing	Valid data capture 2022(a)	2018	2019	2020	2021	2022
S56	The Bridge Secondary School / Tufnell Park Primary School new entrance	529751	185551	83	33	27	25	20	21
S57	Beacon High	529828	185428	92	34	27	20	22	21
S59	Dania School	530887	184860	92	32	29	22	22	20
S60	Samuel Rhodes MLD School	532128	185109	92	36	31	22	21	23
S61	St Paul's Steiner School	532710	184815	92	37	39	29	29	24
S62	The Children's House School	533251	185076	92	34	35	27	24	22
S63	Highbury Fields School	531760	185499	92	37	32	25	20	21
S64	City of London Academy Highbury Grove	531985	185083	92	**41**	39	28	29	25
S65	North Bridge House Senior Canonbury	531985	184551	92	37	30	22	20	21
S66	Dallington School	531877	182328	92	37	28	21	21	23
S67	Italia Conti Academy	532089	182080	92	**41**	**45**	30	30	25
S68	Yerbury Primary- classroom	529679	186360	50	No data	No data	15	18	13
S69	The Gower School/ The Pears Family School	530972	183154	83	35	33	22	22	20
S70	Elizabeth Garrett Anderson School	530973	183197	83	37	35	25	24	23
S71	City of London Academy Islington/ Richard Cloudesley Secondary	532083	183594	67	34	31	21	19	25
S72	City of London Academy Highgate Hill	529745	187171	83	30	28	22	21	27
S73	St Aloysius College	529058	187343	92	34	37	29	25	21
S74	St Mary Magdalene Academy Liverpool Road	531204	184844	92	No data	36	24	28	25

Site ID	Site name	X Easting	Y Northing	Valid data capture 2022(a)	2018	2019	2020	2021	2022
S76	Yerbury Primary- playground	529666	186336	50	No data	No data	18	22	15
S77	The Bridge/ New River College	531244	183879	92	No data	No data	No data	18	23
S78	COLPAI School - Baltic Street East entrance	532161	182224	58	No data	No data	No data	25	26
LEN 15	Central Foundation School	532914	182374	75	34	38	22	24	27
Z16	St John's Upper Holloway C of E Primary School	529546	186501	67	33	32	23	22	24
Y1	Yerbury Primary- outside school 2	529715	186336	92	No data	No data	21	21	29

Notes:

- The annual mean concentrations are presented as µg/m^3.
- Exceedances 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**.
- Means for diffusion tubes have been corrected for bias.
- All means have been "annualised" in accordance with LLAQM Technical Guidance if valid data capture for the calendar year is less than 75% and greater than 25%.
- Results have been distance corrected where applicable.
- (a) 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%).

In 2022, all schools measured below the objective level of 40 µg/m^3 for the third year in a row. The average for all school sites in 2022 was 22 µg/m^3. This compares to 22 µg/m^3 in 2021, 23 µg/m^3 in 2020, 31 µg/m^3 in 2019 and 32 µg/m^3 in 2018 for these sites. While the 2020 to 2022 values are very similar, 2020 was significantly impacted by Covid-19, suggesting the data is following a longer-term trend of decreasing pollution levels. Some schools, for example S8 St Joseph's Primary School outside school, S9

Drayton Park Primary School- Arvon Road entrance, S71 City of London Academy Islington/ Richard Cloudesley Secondary, S72 City of London Academy Highgate Hill, S77 The Bridge/New River College and Y1 Yerbury Primary- outside school 2 display increases of 5 µg/m^3 or more however these schools are not showing longer-term increases. Other schools, for example S6 Ambler Primary School outside school Blackstock Road, S61 St Paul's Steiner School and S67 Italia Conti Academy show decreases of 5 µg/m^3 or more. We will continue to monitor these, and other locations to identify if there are any emerging trends and take action where necessary to reduce exposure to harmful pollutants.

Table Q. Nursery Annual Mean NO_2 Ratified and Bias-adjusted Monitoring Results 2020-2022 (µg/m^3)

Site ID	Site name	X Easting	Y Northing	Valid data capture 2022(a)	2020	2021	2022
N1	Hornsey Lane Estate Community Nursery	529550	187634	100	18	17	21
N2	Hornsey Day Nursery Toddlers and Pre-School	529887	187695	100	23	23	27
N3	Margaret McMillan Nursery School and Children's Centre	530024	187592	100	39	39	33
N4	Blythwood Community Nursery	530437	187717	67	20	21	21
N5	The Maria Montessori School	530213	187499	100	18	20	22
N6	Hornsey Day Nursery (for under 2s)	530166	187198	100	26	26	25
N7	Little Angels Day Nursery and Pre-Prep School	529020	186706	100	20	21	22
N8	Bright Horizons Finsbury Park Day Nursery and Preschool	530995	187093	100	18	19	21
N9	North Islington Nursery School and Children's Centre	530850	187003	100	21	21	22
N10	Andover Pre-School and Brightstart Community Nursery	530875	186624	50	20	21	19
N11	Manor Gardens Centre Pre-School	530420	186375	58	21	20	20
N12	Bennett Court Playgroup	530554	186286	75	19	20	20
N13	Sam Morris Centre Nursery	531194	186286	100	21	21	21
N14	City and Islington College Camden Road Nursery	530566	185657	100	20	21	21
N16	Willow Children's Centre	530290	185985	83	20	20	20

Site ID	Site name	X Easting	Y Northing	Valid data capture 2022(a)	2020	2021	2022
N17	Little Nemo Nursery	529986	185995	100	21	20	20
N18	Les Petites Etoiles	529933	185869	100	19	18	19
N19	Goodinge Early Years Centre	530150	185147	92	21	20	22
N20	Mount Carmel Day Nursery	530962	185308	100	21	21	19
N21	Paradise Park Children's Centre	531041	185045	83	18	19	20
N22	CurioCity Childcare	530685	184896	100	20	21	23
N24	City and Islington Lifelong Learning Nursery	531574	186705	67	34	32	29
N25	St Thomas' Playgroup	531527	186290	100	19	19	21
N26	Little Angels Day Nursery and Pre-Prep School (Highbury)	531909	186197	100	24	27	24
N27	Highbury Day Nursery	531484	186116	100	21	19	21
N28	Conewood Street Children's Centre	531848	186061	92	19	20	18
N29	Aberdeen Park Nursery	532341	185964	100	20	19	20
N30	Monkey Puzzle Day Nursery	531944	185867	100	24	22	20
N31	Highbury Community Nursery	531790	185780	92	25	21	20
N32	Christ Church Playgroup	531895	185457	75	20	21	20
N33	New Park Nursery and Montessori School	532383	185434	92	19	20	18
N34	Floral Place Nursery	532644	185027	100	20	20	20
N35	Minik Kardes Day Nursery	533347	184783	100	34	33	28
N36	Mildmay Community Nursery	532917	184912	100	22	20	21
N37	New River Green Children's Centre	532527	184657	100	21	20	19

Site ID	Site name	X Easting	Y Northing	Valid data capture 2022(a)	2020	2021	2022
N38	Essex Road Pre-school	532282	184405	100	20	20	19
N39	St Andrew's Montessori	530762	184129	100	19	19	19
N40	Bemerton Children's Centre	530638	184108	92	21	21	21
N41	Kate Greenaway Nursery School and Children's Centre	530458	183628	100	19	20	22
N42	Hanover Playschool at Priory Heights	530760	183312	92	24	24	24
N43	Tiddley Tots Nursery	530827	183582	100	21	20	19
N44	Beckett House Montessori Nursery School	531223	183898	92	19	20	23
N45	Mary's Preschool	531740	183917	92	38	30	26
N46	Mars Montessori Bilingual Nursery	531685	183708	100	25	24	25
N47	The Grove Nursery	532503	183878	92	21	21	21
N48	Rosemary Gardens Playgroup	532704	183952	100	21	16	22
N49	Hopes and Dreams Montessori Nursery School	531737	183065	100	30	29	27
N50	Kiddycare Royal Mail Childsplay Nursery	531137	182397	83	29	27	29
N51	Cuckooz Nest	531278	182141	100	22	22	25
N52	Newpark Montessori Nursery School	532070	182448	92	26	22	23
N53	Kido Nursery and Preschool Clerkenwell	532103	182725	100	25	21	23
N54	King Square Community Nursery at Toffee Park Youth Club	532326	182527	100	19	18	22
N55	The Co-operative Childcare	532383	182609	92	23	21	27
V2	Archway Children's Centre	529300	186696	67	28	30	31

Notes:

- The annual mean concentrations are presented as µg/m^3.
- Exceedances 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**.
- Means for diffusion tubes have been corrected for bias.
- All means have been "annualised" in accordance with LLAQM Technical Guidance if valid data capture for the calendar year is less than 75% and greater than 25%.
- Results have been distance corrected where applicable.
- (a) 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%).

In 2022 all nurseries measured below the objective level of 40 µg/m^3 for the third year in a row. The average for all nursery sites in 2022 was 22 µg/m^3.

Table R. Care Home Annual Mean NO_2 Ratified and Bias-adjusted Monitoring Results 2022 (µg/m^3)

Site ID	Site name	X Easting	Y Northing	Valid data capture 2022(a)	2022
CH1	Barchester Cheverton Lodge Care Home	529602	187427	92	19
CH2	Bridgeside Lodge Care Centre	532099	183254	92	21
CH3	St Anne's Care Centre	530922	186723	92	20
CH4	The Highgate Care Home	528976	187267	100	22
CH5	Muriel Street Care Home	530860	183497	100	20
CH6	Highbury New Park Care UK	532333	185860	100	20
CH7	Lennox House Care UK	530951	186682	83	22
CH8	Charterhouse	531886	181879	100	26
CH9	Cardinals Way Care Home	529691	187339	100	19
CH10	Orchard Close	532448	184173	92	19

Site ID	Site name	X Easting	Y Northing	Valid data capture 2022(a)	2022
CH11	King Henry's Walk Home	533110	184908	58	23
CH12	Wray Court	530620	186872	100	21
CH13	148 Hornsey Lane	529698	187754	100	22
CH14	Wilton Villas	532542	183732	100	21
CH15	158 New North Road	532536	183716	92	23
CH16	St Mungo's, Hilldrop Road	529997	185298	100	23

Notes:

- The annual mean concentrations are presented as µg/m^3.
- Exceedances 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**.
- Means for diffusion tubes have been corrected for bias.
- All means have been "annualised" in accordance with LLAQM Technical Guidance if valid data capture for the calendar year is less than 75% and greater than 25%.
- Results have been distance corrected where applicable.
- (a) 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%).

In 2022 all care homes measured below the objective level of 40 µg/m^3, with no data available before this.

Table S. People Friendly Streets Annual Mean NO_2 Ratified and Bias-adjusted Monitoring Results 2020-2022 (µg/m^3)

Site ID	Site name	X Easting	Y Northing	Valid data capture 2022(a)	2020	2021	2022
PF1	New North Road	532371	183926	100	23	23	24

Site ID	Site name	X Easting	Y Northing	Valid data capture 2022(a)	2020	2021	2022
PF2	Northchurch Road	532899	184292	100	28	25	26
PF3	Canonbury Road	532135	184155	92	37	35	38
PF4	Essex Road	532589	184551	100	35	38	32
PF5	Clifton Road	532427	184676	100	18	22	20
PF6	St Paul's Road/Grange Grove	531993	184823	100	25	28	25
PF7	Skinner Street/Rosoman Place	531385	182505	100	23	22	22
PF8	Northampton Road/Corporation Row	531449	182375	100	22	20	21
PF9	Drayton Park	531424	185763	100	24	23	23
PF10	Benwell Road	531117	185553	92	29	24	24
PF11	Highbury Crescent	531561	184857	92	21	21	33
PF12	Highbury Place	531691	184970	100	19	19	20
PF13	Baalbec Road	531792	185202	100	18	19	21
PF14	Cross Street	531883	183935	92	26	27	27
PF15	Lloyd Baker Street	531043	182661	100	23	21	22
PF16	Sonderburg Street	530983	186463	100	29	27	24
PF17	York Way/Hungerford	529916	184927	92	26	24	26
PF18	Riversdale	531931	186100	100	26	25	24
PF19	Green Lanes	532443	186135	100	27	25	22
PF20	Petherton	532505	185571	92	19	19	20
PF21	Tollington Road/Hornsey Road (Sobell Centre)	530931	186022	100	25	31	27

Site ID	Site name	X Easting	Y Northing	Valid data capture 2022(a)	2020	2021	2022
PF22	Newington Green Road	532755	184960	100	25	27	26
PF23	Mildmay Road	533025	185249	100	21	19	21
PF24	Caledonian Road	530610	184689	100	33	33	29
PF25	Boleyn Road	533343	185227	100	26	25	28
PF26	Grosvenor Avenue	532412	185108	92	24	22	25
PF27	164 York Way	530304	183772	92	27	29	27
PF28	Bingfield Street	530542	183933	100	24	22	23
PF29	Offord Road/Liverpool Road	531327	184559	100	27	25	26
PF30	Chapel Market/Liverpool Road	531416	183331	83	24	25	27
PF31	Theberton Street	531636	183782	92	21	26	26
PF32	Gaskin Street	531782	183767	92	22	24	28
PF33	Canonbury Lane	531757	184417	83	27	24	29
PF34	Pentonville Road	530845	183055	92	24	29	29
PF35	Dingley Road	532336	182754	75	25	25	27
PF36	St John's Street	531791	181810	100	26	26	30
PF37	St John's Lane	531792	181897	92	27	25	28
PF38	Cowcross Street	531622	181850	100	22	24	24
PF39	Banner Street	532355	182262	92	24	22	25
PF40	Essex Road / Gaskin St	531806	183734	100	No data	**42**	37
PF41	Islington Green	531713	183638	92	No data	32	31

Site ID	Site name	X Easting	Y Northing	Valid data capture 2022(a)	2020	2021	2022
PF42	Upper Street	531694	183972	100	No data	33	31
PF43	Florence St/Hawes St	531757	184040	83	No data	25	23
PF44	Halton Rd / Braes St	531884	184251	100	No data	22	21
PF45	Copenhagen St	530431	183685	67	No data	24	22
PF46	Wharfdale St	530455	183295	100	No data	38	30
PF47	Pentonville Road / Kings Cross Bridge	530409	182996	100	No data	**42**	36
PF48	Newington Green	532804	185321	100	No data	32	29
PF49	Mildmay Park / Mildmay Grove South	532939	185038	83	No data	27	25
PF50	Highbury Park	531941	185531	100	No data	30	26
PF51	Highbury Grange	532156	185716	92	No data	20	21
PF52	Riversdale Rd / Mountgrove Rd	532232	186347	100	No data	19	20
PF53	Roman Way	530827	184623	100	No data	24	23
PF54	Offord Road	530975	184409	83	No data	27	25
PF55	Furlong Road	531417	184872	100	No data	22	24
PF56	Islington Park St	531461	184358	83	No data	24	23
PF57	Hemingford Rd	531203	184127	92	No data	24	23
PF58	Liverpool Rd	531409	184021	92	No data	26	27
PF59	Tolpuddle St	531228	183412	100	No data	25	22
PF60	Tabernacle St	532908	182347	100	No data	24	24
PF61	St Jude St	533322	185057	92	No data	20	22

Site ID	Site name	X Easting	Y Northing	Valid data capture 2022(a)	2020	2021	2022
PF62	Green Lanes	532797	185469	100	No data	28	26

Notes:

- This includes monitoring sites put in specifically for people friendly streets. Additional monitoring sites located in each area were used in the six and 12 month reports analysing the impacts of the LTNs on air quality.
- Data for these additional LTN sites can be found in this report:
  - Table E- BIS005/01. BIS005/02, BIS005/04, BIS005/08, BIS005/09, BIS005/10 and BIS005/11
  - Table P- S6, S7, S9, S10, S16, S38, S43-S49, S51, S61, S63-S65 and S71
  - Table Q- N13, N24-N28, N30-N32, N37, N38, N45 and N47-N50
  - Table T- C1-C5, OC2, OC3, OC10, IRC5, IRC6, IRC9, DC1 and DC2
  - With three additional sites DC3-DC5 with data until 2020 found in our annual report for 2020
- Concentrations are presented as µg/m^3.
- Exceedances 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**.
- Means for diffusion tubes have been corrected for bias.
- All means have been "annualised" in accordance with LLAQM Technical Guidance if valid data capture for the calendar year is less than 75% and greater than 25%.
- Results have been distance corrected where applicable.
- (a) 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%).

The same average NO_2 level is found across the PF tubes in 2021 and 2022. Results for individual tubes vary, with some showing an increase and some a decrease. The largest increase and the only increase over 5 µg/m^3 is for PF11 on Highbury Crescent. Full analyses of this monitor show that results increased dramatically for the last four months of the year. No reason has been identified for this increase and indicative results for this site, as well as an additional site located nearby, in 2023, suggest levels have now decreased. However, we will continue to monitor this location. The results for the PF tubes, and other tubes used in PFS monitoring, are analysed in Appendix D.

Table T. Other Schemes Annual Mean NO_2 Ratified and Bias-adjusted Monitoring Results 2018-2022 (µg/m^3)

Site ID	Site name	X Easting	Y Northing	Valid data capture 2022(a)	2018	2019	2020	2021	2022
222	Upper Street	531611	184529	100	No data	No data	26	28	28
Z02	St John's Way	529470	186911	92	**54**	**56**	**44**	**46**	34
Z05	Archway Road	529250	187200	92	**49**	38	33	32	32
Z06	Highgate Hill	529108	187058	92	**40**	33	27	27	25
Z09	Junction Road	529386	186807	83	**45**	40	30	30	26
Z13	Junction Road	529546	186501	58	**46**	39	31	32	27
Z17	Holloway Road	529640	186701	92	**49**	**47**	39	38	31
Z19	Sandridge Street	529460	186812	92	**43**	**43**	30	29	26
Z21	Magdala Avenue	529170	186883	92	No data	34	22	24	28
Z22	Pauntley Street/Archway Road	529308	187092	92	No data	**46**	**47**	**50**	36
C1	Clerkenwell Green	531528	182089	100	32	34	25	23	23
C2	Clerkenwell Green	531488	182116	100	29	33	23	23	25
C3	Clerkenwell Green	531530	182149	100	30	33	24	22	24
C4	Clerkenwell Green	531559	182140	92	35	32	24	21	22
C5	Clerkenwell Green (pedestrian area)	531562	182164	100	33	31	23	22	22
LEN01	Old Street	532699	182462	83	**43**	38	28	24	21
LEN02	City Road	532766	182407	67	**64**	**54**	31	34	32
LEN05	Old Street	532845	182525	58	**53**	**51**	**41**	37	40
LEN06	City Road	532744	182571	100	**62**	**58**	**47**	39	39
LEN07	City Road	532742	182561	83	**72**	**69**	**52**	**43**	40
LEN08	Old Street	532742	182561	67	**53**	**47**	34	33	34
LEN09	Mallow Street	532698	182422	92	38	38	25	29	26
LEN10	Featherstone Street	532588	182356	100	35	32	24	21	24
LEN11	Featherstone Street	532682	182364	92	36	29	21	23	24
LEN12	Featherstone Street	532751	182372	100	**44**	39	25	25	27

Site ID	Site name	X Easting	Y Northing	Valid data capture 2022(a)	2018	2019	2020	2021	2022
LEN13	Leonard Street	532790	182362	100	**45**	**43**	27	25	27
LEN14	Leonard Street	532824	182369	100	40	**45**	28	31	28
LEN16	Bath Street	532480	182750	100	40	**41**	28	29	27
LEN17	Bath Street/Lever Street	532489	182707	100	**42**	36	29	25	26
LEN18	Bath Street	532531	182542	92	38	31	23	23	25
LEN19	Bunhill Row	532557	182422	92	40	35	28	26	26
LEN20	City Road	532681	182679	100	**47**	**53**	38	35	32
V4	MacDonald Road	529266	186832	92	**59**	**70**	**90**	**81**	**57**
V9	MacDonald Road	529247	186803	92	No data	No data	No data	**82**	**60**
OC1	Wakley Street	531738	182980	100	No data	No data	**42**	38	35
OC2	St John Street	531624	182481	100	No data	No data	25	22	28
OC3	St John Street	531771	182106	100	No data	No data	30	29	30
OC4	Clerkenwell Road	531892	182150	92	No data	No data	33	32	36
OC5	Percival Street	531890	182551	100	No data	No data	25	24	26
OC6	Old Street	532135	182283	100	No data	No data	32	32	32
OC7	Old Street	532277	182338	100	No data	No data	29	29	31
OC8	Old Street	532473	182408	100	No data	No data	30	28	28
OC9	City Road	532789	182250	100	No data	No data	29	28	29
OC10	City Road	532188	182884	100	No data	No data	25	26	27
CHP1	Greenhill Rents	531736	181804	83	No data	No data	26	24	27
CHP2	Eagle Court/White Horse Alley	531717	181890	92	No data	No data	24	22	24
CHP3	Peter's Lane	531768	181878	67	No data	No data	27	25	26
B2	Pemberton Terrace	529363	186358	100	No data	31	22	21	23
B3	Pemberton Terrace/Monnery Road	529357	186282	92	No data	34	22	24	24
IRC2	Regent's Canal	530824	183461	92	No data	29	20	20	21
IRC4	Regent's Canal	530704	183471	100	No data	35	26	28	25

Site ID	Site name	X Easting	Y Northing	Valid data capture 2022(a)	2018	2019	2020	2021	2022
IRC5	Regent's Canal	531713	183294	100	No data	31	22	22	24
IRC6	Regent's Canal	531762	183289	92	No data	26	19	18	21
IRC9	Regent's Canal	531852	183272	100	No data	33	19	19	19
IRC12	Regent's Canal	530413	183517	92	No data	34	24	23	22
IRC15	Regent's Canal	530541	183499	100	No data	31	22	22	21
DC1	Highbury Corner (Dixon Clark Court side)	531700	184701	100	30	37	25	25	23
DC2	Dixon Clark Court Building	531730	184694	100	32	31	21	22	22

Notes:

- Concentrations are presented as µg/m^3.
- Exceedances 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**.
- Means for diffusion tubes have been corrected for bias.
- All means have been “annualised” in accordance with LLAQM Technical Guidance if valid data capture for the calendar year is less than 75% and greater than 25%.
- Results have been distance corrected where applicable.
- (a) 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%).

Appendix D Low Traffic Neighbourhoods Longer Term Trends

The number of monitoring sites in each Low Traffic Neighbourhood (LTN) varies from year to year, with some sites put in specifically for LTNs, and others already in place. Monitoring used in annual comparisons can be found in Table U.

Table U. Number of monitoring sites in Low Traffic Neighbourhood areas by year

Low Traffic Neighbourhoods	2018	2019	2020	2021	2022
Amwell	2 boundary 1 internal	2 boundary 1 internal	4 boundary 2 internal	4 boundary 2 internal	4 boundary 2 internal
Canonbury West	3 boundary 2 internal 4 non-road	3 boundary 2 internal 4 non-road	6 boundary 5 internal 4 non-road	6 boundary 5 internal	6 boundary 5 internal
Canonbury East	1 boundary 1 internal	1 boundary 1 internal	4 boundary 2 internal 1 non-road	4 boundary 2 internal 1 non-road	5 boundary 4 internal 1 non-road
Clerkenwell Green	1 boundary 4 internal	1 boundary 4 internal	5 boundary 4 internal	5 boundary 4 internal	5 boundary 4 internal
St Peter's	4 internal	4 internal 3 non-road	3 boundary 4 internal 3 non-road	5 boundary 4 internal 3 non-road	7 boundary 4 internal 3 non-road
Highbury	4 boundary 6 internal 1 non-road	4 boundary 6 internal 1 non-road	8 boundary 17 internal 1 non-road	9 boundary 17 internal 1 non-road	9 boundary 17 internal 1 non-road
St Mary's	3 boundary 1 internal	3 boundary 1 internal	5 boundary 5 internal 1 non-road	8 boundary 7 internal 1 non-road	8 boundary 7 internal 1 non-road

Average values for these sites can be found in Table V and Figure 3 below.

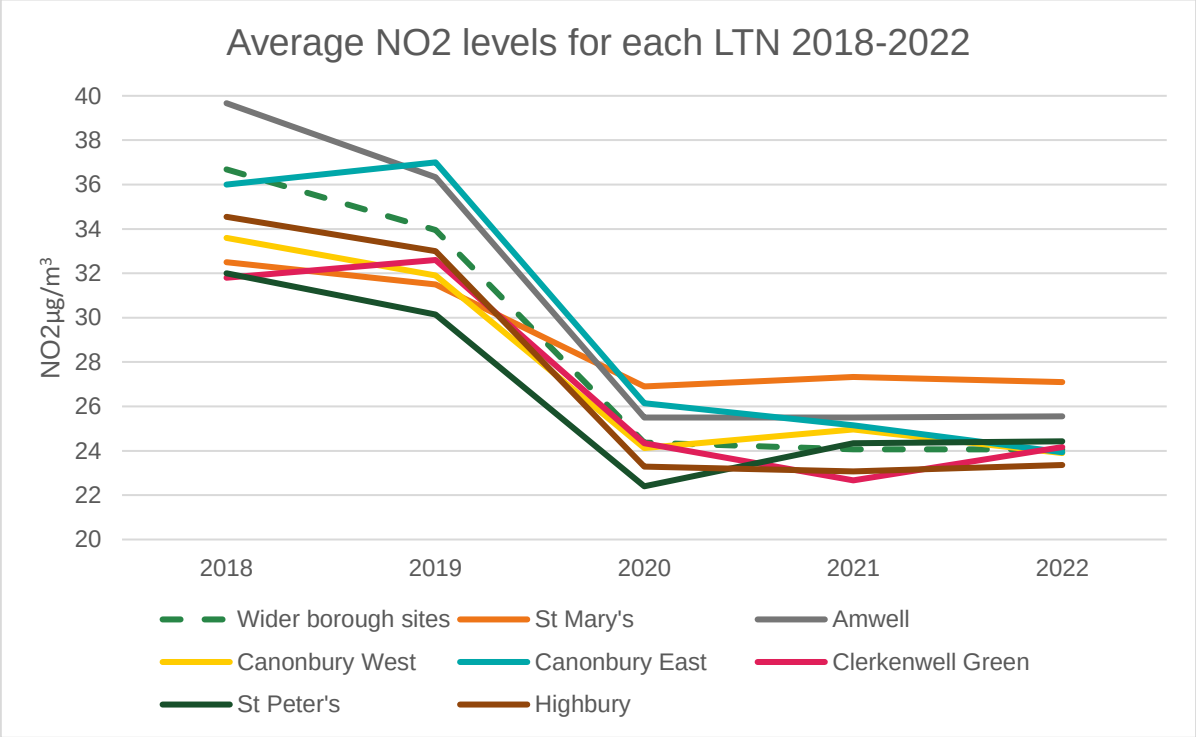
Table V. Annual average mean NO_2 ratified and bias-adjusted monitoring results 2018-2022 for Low Traffic Neighbourhoods (boundary, internal and non-road sites) compared to wider borough sites

Low Traffic Neighbourhoods	2018	2019	2020	2021	2022
Amwell	40	36	26	26	26
Canonbury West	34	32	24	25	24
Canonbury East	36	37	26	25	24
Clerkenwell Green	32	33	24	23	24
St Peter's	32	30	22	24	24
Highbury	35	33	23	23	23
St Mary's	33	32	27	27	27
Wider borough sites	37	34	24	24	24

Notes:

- Concentrations are presented as µg/m^3.
- Means for diffusion tubes have been corrected for bias.
- All means have been "annualised" in accordance with LLAQM Technical Guidance if valid data capture for the calendar year is less than 75% and greater than 25%.

Figure 3. Annual average mean NO_2 ratified and bias-adjusted monitoring results 2018-2022 for Low Traffic Neighbourhoods (boundary, internal and non-road sites) compared to wider borough sites



While there is variation between LTNs, these results show a decrease in NO_2 from 2018 to 2020, with similar pollution levels 2020-2022, and with 2022 pollution levels below pre-2020 levels. This is in line with the trends also observed in the wider borough sites. 2020 showed particularly low levels of NO_2, reflecting longer term trends, but also the impacts of Covid-19 on pollution. This impact was highlighted in the 2020 air quality report for Islington as well as studies by Greater London Authority and Defra. The LTNs were implemented, in many cases, at the end of or just after this period of low pollution in 2020:

- St Peter's – July 2020
- Canonbury East – August 2020
- Clerkenwell Green – September 2020
- Amwell – November 2020
- Canonbury West – November 2020
- Highbury – January 2021
- St Mary's – February 2022

All LTNs show improvements in pollution levels over the longer term, with lower average pollution levels in 2022 compared to 2019.

Studies[5] have shown that Covid-19 led to a large decrease in pollution levels in London in 2020 and to a lesser degree in 2021. While there was a large decrease in pollution levels over the past five years at many LTN locations, if a comparison is made between the year before and after the installation of some LTNs, when Covid was impacting results, a small increase has been measured for some LTNs. When comparing 2022 pollution levels in each LTN to 2020, St Peter's recorded pollution levels 2 µg/m^3 higher. All other LTNs have the same or lower values. Comparing 2022 to 2021, Clerkenwell Green recorded a value 1 µg/m^3 higher, with remaining LTNs with the same or lower values.

These increases are within the error margins of the monitors. They are similar to long-term borough monitoring across the rest of the borough which showed the same overall pollution levels in 2020, 2021 and 2022, with all years significantly lower than 2019. Increases seen in some LTNs are therefore likely due to wider changes in pollution levels due to factors such as national lockdowns, which significantly lowered pollution levels in 2020. Without conducting complex modelling it is hard to pick out exactly how much of the changes in air pollution are due to Low Traffic Neighbourhoods and how much is due to wider factors such as those outlined in the summary section of this report. However, a study conducted by Imperial College London, using Islington data, suggested LTNs are having a beneficial impact on internal and boundary roads. We will continue to monitor pollution in these areas, to look for longer-term trends.

5 https://www.london.gov.uk/sites/default/files/london_response_to_aqeg_call_for_evidence_april_2020.pdf