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Draft Islington Air Quality Strategy 2013-16

Part IV of the Environment Act 1995: Local Air Quality Management

Executive Summary

The London Borough of Islington Air Quality Management Order 2003 came in to effect on the 29th April 2003. The order declared the whole of the borough as an Air Quality Management Area (AQMA) as it was likely that there would be a breach of the nitrogen dioxide (annual mean and hourly mean) and particulate matter (24 hour mean) objectives, as specified in the Air Quality Regulations (England) 2000 as amended.

An Air Quality Action Plan (AQAP) was published to reduce pollutant concentrations and improve overall air quality. Since the AQAP has been in place, Islington has observed a steady year-on-year decline in concentrations, with the exception of 2005 and 2007. The increase in concentrations during these years is believed to be due to weather conditions; these incidents were not exclusive to Islington and can be seen across other London boroughs.

Many of the actions listed in the 2003 plan have been incorporated into Council policy, such as car free developments and a green procurement policy. Some activities previously listed have now ceased or will be continued in this strategy.

This draft strategy broadly outlines the proposed activities that the Council intends to put in place to further reduce pollutant concentrations. The aim is to increase awareness of poor air quality so that our residents may take suitable precautions and reduce personal exposure.

We are seeking views and comments on this draft strategy, please email pollution@islington.gov.uk with your response no later than August 31st 2013.

For further information please call the Pollution Team on 020 7527 3048.

Contents

1. Introduction

Air pollution is caused when chemicals and particles that are considered to be harmful to human health or harmful to ecosystems are released into the atmosphere. The main sources of pollution in the UK are the burning of fossil fuels for energy generation, transport and industrial emissions, with some sources of pollution occurring naturally.

Poor air quality is known to have a range of harmful effects on human health, including increasing the risk of developing cardiovascular and lung disease, and exacerbating those with pre-existing respiratory conditions, such as asthma. In 2010 the Environmental Audit Committee estimated that in the UK, the contribution of small particulate matter (specifically fine particles smaller than 2.5 micrometres in diameter [$PM_{2.5}$]) to poor air quality is shortening life expectancy by 7-8 months[1] and in 2008, 30,000 died from air pollution across the UK. The Greater London Authority published a report estimating that in 2008 fine particles had an impact on mortality equivalent to 4,267 deaths in London[2]. The most recent Environmental Audit Committee report states that the burden of particulate air pollution ($PM_{2.5}$) results in a loss of life expectancy from birth of 6 months[3]. Poor air quality in London is generally attributable to the density of development and the geographical location of the city.

Several studies have shown that elevated levels of pollution are concentrated amongst socially deprived neighbourhoods; Air Quality Management Areas (AQMAs) tend to be characterised by higher levels of deprivation, underlining this association. Added to this, people living in deprived areas are more likely to smoke, or live in households where someone smokes. The Institute of Occupational Medicine estimates that the elimination of passive smoking would increase average life expectancy by 2-3 months. Indoor air quality is also affected by allergens from dust mites and moulds in poor quality housing. This demonstrates the need to tackle both outdoor and indoor air pollution in order to not only reduce morbidity and mortality, but also to reduce health inequalities.

All local authorities in the UK have a statutory duty to assess air quality and identify areas that are unlikely to meet objectives set by the Government. Air quality in Islington does not meet the objective for annual mean nitrogen dioxide (NO_2), and historically has not met the objectives for particulates smaller than 10 micrometres in diameter (PM_{10}), so the whole borough has been declared an AQMA for these two pollutants.

This document outlines measures that will be taken to improve air quality in the borough. Some action is already underway, such as reducing emissions from the corporate fleet and buildings, and also through construction and new developments.

The key aims of this Air Quality Strategy are to:

- Reduce the impact of poor air quality on the health of residents, workers and visitors, particularly those who are vulnerable
- Fulfil statutory obligations for local air quality management and assist the UK Government and the Mayor of London in meeting air quality limit values
- Encourage and implement cost-effective measures to reduce emissions and exposure to poor air quality
- Raise public awareness and increase understanding of air quality issues

[1] Environmental Audit Committee 2010. Air Quality. Fifth Report of Session 2009-10.
[2] Dr Brian G Miller 2010. Institute of Occupational Medicine. Report on estimation of mortality impacts of particulate air pollution. Consulting report P951-001. June 2010.
[3] Environmental Audit Committee 2011. Air Quality: A follow up. Ninth Report of Session 2010-12.

- Encourage good practice by businesses and residents of the borough

An Air Quality Action Plan (AQAP) was published in 2003, and most of the actions for this are considered to be achieved. However, a number of the old actions include measures that should be built upon and continued. For example, measures to tackle transport included reducing traffic and congestion, increasing the uptake of public transport, and reducing transport emissions. These actions are not considered to be finite and work needs to continue across London, not just in Islington, to address these problems. A previous action regarding targeting engine idling is considered to be ongoing, and will be addressed in this strategy. In addition, actions that consider energy-efficiency will be continued as both new properties and a number of existing properties still need to be targeted.

2. Legal Framework and Policies

2.1 European and National Legislation

The European Union has set legally binding limit values[4] for pollutants that are detrimental to human health and the environment, and this was made law in England through the Air Quality Standards Regulations 2010[5]. These limit values are health-based standards consistent with World Health Organisation (WHO) guidance. The Government has prepared an Air Quality Strategy for England, Scotland, Wales and Northern Ireland[6], as required by the Environment Act 1995[7], detailing what measures should be introduced in order to meet these limits. The most recent review was published in 2007, and this requires Councils to assess and manage air quality, and details the standards and objectives for specific pollutants (see table 2.1).

Table 2.1. EU limit values and National Air Quality Objectives.

EU limit values for the protection of human health (Directive 2008/50/EC)				**National Air Quality Objectives**	
Pollutant	**Concentration**	**EU obligations**	**Date to be achieved**	**Objective**	**Date to be achieved**
Sulphur dioxide	1 hour	350 µg/m^3 not to be exceeded more than 24 times a calendar year	1 January 2005	350 µg/m^3 not to be exceeded more than 24 times a calendar year	31 December 2004
	1 day	125 µg/m^3 not to be exceeded more than 3 times a calendar year	1 January 2005	125 µg/m^3 not to be exceeded more than 3 times a calendar year	31 December 2004
Nitrogen dioxide	1 hour	200 µg/m^3 not to be exceeded more than 18 times a calendar year	1 January 2010	200 µg/m^3 not to be exceeded more than 18 times a calendar year	31 December 2005
	Calendar year	40 µg/m^3	1 January 2010	40 µg/m^3	31 December 2005
Benzene	Calendar year	5 µg/m^3	1 January 2010	5 µg/m^3	31 December 2010
Lead	Calendar year	0.5 µg/m^3	1 January 2005	0.25 µg/m^3	31 December 2008
PM_{10}	1 day	50 µg/m^3 not to be exceeded more than 35 times a calendar year	1 January 2005	50 µg/m^3 (gravimetric) not to be exceeded more than 35 times a calendar year	31 December 2004

[4] EU Directive 2008/52/EC.
[5] The Air Quality Standards Regulations 2010, SI 2010/1001.
[6] The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. July 2007.
[7] The Environment Act 1995 (c.25).

	Calendar year	40 µg/m^3	1 January 2005	40 µg/m^3 (gravimetric)	31 December 2004
Carbon monoxide	Maximum daily 8 hour mean	10 mg/m^3	1 January 2005	10 mg/m^3	31 December 2003
Ozone*	Maximum daily 8 hour mean	120 µg/m^3 not to be exceeded on more than 25 days per calendar year averaged over three years	31 December 2010	100 µg/m^3 not to be exceeded more than 10 times a year	31 December 2005
$PM_{2.5}$*	Calendar year	Target value 25 µg/m^3	1 January 2015	25 µg/m^3	2020

*Not prescribed for Local Air Quality Management.

European legislation has had a significant impact on improving air quality in the UK, shown by reductions in sulphur dioxide and benzene over the last twenty years. The European Union has introduced Euro Standards for road vehicles, which define the limits for exhaust emissions for new vehicles sold in Member States. This was first introduced in 1992 and has become increasingly stringent since. The London Low Emission Zone (LEZ) uses these Euro Standards to restrict the most heavily polluting vehicles from entering London, which was introduced in 2008. This is to encourage those driving the most polluting diesel vehicles to become cleaner and the London LEZ is becoming more stringent to reflect the updated Euro Standards.

2.2 Local Air Quality Management

The Environment Act 1995 introduced the system of local air quality management (LAQM) which requires local authorities to periodically review and assess the current and likely future air quality in their area. In August 2000, Islington completed its third stage review and found that objectives for NO_2, and PM_{10} were not going to be achieved so an AQMA was declared in 2001 covering a large part of the borough. An AQMA for the entire borough was declared in 2003 and has been retained since.

The Updated Screening Assessment (USA) in 2012 showed continuing compliance with the objectives for carbon monoxide, benzene, 1,3-butadiene, lead and sulphur dioxide would not be exceeded. The 24 hour and annual mean objectives for PM_{10} had been met, but it was decided to retain the AQMA for this pollutant as evidence showed that a repeat in the meteorological conditions of 2003 could result in an exceedance of this objective. The AQMA was retained for NO_2 as the 2012 USA showed the annual mean objective at the background was borderline and at the roadside it had not been met; it was predicted that there would be continued exceedances at the roadside location.

The 2012 monitoring data shows a provisional result for PM_{10} it is not expected that the ratified data will show an exceedance. Automatic data presented for 2012 shows a slight increase of the NO_2 hourly mean limit the background and whilst a lower concentration in annual mean was observed the objective limit still continues to be exceeded at this location. The passive monitoring showed a decrease in all concentrations from the previous year except in one location. All roadside locations exceeded the annual mean objective whilst the only background location to exceed this objective was the monitoring point located at the Holloway bus garage (see table 2.2 for all of the air quality management reviews historically

undertaken). Section 3.4 details Islington's air quality in comparison with the air quality objectives as described by the latest Progress Report in May 2013.

Table 2.2. Previous Air Quality Management Reviews.

Year	Report	Action
2000	3rd Stage Review	AQMA declared (part of borough)
2003	Further Assessment NO_2	AQMA extended (whole of borough)
2003	Action Plan	
2003	USA	No detailed assessment required, AQMA retained
2004	Progress Report	
2005	Progress Report	
2006	USA	No detailed assessment required, AQMA retained
2007	Progress Report	
2008	Progress Report	
2009	USA	No detailed assessment required, AQMA retained
2010	Progress Report	
2011	Progress Report	
2012	USA	No detailed assessment required, AQMA retained
2013	Progress Report	

Many large cities in England and Wales are not meeting the limit value for NO_2, and in central London many road-side locations are not meeting the hourly limit for NO_2. Also, some parts of London are not meeting the daily limit value for PM_{10}. The European Union granted time extensions for compliance with the PM_{10} limit value to 2011, and for the NO_2 limit value an extension has been granted to 2015.

2.3 London Policies

The Mayor of London's Air Quality Strategy[8] seeks to provide measures to improve air quality in London and ensure the Air Quality Standards Regulations 2010 are met, particularly for particulates and NO_2. The main areas where emissions should be reduced include reducing emissions from transport by encouraging sustainable travel and cleaner vehicles, targeting air quality priority locations and encouraging behaviour change, reducing emissions from homes, businesses and industry (including new developments) and increasing awareness of air quality issues.

The Mayor of London's Transport Strategy[9] is a statutory document to support and shape development across London. The aims of the strategy include making the transport system

[8] Greater London Authority 2010. Clearing the Air. The Mayor's Air Quality Strategy.
[9] Greater London Authority 2010. Mayor's Transport Strategy.

safer and more efficient, encourage modal shift to walking, cycling and public transport, improve quality of life and the environment and improve opportunities for all Londoners. Transport's contribution to climate change must be reduced and air quality improved by promoting use of low emission vehicles.

2.4 Islington Policies

Islington's Core Strategy[10], which is part of Islington's Local Development Framework (LDF), outlines policies to improve the borough across a range of issues. This supersedes the majority of the Unitary Development Plan (UDP)[11]. Policy CS10 on Sustainable Design "seeks to minimise Islington's contribution to climate change and ensure that the borough develops in a way which respects environmental limits and improves quality of life". Parts of the UDP that have been retained that tackle air quality issues are:

- Env 16: development proposals are to avoid detriment air and water quality, and where possible seek improvements.
- Env 17: when considering planning applications the Council will seek to protect or enhance the amenities of the area, in particular regarding detrimental environmental effects, by consideration of appropriate planning conditions.
- Env 18: The Council is committed to implementing the National Air Quality Strategy, including encouraging developments that promote sustainable transport use.

Islington's Transport Strategy[12] sets out the Council's policies to improve the transport environment, and fulfils Islington's requirement to develop and adopt a Local Implementation Plan (LIP). These include, but are not limited to: making more effective use of the existing transport network and increasing capacity where practicable; encouraging healthier, more active forms of travel based on a road user hierarchy; keeping the transport network moving and minimising congestion; ensuring new housing developments are car free; reducing negative transport-related health impacts, particularly emissions; and reducing carbon emissions from land-based transport.

Specific programmes in the LIP Delivery Plan that have received funding to implement TfL policies include:

- Hornsey Road safety and environmental scheme.
- Archway gyratory and public realm improvements.
- King's Cross and Caledonian Road safety and environmental scheme.
- Highbury and Islington Station Square and Highbury gyratory.
- Finsbury Park safety and environmental scheme.
- Old Street roundabout.
- Connect 2 Route.
- Cycle training programme.
- School travel programme.

All of these programmes aim to tackle the issues of congestion, including traffic calming and improving traffic flows, walking and cycling improvements, which will work towards improving local air quality in the borough.

[10] www.islington.gov.uk/services/planning/planningpol/local_dev_frame/pol_corestrat
[11] www.islington.gov.uk/services/planning/planningpol/local_dev_frame/unit_dev_plan/Pages/default.aspx
[12] www.islington.gov.uk/services/parking-roads/Pages/Transport-Strategy.aspx

The Council have produced a design manual for Islington's streets, entitled Islington Streetbook[13], with the aim of improving the quality of the street environment and to deliver a high-quality, safe and accessible environment. This sets standards for those who may be involved in any street works throughout the borough, including the principles of sustainable streets, green procurement, recycling, materials, street furniture, trees and road and footway design. Islington strives to improve the local streets whilst minimising the overall environmental impact of the Council's activities.

[13] http://www.islington.gov.uk/services/planning/planningpol/pol_supplement/Pages/Streetbook.aspx

3. Air Pollution in Islington

3.1 Description of Local Authority Area

The London Borough of Islington is an inner-city borough sharing borders with the City of London, Hackney, Haringey and Camden. Densely populated with a culturally diverse community, Islington is recognised as having the least amount of green space per person of all the London boroughs. The majority of parks and open spaces are located in the north of the borough, whereas the south is predominantly mixed use residential/commercial. The southeast corner of the borough is part of the London Congestion Charge Zone. The main source of pollution is from road traffic as the A1 runs through the heart of the borough and is commonly used as a thoroughfare to travel through the city.

Islington is considered to be a desirable location for developers and is frequented by construction traffic. Recent large-scale developments include the Emirates Stadium and adjacent Queensland Road, Crossrail project and station improvements at Farringdon, Better Schools for the Future projects, along with a number of significant residential developments. Sustainable planning policies, both Islington's and that of the GLA, have led to a rise in biomass boilers and both gas and bio-diesel fuelled Combined Heat and Power (CHP) being included within new developments.

The borough is serviced by 10 London Underground Stations and a number of Overground stations servicing the North London line, Gospel Oak to Barking route and Hertford North to Kings Cross. Recently, the East London Line extension was opened which runs from Hackney to Croydon passing through Islington.

3.2 Pollutants of concern

3.2.1 Particulate Matter

Particles of varying sizes and sources exist in the air, but it is generally considered that fine particles ($PM_{2.5}$) are the most harmful to human health as they can enter deep into the lungs and do the most damage. Concentrations of PM_{10} are comprised of primary particles emitted directly into the atmosphere from sources such as fuel combustion and secondary particles from chemical reactions in the air. Natural particle sources include sea salt, and all small particles can travel long distances in the air. In the UK, the biggest man-made sources of PM_{10} are stationary fuel combustion and road transport, which includes direct engine emissions and particles from tyre and brake wear. Environmental tobacco smoke is a key contributor to indoor air pollution, contributing up to ten times more particulate matter compared to an idling engine.[14]

Health Effects

Fine particulate matter is widely acknowledged as having the greatest impact on human health, with fine particles ($PM_{2.5}$) having a significant impact. Fine particles have a disproportionate effect on vulnerable people, such as children, the elderly, and those with pre-existing heart and lung conditions. Short- and long-term health effects include respiratory and cardiovascular illness, and even death. The Institute of Medicine calculated that in 2008, 100 deaths were attributable to exposure to $PM_{2.5}$ in Islington.[15]

[14] Invernizzi G, Ruprect A, Mazza R. et al. Particulate matter from tobacco versus diesel car exhaust: an educational perspective. Tobacco Control 2004;13:219-221

[15] Miller, BG. (2010) Report on estimation of mortality impacts of particulate air pollution in London. London. Edinburgh: Institute of Medicine

Table 3.1. Number of deaths attributable in 2008 to exposure to $PM_{2.5}$ pollution in Islington Wards[16].

Ward	Total population	Attributable deaths
Barnsbury	11,087	6
Bunhill	11,089	6
Caledonian	13,161	7
Canonbury	10,653	5
Clerkenwell	10,399	5
Finsbury Park	13,522	7
Highbury East	11,529	6
Highbury West	14,096	7
Hillrise	11,936	6
Holloway	15,549	8
Junction	11,461	6
Mildmay	12,179	6
St. Georges	11,925	6
St. Marys	11,362	6
St. Peters	11,882	6
Tollington	13,284	7
TOTAL	**195,114**	**100**

When considering the types of particles in the air, metals and organic compounds are likely to have the greatest impact on health. Current research suggests that there is no safe level of exposure to $PM_{2.5}$, and long-term exposure is likely to cause the most serious health effects. The Government has estimated that the economic cost of the health impacts of poor air quality in the UK is around £15 billion, within a range of £8-17 billion[17]. The Environmental Audit Committee led an investigation into the effects and costs of air quality and the evidence presented stated that the contribution of fine particulate matter ($PM_{2.5}$) to poor air quality reduces life expectancy of all people in the UK by 7-8 months, and for those who are particularly sensitive, the reduction in life expectancy could be as much as 9 years[18].

3.2.2 Nitrogen Dioxide

Nitrogen dioxide (NO_2) is a gas formed through chemical reactions between nitric oxide (NO), which is released during fuel combustion, and oxygen. NO is not considered to be harmful to health at ambient concentrations, but NO_2 can be. NO_2 and NO are referred to together as oxides of nitrogen (NO_x). Primary sources of NO_x include vehicles and energy consumption, including gas boilers.

Health Effects

Nitrogen dioxide has different effects on health to fine particles, and there is no evidence to suggest a link with mortality. However, it is associated with respiratory conditions, such as inflammation of the airways. Long-term exposure is thought to decrease lung function, increase the risk of developing respiratory diseases and increase the response to allergens. NO_x also reacts with other pollutants in the presence of sunlight to form NO and O, the latter combining with molecular oxygen (O_2) to form ozone (O_3), which can damage airways and reduce lung function.

[16] Greater London Authority 2012. Air Quality Information for Public Health Professionals – London Borough of Islington.
[17] Defra 2010. Air Pollution: Action in a Changing Climate.
[18] Environmental Audit Committee 2010. Air Quality. Fifth Report of Session 2009-10.

Impact on Ecosystems

High levels of NO_x can affect vegetation, including leaf damage and reduced growth. It can contribute to acidification and eutrophication of land and water systems, leading to damaged habitats and loss of a variety of life forms. The formation of ozone through NO_x chemical reactions can damage vegetation leading to a loss in yield, in addition to the fact ozone is a greenhouse gas.

3.3 Pollution Monitoring

Monitoring pollution is essential for managing air quality within the borough as it tells us what the current levels of pollutants are, and also how effective policies are in reducing concentrations over time. The London Borough of Islington has been monitoring air quality for more than 20 years and it is an AQMA for NO_2 and PM_{10}. The monitoring focusses mainly on these two pollutants.

3.3.1 Automatic Monitoring

There are currently two automatic monitoring stations in the borough; one adjacent to Holloway Road, near The Nag's Head shopping centre, and the other at Islington's Ecology Centre (see figure 3.1 and table 3.1 for details). This is a Council-run nature reserve, park and educational facility in an area of Islington known as 'Drayton Park'. The Ecology Centre is categorised as an 'urban background' location, and the results presented are representative of pollution levels to which most Islington residents are exposed to most of the time. The Holloway Road site is categorised as a 'roadside' location, and the results are indicative of the highest pollution levels found in the borough. Both PM_{10} and NO_2 are measured at these sites, and carbon monoxide is also monitored at Holloway Road.

The data from both of the automatic air quality monitoring sites is collected on behalf of the Council by the Environmental Research Group (ERG) at King's College London. The ERG calibrate each analyser and validate and ratify the collected data to ensure its validity for comparison with the National Air Quality objectives. The data collected by the ERG across London is collated and presented on their London Air Quality Network (LAQN) website[19]. The roadside location is called 'Islington – Holloway Road' and the urban background is called 'Islington – Arsenal' by the LAQN. These both use the tapered element oscillating microbalance method (TEOM) with the volatile correction method (VCM).

[19] www.londonair.org.uk

Figure 3.1. Map of automatic monitoring sites.

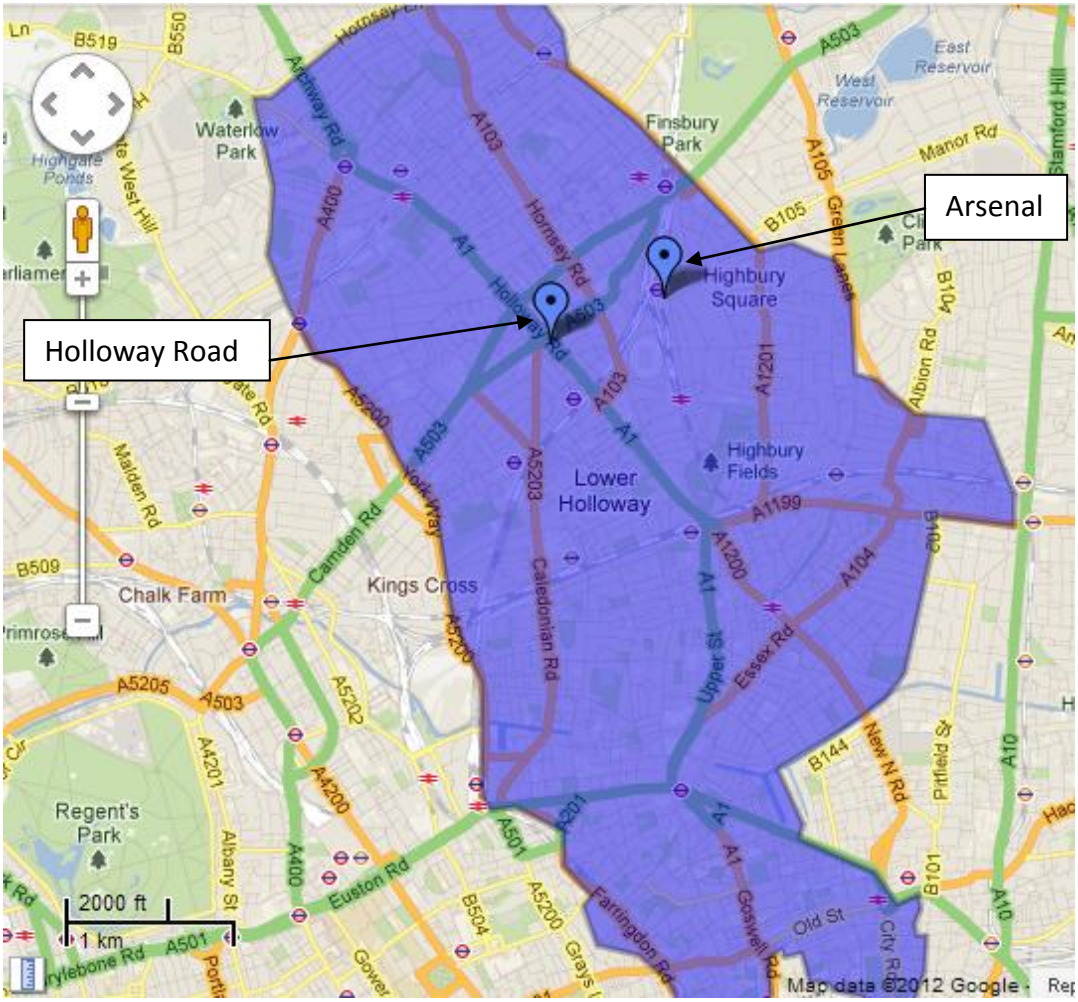


Table 3.1. Details of automatic monitoring sites.

Site Name	**Site Type**	**OS Grid Ref**	**Pollutants Monitored**	**Relevant Exposure?** *(Y/N with distance (m) to relevant exposure)*	**Distance to kerb of nearest road** *(N/A if not applicable)*	**Worst-case Location?**
Arsenal	Urban Background	X 531338 Y 186031	NO_2 PM_{10}	Y (1m)	N/A	N
Holloway Road	Roadside	X 530697 Y 185742	CO NO_2 PM_{10}	Y (1m)	3m	Y

The Arsenal automatic monitoring site was introduced in 2007, prior to this urban background monitoring for PM_{10} and NO_2 was undertaken at an automatic site at 159 Upper Street. Two gravimetric PM_{10} samplers were installed in selected parks in Islington at Foxham Gardens and Duncan Terrace Gardens in 2006. These were discontinued at the end of 2009 due to funding constraints. For historical data information see section 3.5.

3.3.2 Non-Automatic Monitoring

NO_2 is monitored using diffusion tubes at 21 locations across the borough, and these are analysed by Lambeth Scientific Services. There are 9 roadside locations and 10 background locations (see figure 3.2 and table 3.2 for details). Monitoring is also conducted adjacent to the Metroline bus garage in the north of the borough using two diffusion tubes. One is near the entrance of the garage and the other is further away near a children's playground. A colocation study between three diffusion tubes and the automatic monitoring site at Holloway Road has been in operation since 2004. This is to check the reliability of the diffusion tube data in comparison with the automatic monitor and apply a bias adjustment factor to the diffusion tube results.

Figure 3.2. Map of non-automatic monitoring sites.

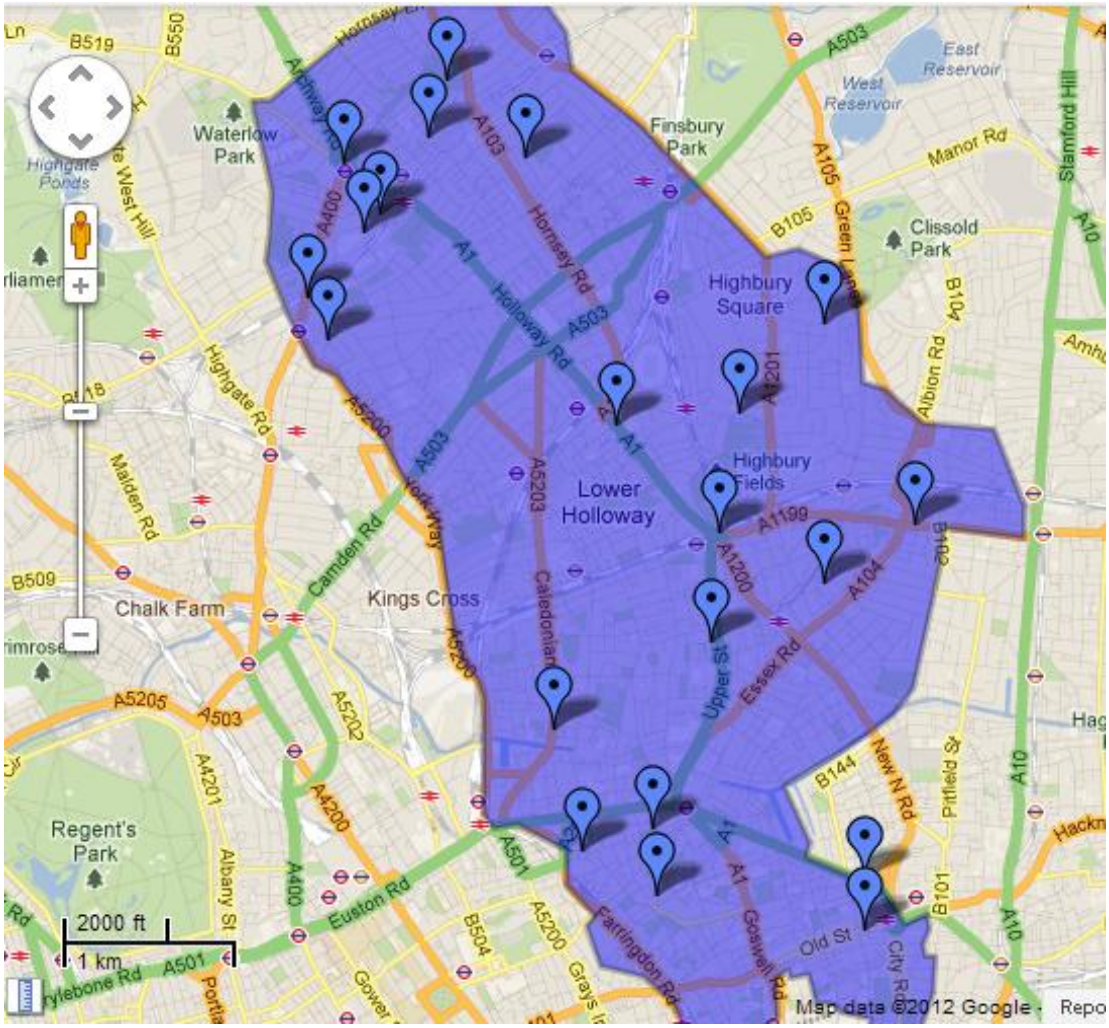


Table 3.2. Details of the non-automatic monitoring sites.

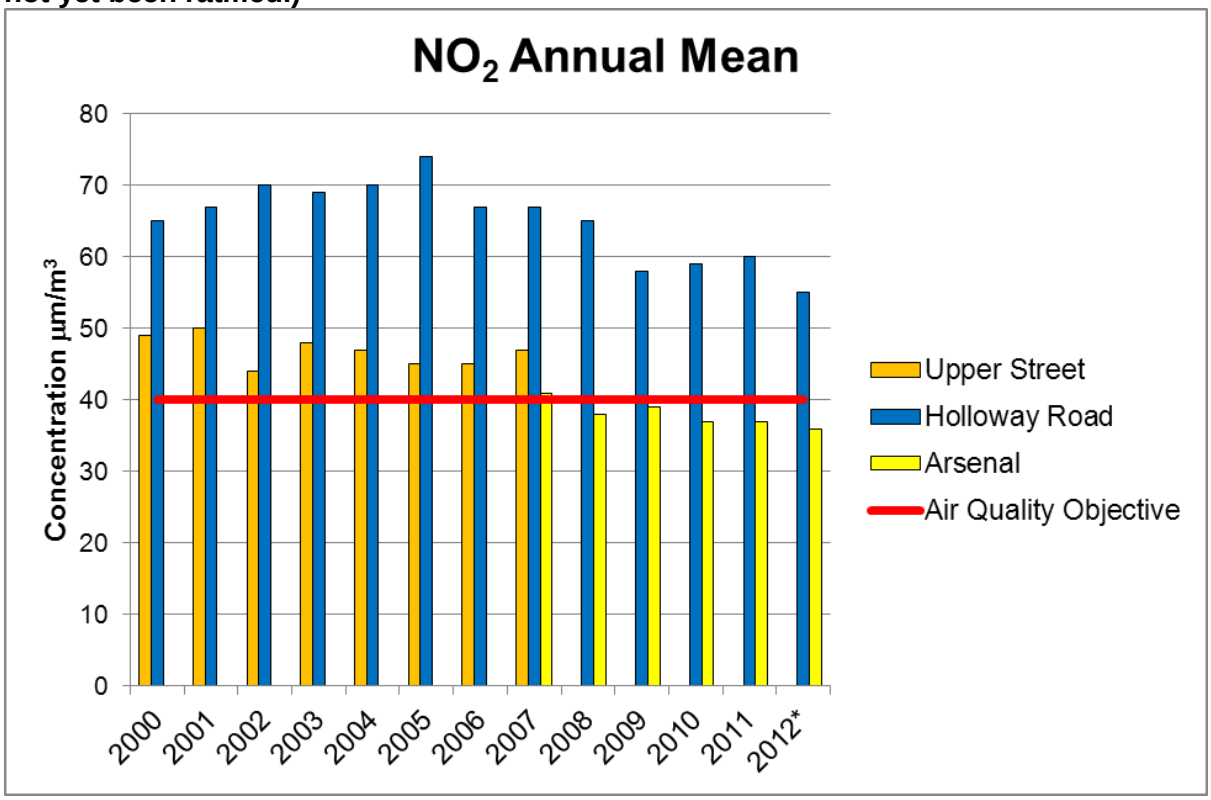
Site Name	**Site Type**	**OS Grid Ref**	**Pollutants Monitored**	**Relevant Exposure?** *(Y/N with distance (m) to relevant exposure)*	**Distance to kerb of nearest road** *(N/A if not applicable)*	**Worst-case Location?**
Caledonian Road	Roadside	X 530721 Y 183584	NO_2	Y (0.5m)	0.5m	N
Roseberry Avenue	Roadside	X 531336 Y 182599	NO_2	Y (0.5m)	0.5m	N
City Road	Roadside	X 532566 Y 182736	NO_2	Y (0.5m)	0.5m	N
Old Street	Roadside	X 532577 Y 182429	NO_2	Y (0.5m)	0.5m	N
Highbury Corner	Roadside	X 531669 Y 184743	NO_2	Y (0.5m)	0.5m	N
Balls Pond Road	Roadside	X 532820 Y 184822	NO_2	Y (0.5m)	0.5m	N
Holloway Road	Roadside	X 531034 Y 185349	NO_2	Y (0.5m)	0.5m	N
Junction Road	Roadside	X 529204 Y 186093	NO_2	Y (0.5m)	0.5m	N
Archway Close	Roadside	X 529396 Y 186848	NO_2	Y (0.5m)	0.5m	Y
Percy Circus	Urban Background	X 530901 Y 182855	NO_2	Y (1m)	N/A	N
Myddleton Square	Urban Background	X 531317 Y 182998	NO_2	Y (1m)	N/A	N
Arran Walk	Urban Background	X 532303 Y 184460	NO_2	Y (1m)	N/A	N
Sotheby Road	Urban Background	X 532252 Y 185983	NO_2	Y (1m)	N/A	N
Highbury Fields	Urban Background	X 531755 Y 185454	NO_2	Y (1m)	N/A	N
Lady Margaret Road	Urban Background	X 529325 Y 185813	NO_2	Y (1m)	N/A	N
Zoffany Park	Urban Background	X 529881 Y 187022	NO_2	Y (1m)	N/A	N
Elthorne Park	Urban Background	X 529987 Y 187342	NO_2	Y (1m)	N/A	N
Turle Road	Urban Background	X 530469 Y 186891	NO_2	Y (1m)	N/A	N
Waterloo Terrace	Urban Background	X 531625 Y 184100	NO_2	Y (1m)	N/A	N
Bus 1	Urban Backround	X 529521 Y 186443	NO_2	Y (1m)	N/A	N
Bus 2	Urban Background	X 529618 Y 186558	NO_2	Y (1m)	N/A	N

3.4 Comparison of Monitoring Results with Air Quality Objectives

3.4.1 Nitrogen Dioxide

The data at the roadside Holloway Road monitoring station shows a general decrease in NO_2 concentrations since 2005, but the decrease since 2009 has not been significant and annual concentrations are exceeding the air quality objective (see figure 3.3). The concentrations at the background Arsenal monitoring station have not shown a significant decrease since 2008, and even though the objective is being met, the concentrations are close to the limit value.

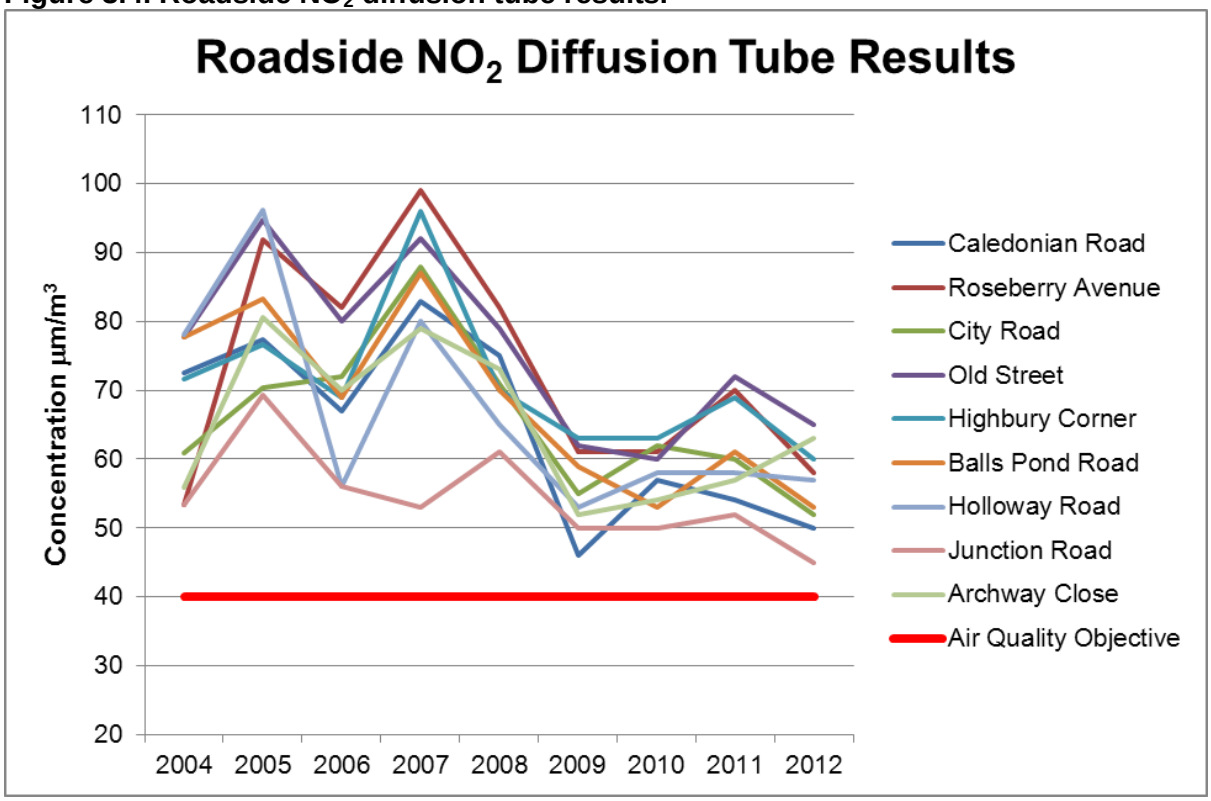
Figure 3.3. Annual NO_2 concentrations at the automatic monitoring sites. (* Data has not yet been ratified.)



Results from the roadside diffusion tube locations shows that all sites are not meeting the air quality objective, but there has been an overall decrease in NO_2 results since 2007. The data shows an increase in concentrations in 2010, but there was a decrease in most locations in 2011 (see figure 3.4).

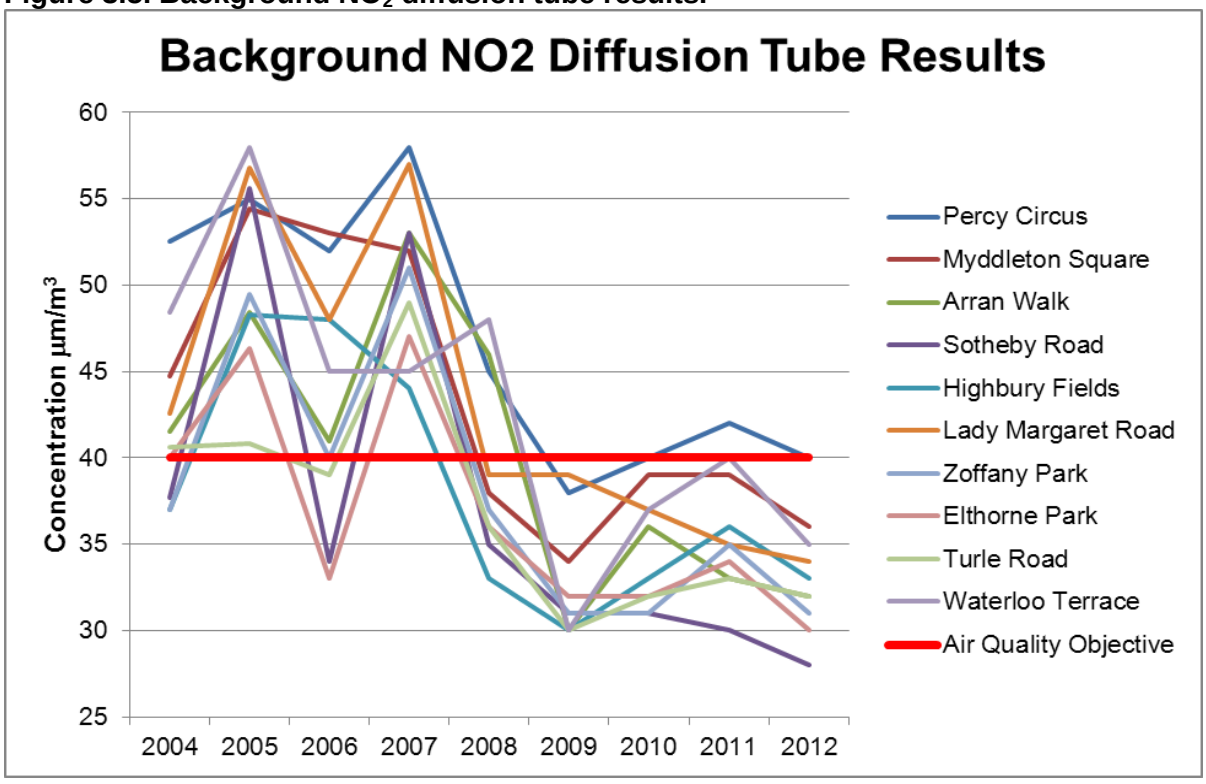
Monitoring of NO_2 at the Holloway automatic monitoring station (roadside) during 2012, shows a reduction of 5µg/m^3 since 2011. The Arsenal (urban background) station shows only a reduction of 1µg/m^3. The number of hourly exceedances of the 1-hour mean objective had decreased from 2 to 0 at Holloway Road and increased from 0 to 1 at Arsenal.

Figure 3.4. Roadside NO_2 diffusion tube results.



The results for the background diffusion tube locations shows an overall increase in concentrations since 2008; however, there has been decrease in concentrations since 2010 with all of the locations meeting the air quality objective in 2012 (see figure 3.5).

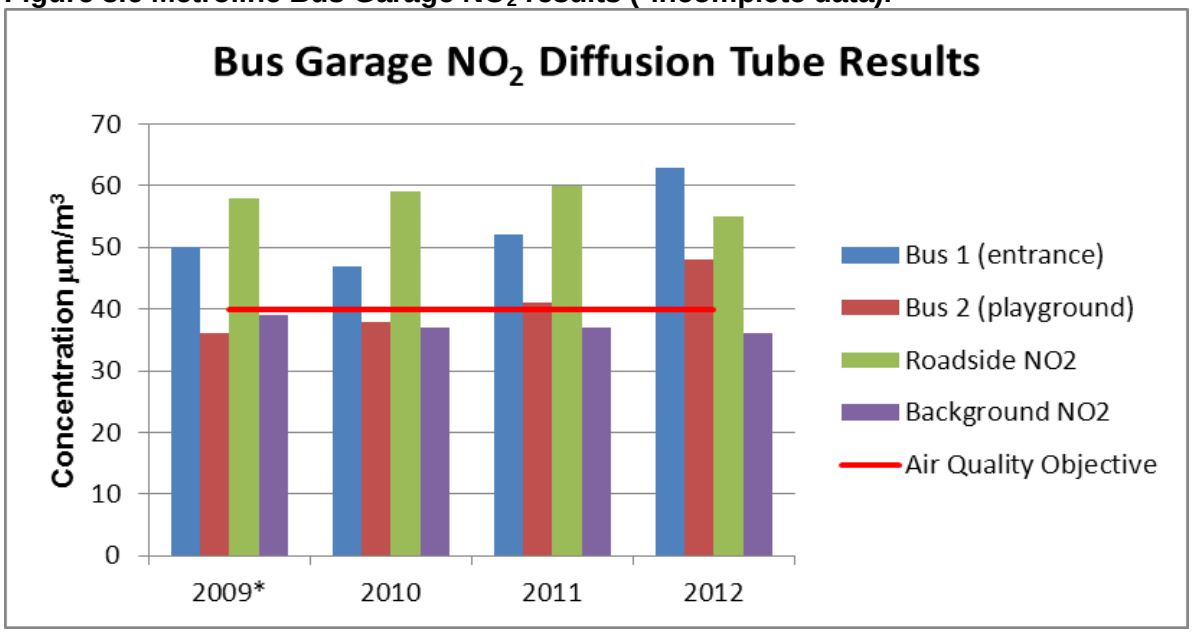
Figure 3.5. Background NO_2 diffusion tube results.



The diffusion tubes by the Metroline Bus Garage in the north of the borough were set up in 2009, with tube 1 by the entrance to the garage and tube 2 by a children's playground further down Pemberton Gardens. The garage is located in a dense residential area, and it houses approximately 200 Metroline buses that serve a number of routes through Islington. The Council has historically received a number of complaints about buses queuing on Pemberton Gardens on their approach to the garage, particularly late at night. It was decided to set up two diffusion tubes here to attempt to quantify the air quality impact the buses have on this locality.

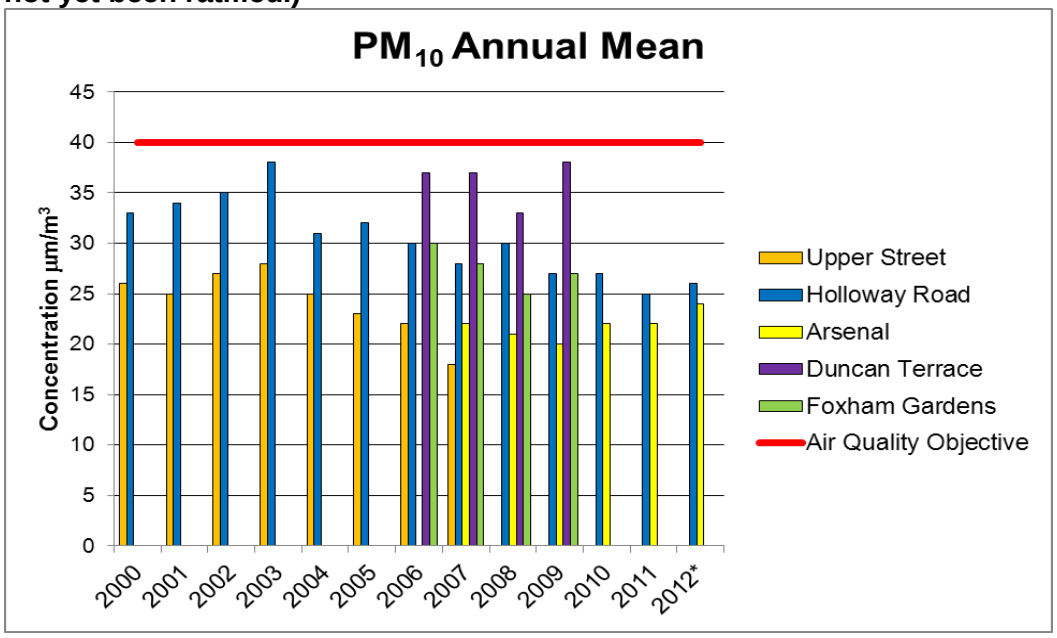
The data set for 2009 is incomplete, as monitoring started in May of that year, but the results show that there has been an increase in NO_x emissions by both the entrance to the garage and also by the playground (see figure 3.6). This is in line with the roadside data, which has shown an increase, but they do not correlate with that of the background levels. This is expected as there are high residential buildings either side of the garage entrance creating a canyon effect and not allowing for adequate dispersion of the diesel emissions. Continuous dialogue between the Council and Metroline has achieved some improvements in reducing the numbers of idling buses and encouraging smoother flows of traffic, but more needs to be done to reduce the levels that would be representative of a normal background location.

Figure 3.6 Metroline Bus Garage NO_2 results (*incomplete data).



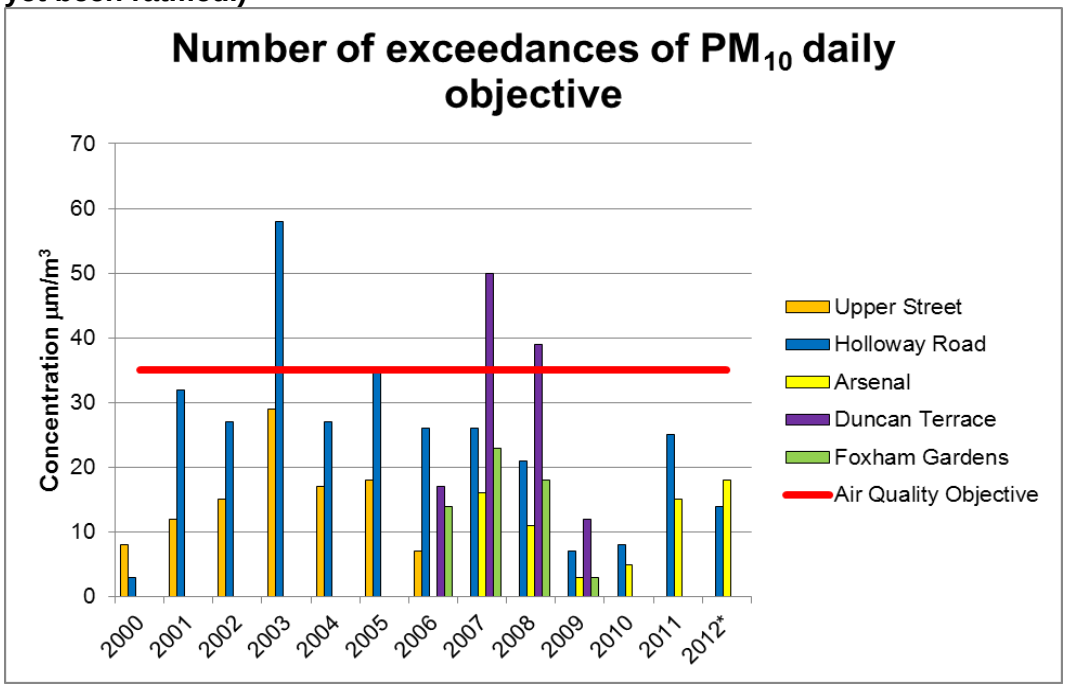
3.4.2 Particulate Matter (PM_{10})

Figure 3.7 Annual PM_{10} concentrations at the automatic monitoring sites. (* Data has not yet been ratified.)



Islington has consisitently met the PM_{10} annual mean objective since monitoring began in 2000; however, a fluctuation of results has been observed.

Figure 3.8 Daily PM_{10} concentrations at the automatic monitoring sites. (* Data has not yet been ratified.)



The daily objective limit for PM_{10} has not been exceeded since 2008; Islington has chosen to retain the AQMA for this objective. A repeat of weather conditions, as those seen in previous years, may cause an increase in the number of days when PM_{10} concentrations rise above the objective limit.

4. Air Quality and Climate Change

Over the last century there has been an increase in emissions from greenhouse gases (GHGs), which has been associated with a rise in global temperatures. If temperatures continue to rise this could lead to more extreme weather events in the UK, including hotter and drier summers, flooding and rising sea levels, with potentially catastrophic consequences to our economy and environment. Air quality is intrinsically linked with climate change as emissions of other pollutants, such NO_x and particulates, are usually associated with emissions of GHGs, such as CO_2 as both sets of emissions usually arise from the same combustion processes.

Warmer temperatures and more frequent hot sunny days lead to an increase in ground level ozone concentrations, which is formed by reactions of sunlight with NO_x. Ozone is an irritant and can exacerbate pre-existing respiratory and cardiovascular conditions. Air quality is affected by many weather-related factors, such as temperature, wind dispersion and humidity, which are all affected by a changing climate. Conversely, air pollution has both a direct and indirect impact on the climate, for example soot particles (black carbon) absorb the sun's energy and contribute to global warming.

The National Air Quality Strategy recognises that where practicable and sensible, policies tackling climate change should be synergistic with air quality policies, but this is not always the case. For example energy strategies that include biodiesel or biomass usually offer a reduction in CO_2 but with a gain in particle and NO_x emissions, and there can be practical difficulties in using biomass efficiently as a fuel. Diesel vehicles are more fuel efficient and produce less CO_2 than petrol; however, they emit 22 times more particulates and 4 times more NO_2 which has a detrimental effect on air quality and health.

5. Actions

1. Transport

a. Encouraging changes in driver behaviour

Islington became the first borough in the country to introduce a 20 mph limit on all roads. Further driver education is planned to ensure that emissions are reduced whilst maximising fuel efficiency. This programme will target all drivers including residents, schools, businesses and the Council's own fleet. Awareness raising exercises, such as car sharing and car free days, will complement this action.

b. Reducing emissions from idling vehicles

The Road Traffic (Vehicle Emissions) (Fixed Penalty) (England) Regulations 2002, were adopted by Islington in 2009. Targeted enforcement of this legislation will take place around hot-spot areas, including bus terminals, schools and programmed events, to reduce numbers of idling vehicles and raise awareness.

c. Reducing personal car use

Islington currently reserves over 200 car club spaces across the borough. This provision will be reviewed with a view to providing a range of vehicle types available through these schemes and to encourage car-club organisations to use low emission vehicles.

We will conduct a review into potential incentives that could be given to residents if they choose to return their parking permit.

d. Emission-based parking surcharges

Islington operates an emissions based parking charge for residential permits. Since the introduction of this scheme a noticeable increase in the number of lower emission parking permits has been observed and this will be continued.

e. Reducing emissions from taxis

A best practice guide for taxi drivers will be produced. We will work with mini-cab offices to encourage greening of their fleet as well as providing guidance on efficient driving in order to reduce fuel consumption and emissions.

f. Low Emission Zone feasibility study

We will conduct a study into the feasibility of having an Islington low emission zone.

2. Planning & Development

a. Determining the impacts of new developments on air quality

All new major developments and new residential planning applications will be required to conduct an air quality assessment. Developers will be required to meet an "air quality neutral" standard as well as ensuring that new receptors introduced into the borough will not be exposed to high levels of ambient air pollution.

The scale of the air quality assessment required will be dependent on the development. Factors such as location, use class and energy and transport strategies will be taken into account.

b. Reducing emissions at construction sites

Islington has a dedicated Construction Impacts Monitoring Officer to proactively monitor all major developments. This role has been in place since 2007 and is identified as good practice in the Mayor's Air Quality Strategy 2010. This role will be developed to create exemplar working practice on construction sites in the borough. An award scheme is to be developed as well as a new Islington Code of Construction Practice, which will seek to further minimise construction-related emissions.

The existing requirement for construction management plans will be developed to include best practice measures to reduce pollutant emissions from construction and demolition.

Developers will be encouraged to achieve a BREEAM "excellent" rating and obtain maximum points for the pollution section.

c. Reducing transport emissions at new developments

New developments will be car free and will only allow spaces for essential vehicles and car clubs. Management plans are required to be submitted for new developments showing how deliveries and building services will be controlled in order to reduce congestion on local roads. Development-specific travel plans should be adopted.

3. Energy Usage

a. Improving energy efficiency

Increasing energy efficiency requirements of new developments will reduce the amount heating energy needed. This is expected to reduce emissions of CO_2, NO_x and PM_{10}, as well as helping residents to avoid fuel poverty.

We will work with housing providers, including private landlords, to give advice on measures that can be taken to reduce emissions by improving energy efficiency in existing homes.

b. Cleaner energy

Developers will be encouraged to use non-combustion renewable energy technologies to ensure compliance with carbon-reduction targets, whilst reducing pollutant emissions.

A detailed air quality assessment will be required for biomass or bio-fuel powered energy generation.

c. Providing advice on energy saving and fuel use

The Energy Advice Team will help residents improve both their health and the local environment through changing the way different energy sources are used. Help, advice and support will be provided to Islington, Camden and Hackney residents on using insulation to reduce their use of polluting fuels, whilst encouraging the adoption of Ultra Low NO_x boilers.

4. Businesses

a. Adoption of a green procurement guide for businesses

A green procurement guide will be written for Islington businesses; this will include utilising local suppliers to reduce transport emissions.

b. Business Engagement Programme

This action is based on the successful "City Air" initiative and will initially target the borough's NO_2 focus areas. The aim is to help businesses reduce their emissions and identify practical measures to improve local air quality from their operations. This includes adoption of low emission deliveries, better building management and reduced energy use; whilst generating an improvement in the local area. This will assist our major shopping areas to boost economic activity.

We will work with neighbouring boroughs to extend existing programmes, such as the Zero Emission Network (ZEN) with Hackney around the Old Street area.

5. Air quality awareness raising initiatives

a. Raise awareness regarding personal exposure

Borough-wide walking and cycling maps will be produced detailing less polluted routes through Islington. Site-specific maps for schools and Council buildings will also be produced.

By working with colleagues in NHS Islington we will advise on the effects of exposure to poor air pollution within the existing NHS Healthcheck service.

The Energy Advice Team will assist residents in signing up for the AirTEXT service as well as disseminating advice about how personal exposure can be reduced.

Officers will work with local groups to inform and advise about best practice measures to reduce emissions and limit personal exposure. Outreach programmes to work with Breath Easy and other similar groups. The Islington Environment Forum will re-convene later this year and the first subject matter for discussion is air quality. This event will serve as part of the Air Quality Strategy consultation process.

The Air Quality Summit II will be held in Islington in November 2013, this will be the second joint summit between Islington and Camden Councils and chaired by the Joint Director of Public Health. The event will look back on what has been achieved in the two years since the first summit and review the next steps to be taken to improve local air quality and protect public health.

Islington Car Free Day is to take place in partnership with the "Cally Road Festival" in September 2013. Officers and community groups will be on hand to help residents make car free choices and will showcase the work being carried out around the borough to reduce pollutant concentrations.

Islington will work with the GLA and other London boroughs to develop a campaign entitled "Breathe Better Together". This is a service that will encourage behaviour change on days with high levels of pollution.

In collaboration with the GLA, Sustrans and other boroughs, Islington will enrol Air Quality Champions. These will be individuals or groups from across Islington that will work with the Council to implement measures to improve local areas and reduce emissions.

b. Provision of air quality information

Islington will continue to lead on the London wide AirTEXT service which provides pollution forecasts. Further information regarding temperature, UV and pollen is also provided to allow residents to change their behaviour that will improve overall health and well-being. Information about these services will be displayed in health centres.

c. Promoting air quality in Islington's schools

A school engagement programme is targeted at Islington primary schools and will work with pupils, teachers, parents, governors and the local community to use citizen science to evaluate pollution around the school sites. The programme will be integrated into the science curriculum to provide a greater understanding of the sources and effects of air pollution.

6. Public Realm

a. Cycling

Cycle parking will be increased around the borough, particularly around shopping centres and housing estates. Improvements to junctions and routes around Regent's Canal are being developed. These measures will seek to reduce cyclists' exposure to poor air quality and encourage non-cyclists to make a modal shift onto safer highways with clear cycle routes.

b. Walking

Cleaner walking routes across the borough will be mapped and advertised. Promotion of walking will be included within Islington's Joint Strategic Needs Assessment to tackle physical inactivity and obesity.

c. Buses

Islington will work with Transport for London (TfL) and Metroline to ensure that only the cleanest buses in the TfL fleet operate through the borough. Routes using the Holloway bus garage will be targeted first, followed by services around NO_2 focus areas.

d. Trees

Tree planting in the borough will be increased through existing plans and through planning requirements. Research will be conducted to identify species that reduce PM_{10} concentrations.

e. Highways

Islington will ensure that contractors conducting works to the Highways adhere to best practice measures to reduce local air pollution, such as no engine idling and dust suppression techniques. We will work with TfL to ensure that all new road improvements are considerate of walking and cycling to create safer, cleaner spaces for active travel.

f. Canals

We will work with the Canal & River Trust and local communities to ensure that emissions of smoke and diesel particulates from residential boats are reduced. Currently, the requirements of smoke control orders that apply on land do not apply to the waterways; therefore, local agreements are required to protect the health of boaters and surrounding residents.

7. Cleaner Air Borough

Islington is committed to the GLA's Cleaner Air Borough initiative and will strive to achieve a Kitemark® award. The programme specifies 5 criteria to be followed by boroughs.

i. Political Leadership

The Cleaner Air Borough initiative is supported by the leader of Islington Council, Catherine West.

ii. Taking Action

The London Borough of Islington will seek to include air quality improvements within all policy areas and take innovative steps to reduce emissions, concentrations and exposure.

iii. Lead by Example

The London Borough of Islington will ensure that it takes all best practical measures to reduce emissions from its own buildings. A review of energy requirements will be undertaken and identify areas where insulation can be improved; replacement energy infrastructure will be low emission. Car parking spaces at Council buildings will be reserved for fleet vehicles and essential car users only. Measures will continue to be taken to further reduce emissions from the Council's fleet with the aim of achieving Silver and Gold status in the Freight Operator Recognition Scheme (FORS). Other measures to be taken will include eco-driver training, amalgamation of vehicle-based services and the development of a 'last mile' logistics scheme for deliveries. Suppliers will be encouraged to take similar steps through the procurement process.

iv. Use the Planning System

All new developments will be required to achieve air quality neutral or better status. Section 106 agreements will seek to achieve urban realm improvements around major developments. Air quality assessments will be required for all major developments and new residential planning applications.

v. Informing the Public

The London Borough of Islington will work as part of the community to develop and disseminate air quality policy and information to residents and businesses. Awareness raising events, such as Islington Car Free Day, Air Quality Summit II and the Islington Environment Forum have already been planned. The Air Quality Working Group was formed in January 2013 to consult in advance of this draft, as recommended by the Air Quality Scrutiny Panel.