Air Quality in Hillingdon

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Hillingdon Air Quality Brochure

This brochure tells you about air quality in Hillingdon and the actions the Council are taking in regard to Air Quality Management.

The air quality data used in the brochure are fully ratified data for the year 2001. The latest air quality data for Hillingdon can be obtained from the UK National Air Quality Information web site - http://www.airquality.co.uk/archive/index.php.

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Introduction

Air Quality in Hillingdon has improved over the years. Cleaner air has been achieved through regulating industry, using cleaner fuels in our homes and by progressively tightening emissions standards for vehicles and these improvements look set to continue. Nevertheless, air pollution still presents a challenge. Road traffic contributes significantly to air pollution in Hillingdon, as does the presence of Heathrow Airport in the south of the borough where emissions from airport-related activities and aircraft all contribute to the poor air quality experienced in certain parts of Hillingdon.

The main pollutants of concern in Hillingdon are fine particles (PM_{10}) and nitrogen dioxide. Fine particles (PM_{10}) are small enough to penetrate deep into the lungs and so potentially pose significant health risks. Nitrogen dioxide can irritate the lungs and lower resistance to respiratory infections such as influenza.

Air pollution levels in Hillingdon will not normally present a problem to people in general good health, but people with lung diseases or heart conditions may be at risk. The following table indicates possible health effects of increasing levels of pollution. The pollution bands for Hillingdon are updated daily on the National Air Quality Information web site - http://www.airquality.co.uk.

Pollution Band

1–3 (LOW)

Effects are unlikely to be noticed, even by people who know they are sensitive to air pollutants

4–6 (MODERATE)
Mild effects are unlikely to require action, but sensitive people may notice them

7–9 (HIGH)
Sensitive people may notice significant effects, and may have to act to reduce or avoid them (for example, by reducing times pent outdoors). Asthmatics will find that their reliever inhaler should reverse the effects of pollution on their lungs

10 (VERY HIGH)
The effects of high levels of pollution on sensitive people may worsen when pollution becomes very high

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Managing Air Quality

The UK Air Quality Strategy

The Government and devolved administrations are committed to meeting people's right to clean air. It is essential for a good quality of life. People have a right to expect that the air they breathe will not harm them. Air quality in the UK is now generally very good, but there are still sometimes unacceptably high levels of pollution that can harm human health and the environment.

The Air Quality Strategy sets out how we can protect human health and the environment by reducing pollution. It sets health-based standards for the eight main air pollutants and objectives for air quality, to be achieved by specific, dates for the whole UK.

The Strategy deals with pollutants that are all known to harm human health and which occur widely throughout the UK, caused mainly by vehicles and industry. They are:

- Benzene
- 1,3-butadiene
- Carbon monoxide
- Lead
- Nitrogen dioxide
- Particles (PM_{10})
- Sulphur dioxide
- Ozone

Local authorities play a key role in improving air quality. They do this through regulating industry and through the system of Local Air Quality Management (LAQM) for the first seven of the above pollutants. The Government have decided that ozone cannot be managed locally and will be addressed through national and international measures.

Local Air Quality Management (LAQM)

Throughout the LAQM process, local authorities must consult widely with other stakeholders. They should carefully consider the relative contributions of industry, transport and other sources of local air pollution. They also have a range of measures to help achieve the objectives. These include strategies for managing local air quality, smoke and traffic. Land-use planning and local transport plans will also have a direct effect on air quality.

Where a local authority considers that one or more of the air quality objectives is unlikely to be met on time, it must declare an Air Quality Management Area (AQMA) covering the part of its area where the problem lies. The local authority must then draw up an action plan, setting out what it will do to work towards achieving the objectives within the AQMA.

Objectives included in the Air Quality Regulations 2000 and (Amendment) Regulations 2002 for the purpose of Local Air Quality Management			
Pollutant	**Air Quality Objective**		**Date to be achieved by**
	Concentration	**Measured as**	
Benzene	16.25 μg/m^3	running annual mean	31.12.2003
1,3 Butadiene	2.25 μg/m^3	running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	maximum daily 8-hour mean	31.12.2003
Lead	0.5 μg/m^3 0.25 μg/m^3	annual mean annual mean	31.12.2004 31.12.2008
Nitrogen dioxide[c]	200 μg/m^3 not to be exceeded more than 18 times a year 40 μg/m^3	1 hour mean annual mean	31.12.2005 31.12.2005
Particles (PM_{10}) (gravimetric) All authorities	50 μg/m^3 not to be exceeded more than 35 times a year 40 μg/m^3	24 hour mean annual mean	31.12.2004 31.12.2004
London authorities (provisional)	50 μg/m^3 not to be exceeded more than 10 times a year	24 hour mean	31.12.2010
London authorities (provisional)	23 μg/m^3	annual mean	31.12.2010
Sulphur dioxide	350 μg/m^3 not to be exceeded more than 24 times a year 125 μg/m^3 not to be exceeded more than 3 times a year 266 μg/m^3 not to be exceeded more than 35 times a year	1 hour mean 24 hour mean 15 minute mean	31.12.2004 31.12.2004 31.12.2005

*1 μgm^{-3} means that one cubic metre of air contains one microgramme (one millionth of a gramme) of pollutant.

Hillingdon's Review and Assessment of Air Quality

Under the LAQM process Hillingdon has undertaken a Review and Assessment of air quality in the Borough. The review estimated current and future air pollution levels using data from the monitoring stations as well mathematical modelling techniques.

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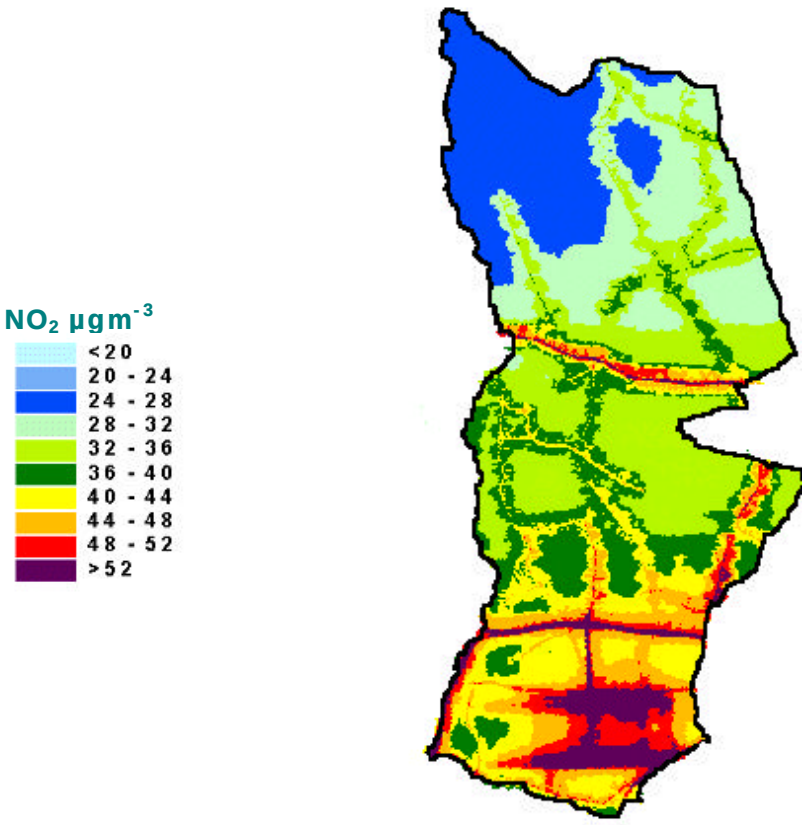
Based on this study it was concluded that the Government's targets for the annual mean objective for nitrogen dioxide will not be met by the required dates. This map shows the latest detailed modelling for the predicted concentrations of annual mean nitrogen dioxide in 2005. This map takes into account the new emissions factors for vehicles as issued by the Government in 2002.

Estimated Concentrations of NO_2

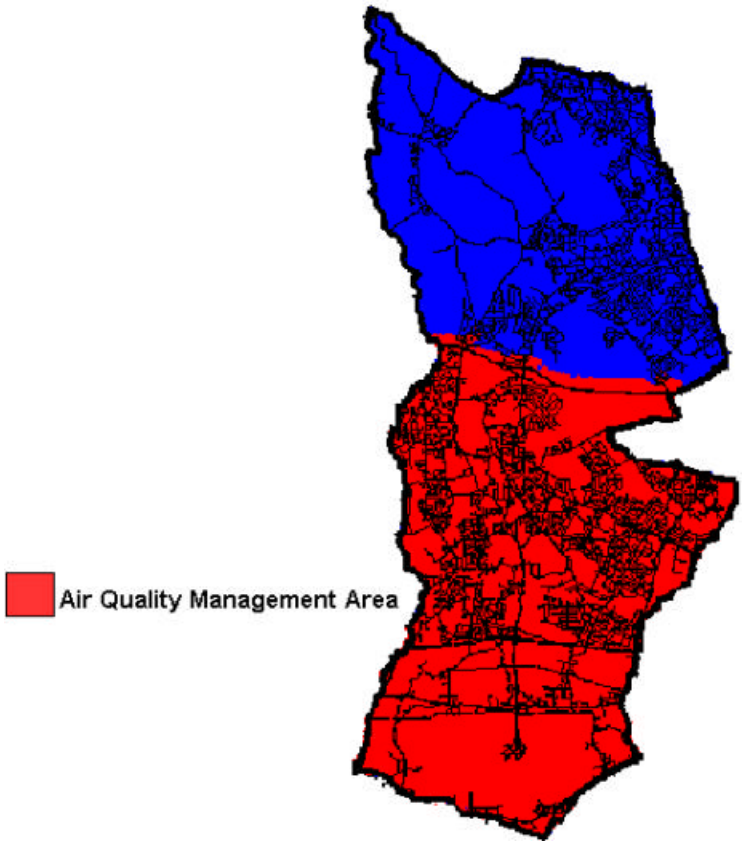


NO_2 Annual Average Concentration 2005

Hillingdon Air Quality Management Area

Based on this Review and Assessment of air quality in Hillingdon, an Air Quality Management Area (AQMA) has been declared for nitrogen dioxide. The Air Quality Management Area stretches from the A40 corridor to the southern Borough Boundary. The boundary includes the A40 Road corridor from the western boundary along to and incorporating Northolt Aerodrome up to the Chiltern mainline railway then following the railway line to the eastern boundary of the Borough. In the following map, the red area represents the extent of the AQMA.

Air Quality in Hillingdon



Hillingdon's Air Quality Action Plan

A written action plan is being produced setting out the actions that will need to be taken to reduce air pollution in Hillingdon. Involvement from a wide range of stakeholders will be needed to look at a range of options to improve the air quality including Council departments, neighbouring authorities, Government bodies and regulators, businesses and industry and local residents.

The development of the Action Plan requires full consultation throughout the process. It is essential to have the support of people in Hillingdon to implement the measures necessary for improving air quality in the Borough.

Typical local measures will look at transport to:

- promote more sustainable transport choices for both people and for moving freight;
- promote accessibility to jobs, shopping, leisure facilities and services by public transport, walking and cycling; and
- reduce the need to travel, especially by car.

The continued collection and analysis of air quality monitoring data will be an important part of Hillingdon's action plan. It provides real time data for the air quality in the area and will be used to monitor the effectiveness of any measures put in place to try and reduce pollution both locally and nationally. It also provides the scientific background for the dispersion modelling work carried out as part of the review and assessment process.

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Air Pollution Monitoring

Continuous Monitoring

This involves the use of complex, precision analysers in custom-built designed cabinets. It gives real-time data of a range of pollutants and is used in order to check accurately the pollution levels in an area and to check compliance with the Government's air quality standards. Hillingdon has three continuous monitoring sites.

West Drayton (Site name - London Hillingdon)
Air Pollution has been measured in Hillingdon since 1996 using the automatic air monitoring station at West Drayton which forms part of the Department of Environment, Food and Rural Affairs (DEFRA) Automatic Urban and Rural Monitoring Network (AURN).

The monitoring station is within a self-contained, air-conditioned housing located on an open grass area approximately 2.5 metres from the kerb of a residential road. The site is bordered on three sides by residential roads and on the fourth by the busy M4 motorway, approximately 30 metres distance. The manifold inlet is approximately 3 metres high. The general area is open and protected from the M4 by trees.

The following pollutants are continuously monitored:

Nitrogen Dioxide
Particulate Matter (PM_{10})
Carbon Monoxide
Ozone
Sulphur dioxide

Ruislip
Hillingdon have a second monitoring site in place along West End Road, South Ruislip since September 1999. This is an authority owned site and, as with the AURN site, local authority officers are the site operators for routine calibration of the analysers. The site measures nitrogen dioxide and fine particulate matter as PM_{10}.

Hillingdon
The third continuous monitoring station is at the junction of Colham Road and Pield Heath Road opposite Hillingdon Hospital. This was commissioned in October 2002. This is an authority owned site and local authority officers are the site operators for routine calibration of the analysers. The site measures nitrogen dioxide and fine particulate matter as PM_{10}.

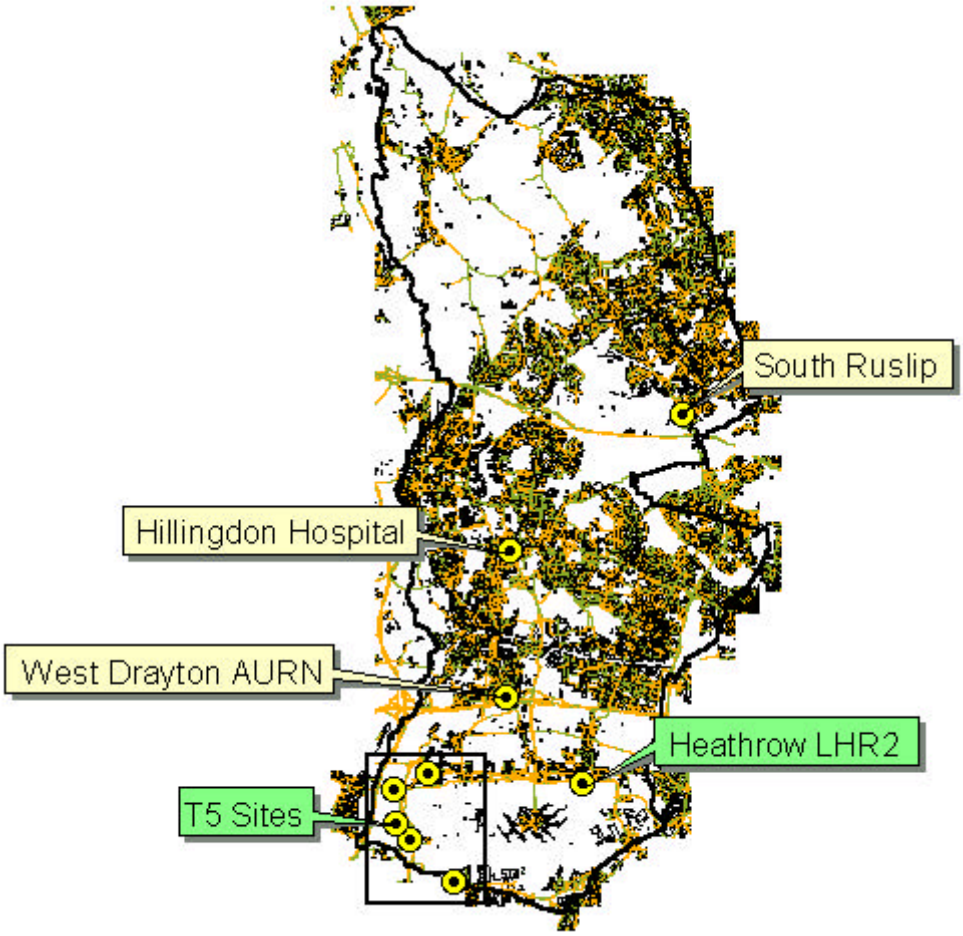
Data from the monitoring stations are sent hourly to a central computer to provide public information on current air quality. The latest data from the West Drayton (London Hillingdon) site and summaries of air quality for London can be found on the UK National Air Quality Information Archive web site - http://www.airqualityco.uk and for the Ruislip and Hillingdon sites on the web site of the London Air Quality Network – http://www.erg.kcl.ac.uk/london/asp/home.asp..

BAA Heathrow (LHR2)
The Heathrow monitoring site is located on an area of the old apron between the northern runway and the northern perimeter road approximately 170m from the runway edge and 30m from the road edge. The site measures nitrogen dioxide, carbon monoxide and fine particulate matter (PM_{10}). The site is owned by BAA plc. Data reports are sent through to council officers.

T5 Construction Sites

There are five continuous monitoring stations in place around the proposed T5 site measuring for nitrogen dioxide and fine particulates (PM10). These have been commissioned as part of the conditions for the T5 project and will be in place throughout the whole of the construction phase, through to final operation. They are owned by BAA plc and run on their behalf by external consultants. Hillingdon are forwarded the results via quarterly reports however as part of the conditions for T5, the data from these sites is now received directly from the monitoring stations to a computer in the Civic Centre. This will allow the continuous monitoring of the project during its construction phase and through to its final operation.

Automatic Monitoring Sites in Hillingdon

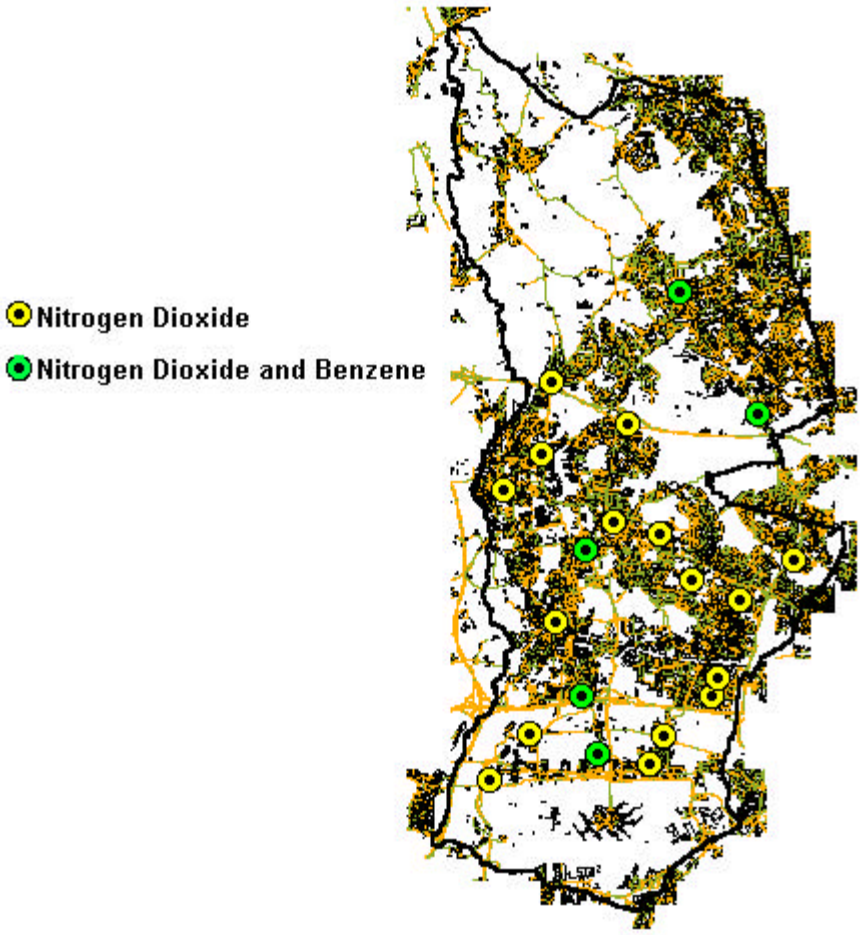


NON-AUTOMATIC MONITORING

Nitrogen dioxide is measured in 21 areas of Hillingdon using diffusion tube samplers which provide monthly average pollutant concentrations. Samplers are placed at kerbside locations (1-5 metres from a major road) and background sites (residential areas more than 50m from a major road).

The diffusion samplers are not used as a monitoring method to check compliance with the national air quality standards, however, they are a fairly inexpensive method for examining trends across the borough and identifying potential “hot-spots” of local air pollution.

Diffusion Tube Monitoring Sites in Hillingdon



Five diffusion tube sites monitoring benzene have also been set up in areas to monitor levels in the Borough bearing in mind the more stringent air quality objectives for this pollutant that will need to be met by 2010.

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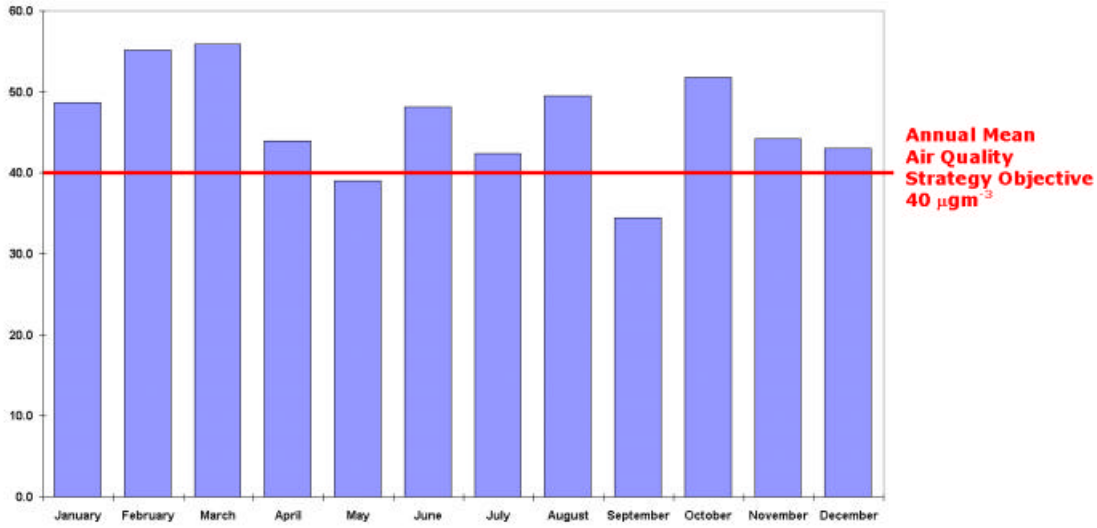
Air Pollution Measurements for 2001

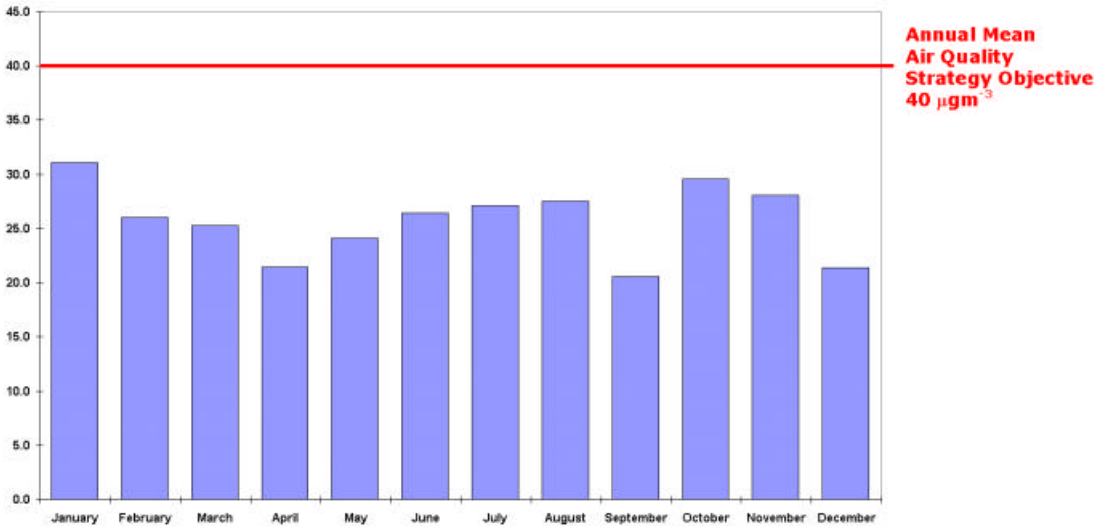
Measurements made at the AURN station for 2001 show that annual mean concentrations of nitrogen dioxide are not currently likely to meet the objective of the Air Quality Strategy. The annual mean concentration of 46 μgm^{-3} is above the objective value of 40 μgm^{-3}.

Monthly average nitrogen dioxide measurements at Hillingdon AURN station 2001



The annual mean concentrations of particulate matter are likely to meet the objective of the Air Quality Strategy. The annual mean concentration of 26 μgm^{-3} is below the objective value of 40 μgm^{-3}. However, a proposed new objective value of 23 μgm^{-3} is being considered and current PM_{10} concentrations in Hillingdon would not meet this objective.

Monthly average PM10 particulate measurements at Hillingdon AURN station 2001

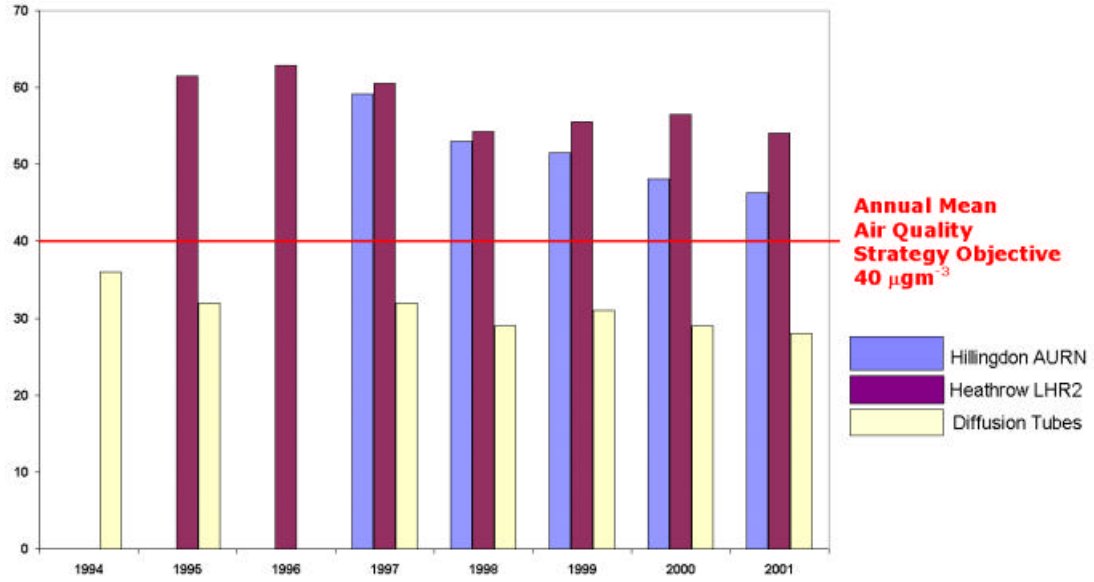


Air Quality in Hillingdon

Nitrogen dioxide concentrations in Hillingdon have decreased steadily since the early 1990s. This is in line with reductions in NO_2 concentrations nationally due to improvements in vehicle technology such as the use of catalytic converters to reduce exhaust emissions. Concentrations at Heathrow have decreased slightly but have remained fairly constant over the last few years. This suggests that airport activity will tend to become a dominant source of nitrogen dioxide.

PM_{10} concentrations in Hillingdon have decreased since the early 1990s but have remained fairly constant over the last few years. Again this is in line with the national picture. PM_{10} emissions are predicted to fall significantly over the next few years with the introduction of tighter standards on the emission of particles from diesel vehicles and the introduction of cleaner fuels.

Annual Average NO_2 Concentrations Hillingdon and Heathrow



Annual Average PM_{10} Concentrations Hillingdon and Heathrow