

2007 Air quality monitoring overview

Please see the Glossary of Terms on the Council's air quality web pages if you wish to learn more about any of the terms used here.

Nitrogen dioxide

National air quality objectives for Nitrogen dioxide:

	Measured as	Objective
Nitrogen dioxide	1 hour mean	200 µg/ m ³ not to be exceeded more than 18 times a year
	Annual mean	40 µg/ m ³

Nitrogen dioxide is the principal pollutant of concern in the Borough and the most extensively monitored with a total of 3 continuous monitoring stations and 47 diffusion tubes. The monitoring network has been expanded and improved during 2007. Five additional diffusion tube locations have been added in late 2007/ early 2008.

The first complete year of results at the new continuous monitoring site at Sunbury Cross gave levels there to be below the annual average nitrogen dioxide objective. The measured annual mean was 38.57 µg/ m³ in comparison to a national air quality objective of 40 µg/ m³. However it is likely that the objective is being exceeded closer to the Motorway junction, and so residents at The Parade and nearby may be exposed to levels above the objective. From monitoring results it is very unlikely that the one hour mean objective is failed, even at The Parade.

Nitrogen dioxide is also monitored continuously at two other monitoring stations in the Borough: one in Stanwell close to Terminal 5, Heathrow and the other beside the M25. Both of these monitoring stations are run by external organisations.

The annual average objective for nitrogen dioxide was not exceeded at the monitoring station at Oaks Road, Stanwell with an average concentration of 37.2 µg/ m³ being measured for 2007. Both the hourly mean and annual mean objectives were exceeded at the monitoring site road-side of the M25 with a total of 33 exceedances of the hourly mean and an annual average of 57.15 µg/ m³ nitrogen dioxide respectively. However, there is no relevant exposure in the immediate vicinity as there are no residents living in close proximity and members of the public are not regularly exposed at the hard shoulder of the motorway.

The continuous monitoring stations are supplemented by an extensive network of diffusion tubes that monitor air quality over a period of a month at a time. Monitoring using the diffusion tubes showed exceedances of the 40 µg/ m³ annual average nitrogen dioxide objective at 12 locations around the Borough in 2007:

Site	Location	Annual Average (µg/ m ³)
SP5	Church Street, Ashford	43.3
SP31	London Road/ Ashford Hospital	40.5
SP32	Feltham Road, Ashford	41.2
SP33	Ford Close, Ashford	40.4
SP34	School Road, Ashford	46.0
SP28	London Road, Staines	40.8
SP29	London Road, Staines	49.9
SP3	Wraysbury Road, Staines;	40.3
SP19	Bedfont Road/ Long Lane, Stanwell	45.1
SP8	The Parade, Sunbury Cross	49.6
SP35	Vicarage Road, Sunbury	41.7
SP36	St Ignatius School, Green Street, Sunbury	40.2

It is difficult to interpret trends in the monitoring data as weather conditions have a large influence on air quality. Defra has reported that generally levels of pollution across the UK as a whole were down in 2007 compared to previous years, partly due to a continuing downward trend but also due to poor weather in 2007 dispersing pollution better.

From the table it can be seen that five of the 12 locations only slightly exceeded the objective. In 2006 there were only 10 locations where the 40 µg/ m³ annual average nitrogen dioxide objective was exceeded, but the levels recorded at those locations were generally much higher. For example the annual averages for nitrogen dioxide levels at The Parade, Sunbury and London Road, Staines (SP29) were both over 60 µg/ m³ respectively in 2006, whilst in 2007 these two locations recorded just less than 50 µg/ m³.

The only location where levels have not previously exceeded the 40 µg/ m³ annual average nitrogen dioxide objective is Wraysbury Road, Staines (SP3). The remainder of the 12 locations have typically exceeded the objective over the past couple of years.

At some locations there appears to be a general downward trend suggesting a fall in nitrogen dioxide levels as measured by the annual mean from diffusion tubes between the years 2002 and 2007. But at a number of locations it is difficult to be confident of such a trend and a few could be interpreted as having a general upward trend, indicating rising NO₂ levels.

Particulate matter

National air quality objectives for particulate matter:

	Measured as	Objective
Particles (PM ₁₀)	24 hour mean	50 µg/ m ³ not to be exceeded more than 35 times a year
	Annual mean	40 µg/ m ³
Particles (PM _{2.5})	Annual mean	25 µg/ m ³

In 2007 particulate matter was monitored by two external organisations at locations in the north (Oaks Road, Stanwell) and west (M25 Junction 13) of the Borough.

At the M25 site, the annual average concentration of PM₁₀ during 2007 was 21.73 40 µg/ m³, compared to an objective of 40 µg/ m³. This site also monitors smaller particulates, PM_{2.5}, and the annual average concentration for this pollutant was 15.26 µg/ m³, below the target for PM_{2.5} of 25 µg/ m³. The daily average concentration of PM₁₀ only exceeded 50 µg/ m³ on 9 days, below the 35 days per year set by the objective.

At the monitoring station in Stanwell, the annual average concentration of PM₁₀ during 2007 was 24.52 µg/ m³. The daily average concentration of PM₁₀ exceeded 50 µg/ m³ on 19 days.

The Council also ran a short-term study of particulate matter at its monitoring station at Sunbury Cross between November 2007 and February 2008. During this period the daily average concentration of PM₁₀ exceeded 50 µg/ m³ on 12 days of the 3 month monitoring period. So over a full year, the number of days where levels exceed 50 µg/ m³ could be greater than the 35 set by the objective. The data suggests that the national air quality objective for annual average PM₁₀ levels, of 40 µg/ m³, would not be exceeded.

The type of analyser owned by the Council does not use a method recommended by government for precise measurement of particulate matter. Our analyser is small and can be moved easily between locations, so it is a good screening tool to give an idea of whether particulate matter may be an issue. The analyser is known to most accurately measure annual mean particulate matter concentrations rather than peak daily levels. Therefore, the data from the three month study must be treated with caution. The study was undertaken at a time of year when the highest levels of pollution are expected, so this could lead to over estimation of an annual mean or the number of days per year with elevated levels.

In 2008 and into 2009 the pollution team will continue to the study of particulate matter at Sunbury Cross. The aim will be to see if over the longer-term the results of the short-term study are correct or not.

Benzene

Between September 2006 and October 2007, levels of benzene were monitored using a diffusion tube study adjacent to a petrol filling station on Walton Bridge Road, Shepperton. Results have shown levels of benzene to be well below the national air quality objective. Therefore, monitoring was discontinued. This study mirrors the findings of monitoring carried out from 2003 to 2006 close to another petrol filling station on the A308 London Road, Staines.

Other pollutants

Levels of sulphur dioxide, carbon monoxide and ozone are measured by the continuous monitoring station on the hard shoulder of the M25 motorway. Levels of sulphur dioxide measured at this location have been very low compared to the 15 minute, hourly and daily average guideline levels. The measurements show that carbon monoxide levels there are also very low relative to the maximum daily running 8 hour mean guideline value. The national air quality guideline for ozone is that the average value over any eight-hour period should not exceed $100 \mu\text{g}/\text{m}^3$ on more than ten occasions per year. Monitoring in 2007 showed that there were no periods where the level was exceeded and so levels are currently well below the air quality objective in the Borough.