

Annual Air Quality Report

2002

Summary

There were no major episodes of very poor air quality affecting the borough in 2002. However there were a number of incidents where air quality levels breached the moderate band of the governments' air quality dissemination system.

On 14 days ozone reached moderate levels. This was mainly during the summer months. For particles, moderate levels were reached on two days at background locations and up to 10 days at roadside locations. Nitrogen dioxide reached moderate levels on five days but only at one roadside location.

Public Dissemination Banding

Number of days that were moderate and above in 2002

Pollutant	Location	Moderate	High	Very High
Ozone	Urban background	14	0	0
Nitrogen dioxide	Kerbside/roadside	5	0	0
	Roadside	0	0	0
	Urban background	0	0	0
Carbon monoxide	Urban background	0	0	0
	Roadside	0	0	0
Particulate matter PM ₁₀	Urban background	2	0	0
	Roadside	10	0	0
Sulphur dioxide	Urban background	0	0	0
	Roadside	0	0	0

Consultation on Review and Assessment of Air Quality -Stage Four

An assessment of the Government's long-term air quality objectives was undertaken in 2002. It concluded that nitrogen dioxide and particulate matter were likely to exceed future objectives. A report of this review and assessment along with the council's action plan were published for consultation during July 2002. Comments were received from DEFRA, the Greater London Authority as well as other consultees. DEFRA identified the Royal Borough's Review and Assessment report as an example of good practice.

Copies of the Action Plan and the Fourth stage Review and Assessment report are available on the councils website. In 2003 the council will be undertaking an updating and screening assessment. This will involve reviewing all the strategy pollutants and checking that the situation for pollutants eliminated from the process during earlier assessments has not changed.



Anniversary of the Great Smog of 1952

2002 was the fiftieth anniversary of the Great Smog. This smog or "pea-souper" as it was called then, caused the death of several prize cattle at the agri-business show, when it was held at Earls Court. In the winter of 1952, air pollution also brought much of London to a halt, with theatres and cinemas closing. The great smog has gone down in London's history.

It was so thick that people could not even see their feet in some parts of the city. Tragically the smog took a heavy toll, with estimates of around 4,000 people dying in the five days that the smog was at its worst.

This was a turning point in terms of air pollution control and led to the introduction of the Clean Air Act 1956, which controlled for the first time, smoke from domestic chimneys and other commercial and industrial processes not covered by the alkali acts.

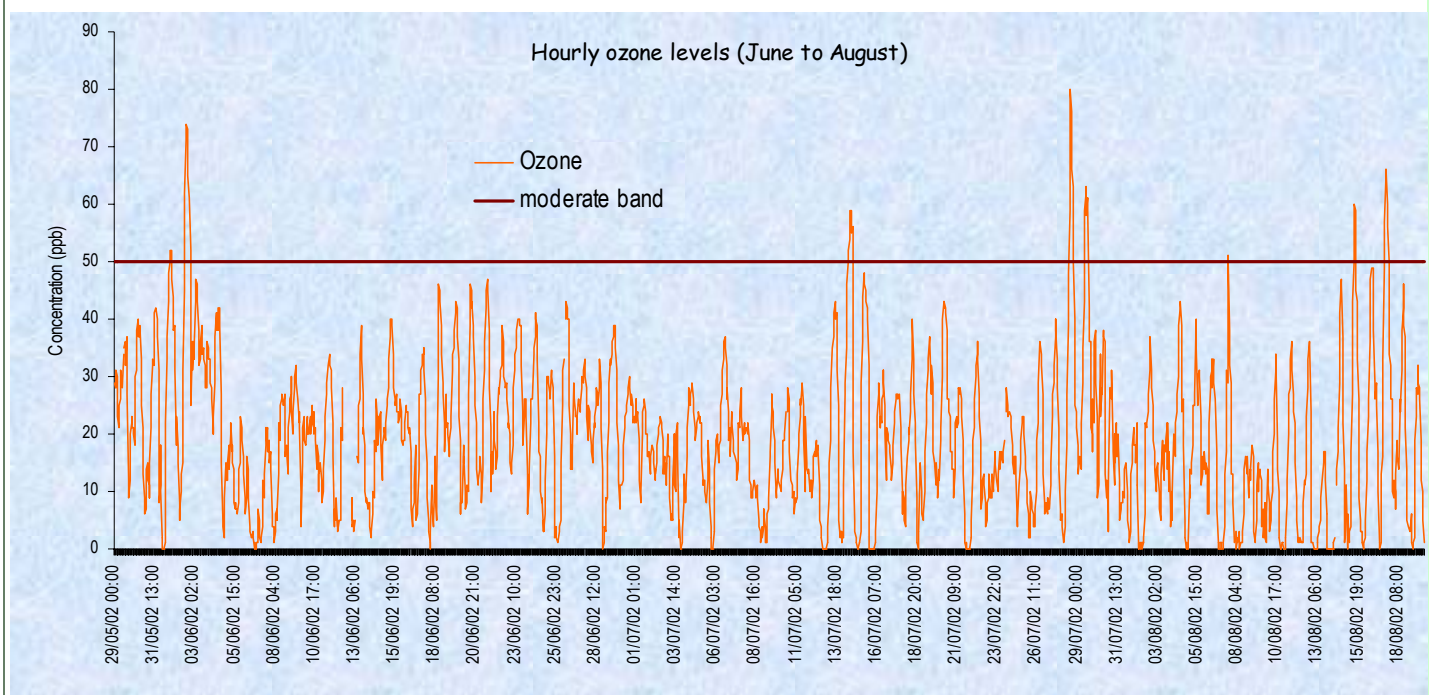
Vapour Recovery from petrol stations

In 2002 the government consulted on implementing vapour recovery from petrol stations. Petrol stations are an important source of benzene; this is one of the pollutants monitored in the borough. Levels of benzene in petrol have already been reduced and this has resulted in lower levels in the atmosphere. However evaporation from storage tanks and releases during deliveries and filling up can lead to higher levels at petrol stations than in surrounding roads.

This summary covers the monitoring aspects and pollutants not covered by the updating and screening assessment. The updating and screening assessment covers carbon monoxide, benzene, 1,3- butadiene, lead, nitrogen dioxide, sulphur dioxide, PM₁₀ and PAHs. Further information about air quality monitoring can be viewed on the borough's website: <http://www.rbkc.gov.uk/EnvironmentalServices/AirQuality/default.asp>

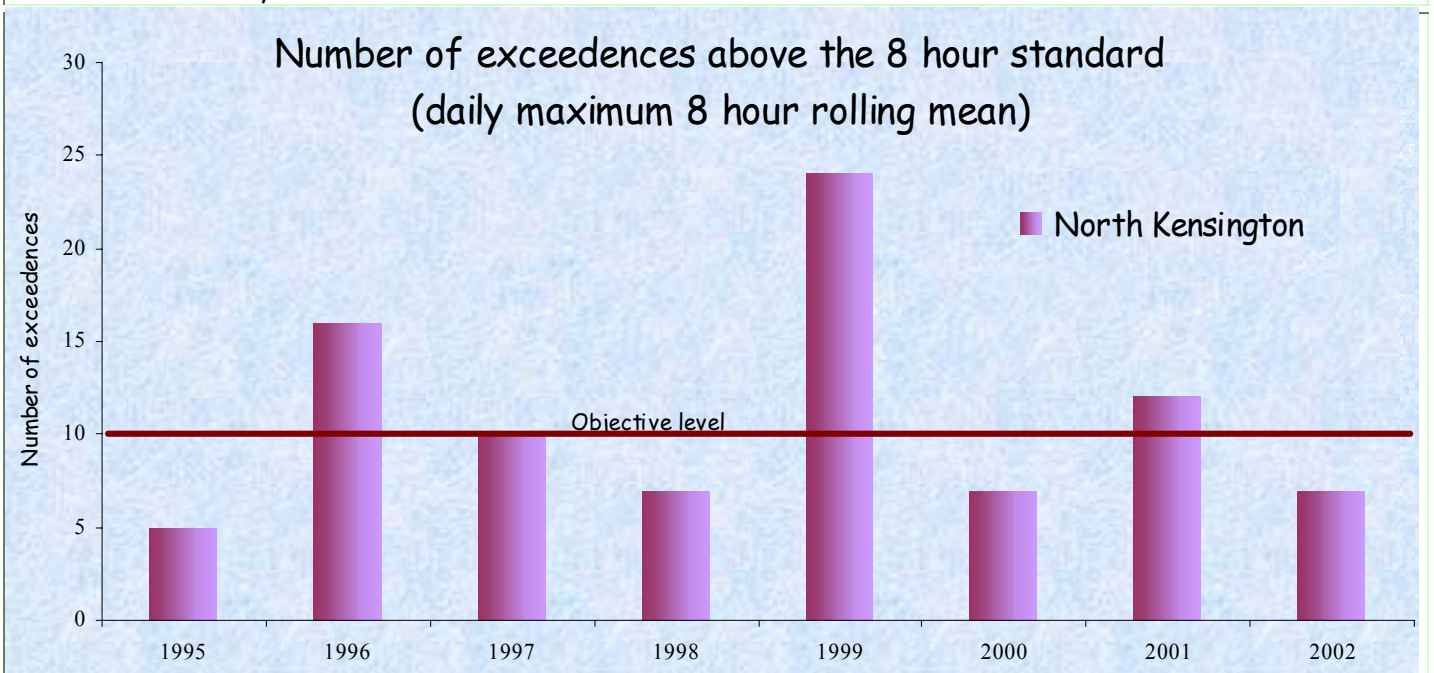
Ozone

Ozone, though not included in the Local Air Quality Management process and therefore not in the updating and screening assessment, is still a pollutant of some concern. It is caused by complex reactions involving other pollutants and needs high temperatures and sunlight to be created. Because of this, it often affects large regions, and in particular the south east of England. In 2002 moderate levels occurred in early June, mid and late July and in August. Between July 26th and August 7th an episode occurred which affected the whole of southern England peaking on the 29th of July with over 40 of the government's network (AURN) sites reporting levels that were moderate or above. Reports from NETCEN (the body responsible for disseminating data from the AURN) show the episode was driven by high temperatures, long periods of sunshine and continental air masses containing ozone precursors. Another episode in August was also caused by a similar combination of hot, sunny weather and polluted winds arising from Europe.



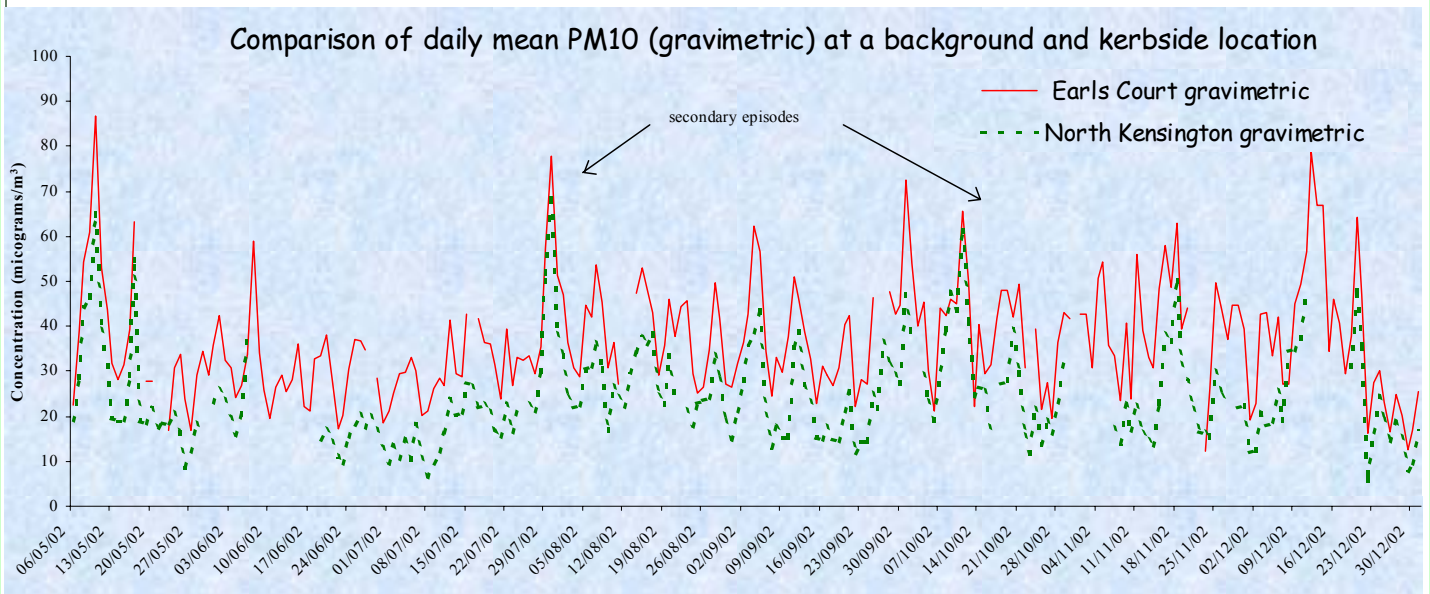
Long term trend for ozone

The objective level for ozone has been breached on and off for the past 8 years; there is no clear trend (though it does appear that there have been fewer exceedences recently). This is because ozone formation is dependant on high temperatures and sunlight and the presence of other pollutants. It is not possible to reduce ozone in the same way as other pollutants i.e. from a direct source so the number of exceedences relate more to the level of sunny weather rather than to a reduction in emissions.



Gravimetric monitoring of particles

Gravimetric monitoring commenced in May 2002 at the Earls Court monitoring site. This was installed to enable levels to be directly compared to government air quality objectives (AQO). It also allows a comparison to be made with gravimetric measurements made on behalf of DEFRA at the North Kensington background site, shown below. This illustrates that levels by the roadside are generally higher. However on a number of occasions, levels at both locations are very similar. This occurs when background concentrations are dominated by high concentrations of secondary particles. Such episodes affect large areas and are the result of gases reacting in the atmosphere or by attachment to aerosols to form fine particles. This was observed around the 30th of July and again on the 11th of October. Elevated levels were also recorded around the 12 and 13th of September when the wind direction switched from south westerly to strong north easterly and east. This episode affected mainly the northern parts of the UK - levels in these areas reached the 'high' category of the banding system. The source of this episode is likely to have been widespread forest and peat bog fires in Russia identified by satellite imagery and news reports.



Using data collected by DEFRA at the North Kensington site it was possible to compare how well gravimetric monitoring compares with data collected by our TEOM at this location (see chart below). Data from TEOM's are normally factored to take into account the differences of monitoring using these two techniques to enable a comparison with AQO's (this factor is not applied to data used for the daily public data dissemination system). While there is quite a good correlation between the two sets of data, it is noticeable that at some peak readings, the factor used does not adequately reflect the difference being measured. The advantage of a TEOM is that it offers a completely automated method of monitoring particles and can record levels every 10 minutes. However because the air sampled is standardised to a known temperature this results in some of the more volatile particles being lost and therefore underestimated. Gravimetric sampling is far more labour intensive (filters have to be exposed for a known period of time, manually collected and then sent for laboratory weighing) and therefore more costly. It is also only possible to collect daily samples from gravimetric systems.

