

Annual Air Quality Summary 2003

Summary

2003 was dominated by hot weather episodes and secondary episodes, which exacerbated pollution levels in the Borough and reversed some downward trends in levels. Exceedences of long term objective levels were up compared to 2001 and 2002; these years had been typified by largely 'better' weather conditions, which helped to disperse pollution. Objective levels are used by the government and local authorities to assess how well policy measures are having on improving air quality. On a day to day basis episodes can be roughly defined when levels reach the moderate band of the government's public notification system or above.

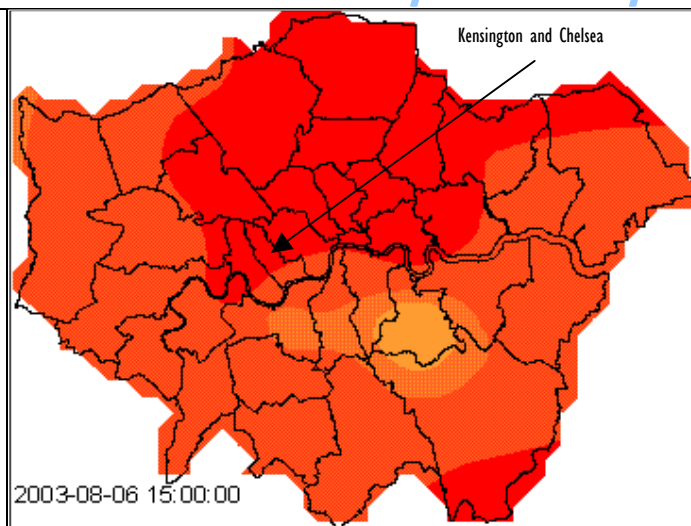
Numerous pollution episodes were experienced throughout the year with ozone and particulate matter (and to a lesser extent nitrogen dioxide) dominating these. 2003 was characterised by approximately seven significant major pollution episodes. The first ozone incident was recorded in March whilst the last was recorded in September; the distribution of these are shown in the adjacent chart. The most severe occurred in August (see map 1).

The year was also affected by a number of PM₁₀ episodes. The episode in November was caused by Guy Fawkes Night bonfires and fireworks (see map 2). Other episodes such as the August episode were associated with photochemical activity, coinciding with record breaking temperatures and the highest ozone levels measured for many years.

Some nitrogen dioxide (NO₂) incidents also occurred. However whilst there were only 20 hours that breached the moderate banding level, in terms of the longer term objective level (which is stricter) the number of hours above the objective increase to 235 at one roadside location.

Air quality data can be viewed on:

<http://www.londonair.org.uk/london/asp/home.asp>



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Map 1 Modelled concentrations of ozone during the August 2003 episode

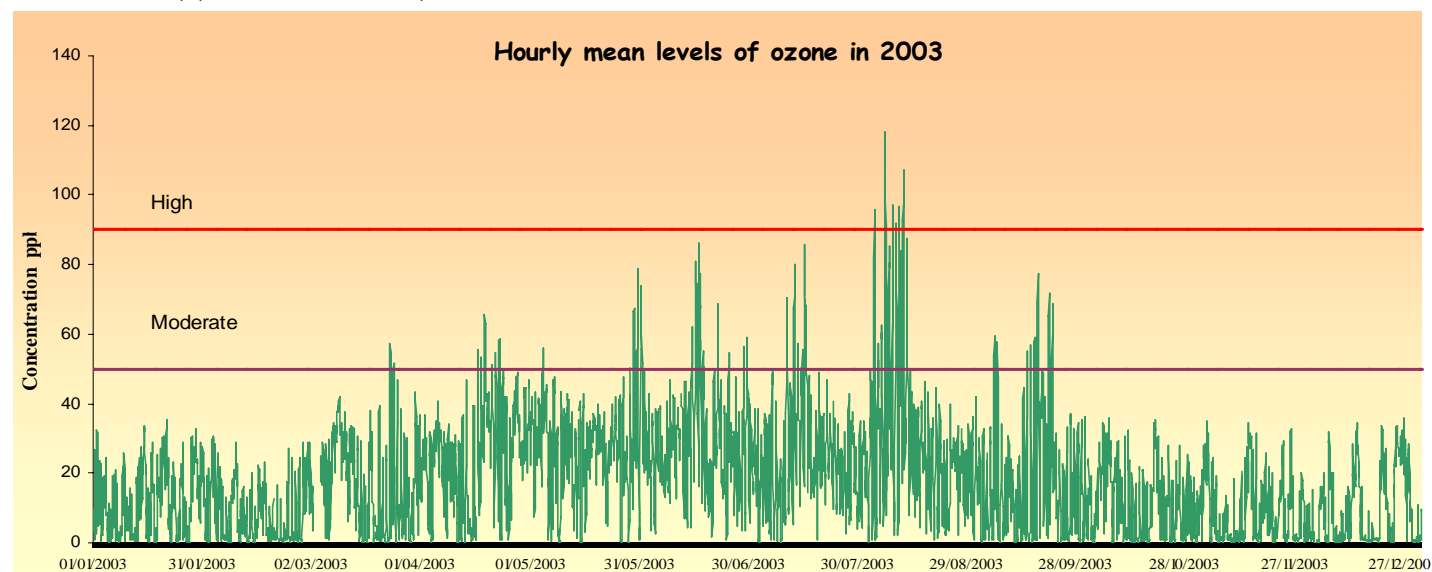
This map shows modelled levels of ozone at their peak in August in the London area. Levels reached the 'high' band of the government's public dissemination system. In the Borough the highest level was recorded on the six of August. This episode occurred during record breaking temperatures. Measured levels of ozone were at their highest since 1999. Moderate levels of particulates (PM₁₀) were also recorded across London (see PM₁₀ chart overleaf).

To view further animations of pollution episodes please visit the LAQN website <http://www.londonair.org.uk/london/asp/PublicEpisodes.asp?region=0>

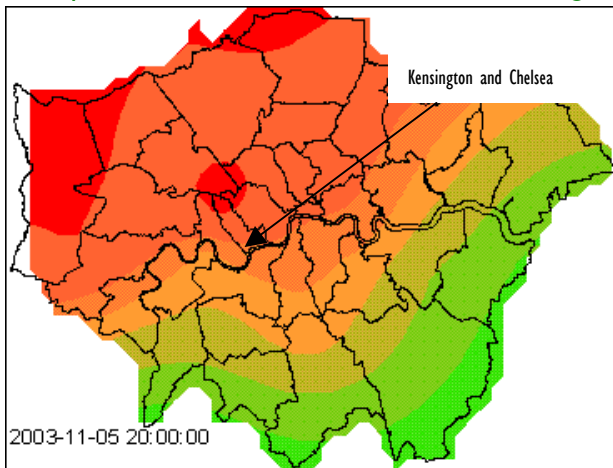
low > moderate > High

Ozone

This chart shows how ozone levels changed throughout 2003 in the Borough. The highest levels tend to occur between April and September, whilst during the colder months levels are at their lowest. Levels of ozone frequently exceed the moderate level but are less likely to reach the high band. Also Urban areas tend to experience lower levels of ozone due to the presence of nitrogen dioxide which 'uses up' the ozone in its formation. Ozone levels are almost entirely weather dependant and having other necessary pollutants such as hydrocarbons to form.



Map2 Modelled concentrations of PM₁₀ during



Bonfire night 2003 episode

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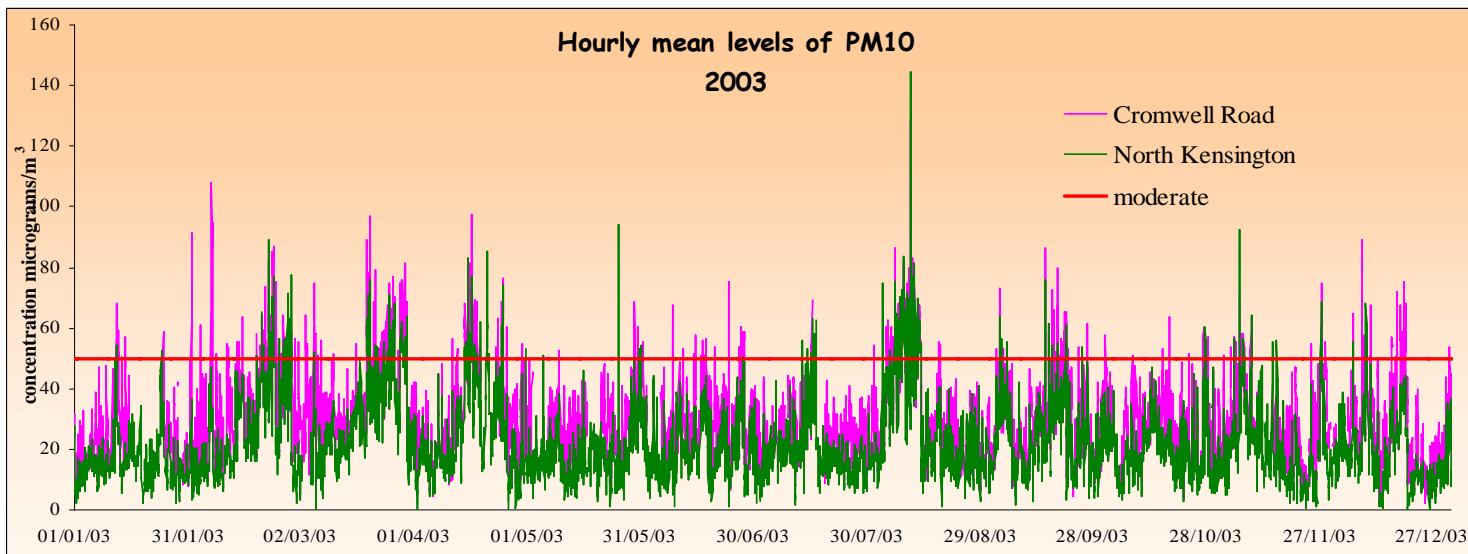
The map above shows modelled levels of PM₁₀ on the evening of 5th of November with levels reaching their highest at 10pm in the north of the Borough. This was the result of poor dispersion from local bonfire events coupled with easterly winds bringing elevated levels from Europe.

Updating and screening assessment

The Borough's updating and screening assessment was completed in 2003. This is a statutory report which summarises the checks that the council have undertaken to ensure that there has been no change in our assessment of the strategy pollutants (i.e. nitrogen dioxide, sulphur dioxide, benzene, 1,3-butadiene, carbon monoxide, PM₁₀ and lead). We concluded that no changes had occurred that would require a detailed assessment at this time. It can be downloaded from Borough's website <http://www.rbkc.gov.uk/EnvironmentalServices/AirQuality/default.asp> PDF <http://www.rbkc.gov.uk/EnvironmentalServices/AirQuality/usassessment03.pdf>

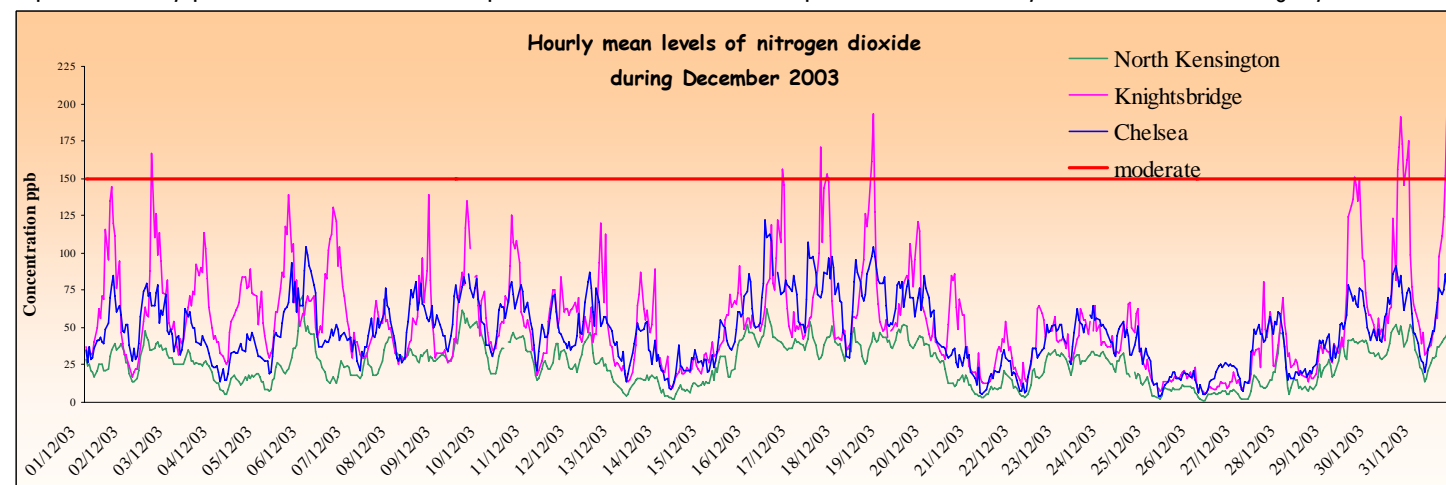
PM₁₀

PM₁₀ levels in the Borough are affected both by local pollution and 'secondary' pollution from national and continental sources. Pollutants brought from the continent dominated 2003. It can be seen in the chart below that concentrations at the Cromwell Road tend to be higher due to its proximity to the road when compared to the North Kensington site. However during some of the episodes levels are similar and unusually during the August episode are in fact higher.



Nitrogen dioxide

This pollutant tends to occur during the winter though summer time episodes can also happen. Summer episodes can result from high levels of ozone which can oxidise more of the nitric oxide (NO) being emitted from exhaust pipes into nitrogen dioxide (NO₂). The winter episodes are more likely to result from poor dispersion of locally produced NO₂. This chart shows peaks which occurred in the build up to Christmas followed by the lowest levels on Boxing day.



ppb = parts per billion i.e. the number of parts of the pollutant in one thousand million parts of air
 µg/m³ = micrograms/m³ i.e. a millionth of a gram of a pollutant in a cubic metre of air