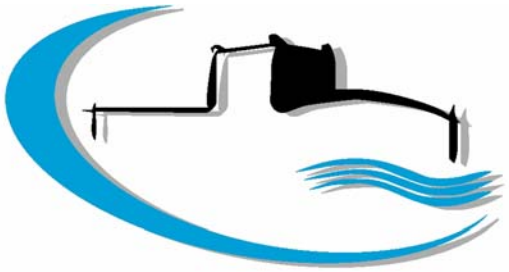


Carrickfergus Borough Council

Third Stage Air Quality Review and Assessment

June 2004

1. Synopsis of Carrickfergus Borough Council Air Quality Review and Assessment Process to Date

Air quality monitoring of NO2 and SO2 using diffusion tubes has been ongoing Carrickfergus Borough since March 1997. Real time monitoring of SO2 and PM10 commenced in July 2002 at the Councils Rosebrook Grove site and continues to date.

The First Stage Air Quality Review and Assessment completed February 2001 concluded that the pollutants indicated in the following table namely, NO2 from roads and industrial sources, SO2 from industrial and domestic sources and PM10 from industrial and domestic sources, should be examined during the second stage review.

Pollutant	Exceedances Road Sources	Exceedances Industrial Sources	Exceedances Domestic Sources	Progress to Second Stage Review
Carbon Monoxide	None	None	None	No
Benzene	None	None	None	No
1,3 Butadiene	None	None	None	No
Lead	None	None	None	No
Nitrogen Dioxide	**Yes**	**Yes**	None	**Yes**
Sulphur Dioxide	None	**Yes**	**Yes**	**Yes**
PM10	**Yes**	No	**Yes**	**Yes**

The Second Stage Assessment completed in February 2002 excluded SO2 and PM10 from industrial sources and NO2 from industrial and road sources.

Third stage review and assessment contained within this document therefore concentrates on the assessment of the remaining pollutants namely PM10 and SO2 from domestic sources.

A Report on the Air Quality Review and Assessment Stage 3 Domestic Fuel Combustion was carried out by Netcen in the spring of 2004. This report recommends the actions to be taken in relation to PM10 and SO2 from domestic sources. The Netcen report is attached as Appendix 2 to this report.

2. Conclusions

The conclusions from the Netcen report are detailed below.

Particulate Matter (PM_{10})

The detailed modelling has shown that PM_{10} emissions arising from domestic fuel combustion in Carrickfergus Borough Council **are likely to cause an exceedence** of the air quality objective within Carrickfergus Town and Greenisland under meteorological conditions conducive to poor dispersion.

Sulphur Dioxide (SO_2)

The detailed modelling has shown that SO_2 emissions arising from domestic fuel combustion in Carrickfergus Borough Council are **not predicted to cause an exceedence** of the air quality objectives within Carrickfergus and Greenisland.

3. Netcen Recommendations

The modelling shows that an exceedence of the PM_{10} objective is possible under certain meteorological conditions conducive to poor dispersion. Since model verification further monitoring data has been made available. A review of this most recent data reveals three exceedences across the winter 2003/2004 period. It should be noted that the monitoring station, whilst in a domestic coal burning area, is not in the area of predicted highest concentration by the model.

Therefore on the basis that an exceedence is likely under specific meteorological conditions an Air Quality Management Area (AMQA) should be declared and a further assessment undertaken. The reduction in concentration required to meet the Air quality Objective for PM10 is a reduction of approximately 25 $\mu g\ m^{-3}$ in Carrickfergus town and 5 $\mu g\ m^{-3}$ in Greenisland.

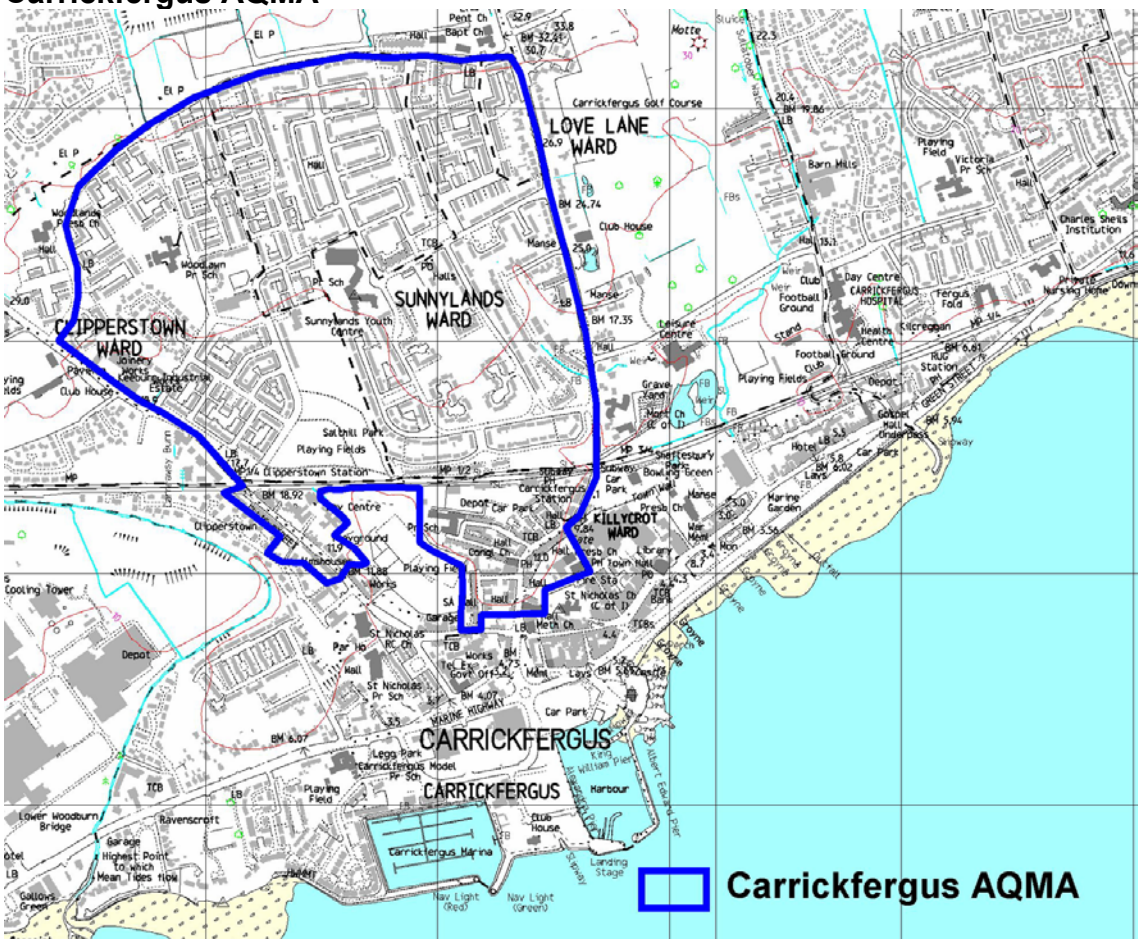
Domestic fuel combustion is believed to be the only significant source in the localised area. A contribution from a power station in the region has been incorporated into the model but the contribution to local concentrations is small. Therefore for source apportionment it is reasonable to conclude that domestic fuel combustion is the major cause of the predicted PM_{10} exceedence, composing the background contribution and the domestic fuel combustion contribution.

4. Declaration of Air Quality Management Areas (AQMAs)

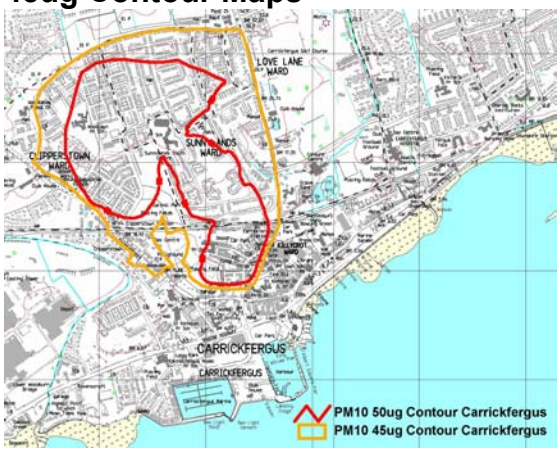
On the basis of this recommendation it is the intention of Carrickfergus Borough Council (subject to the DEFRA review) to declare two Air Quality Management Areas for PM10 from Domestic sources, one in Carrickfergus town and the other in Greenisland as detailed in the maps below.

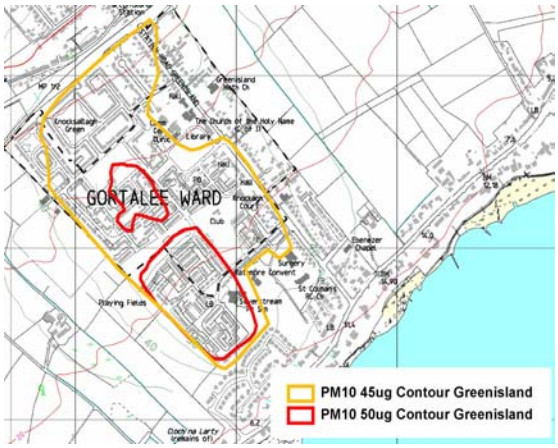
The Carrickfergus AQMA has an area of 98 hectares and contains 2574 properties and the Greenisland AQMA has an area of 38.8 hectares and contains 1128 properties. The boundaries of both AQMAs are based approximately on the 45ug contour produced from the dispersal modelling (see maps below). These boundaries have been modified slightly to take into account geographical features such as roads buildings etc.

Carrickfergus AQMA

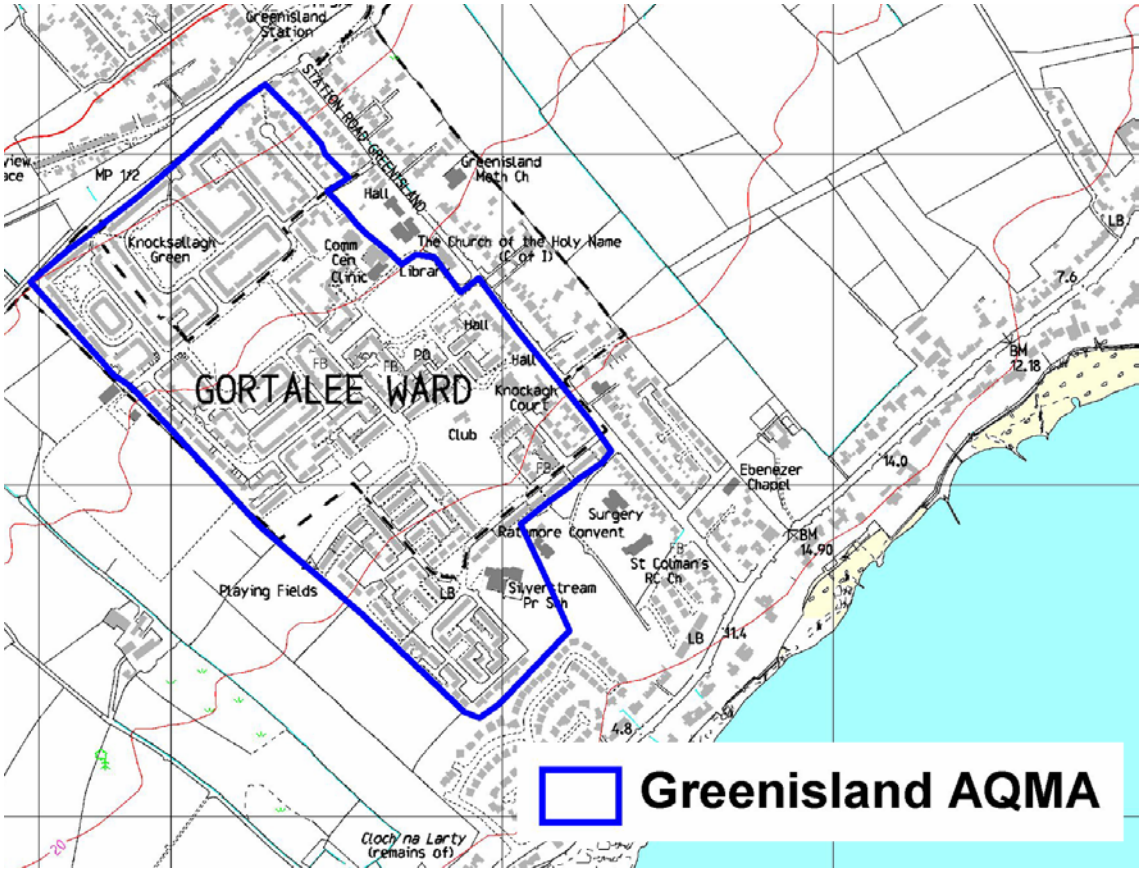


45ug Contour Maps





Greenisland AQMA



Council in making the decision to declare the AQMAs has decided to adopt a precautionary approach to the matter in the interests of public health, as the recommendation to declare the AQMAs is based only upon predicted exceedances from the dispersal modelling and has not been corroborated by the results from the local real time monitor. The monitoring carried out at the Council Air Quality Monitoring station situated at Rosebrook Grove inside the proposed Carrickfergus AQMA indicates that since monitoring began in July 2002 the PM10 24Hr Mean of 50ug/m3 has not been exceeded more than 35 times.

It may therefore be the case that with the proposed further refinement of the dispersal modelling, detailed below, using additional monitoring data and an updated fuel use survey, that the AQMAs may be revoked.

6. Next Steps

a) Monitoring

Continuous monitoring already in place will continue, with QC procedures in place since April 04. The data will be revisited and considered again in the action planning and further assessment phase.

b) Fuel Use Survey

The fuel use survey used in the modelling exercise was based on data gathered in March 2002. There has been a considerable extension of the natural gas network in both AQMAs since then and it is proposed to re-survey these areas to establish the current fuel use patterns and model various scenarios. The scenario modelling will provide an opportunity to appraise the impact of changes in the types of fuel used, updated monitoring data and examining data on a point source basis.

c) Further Dispersal Modelling

It is intended that any subsequent change in concentrations will be modelled within the exceedence areas. This further modelling will provide the information required to inform which options are available to reduce concentrations for the action planning phase and how effective they would be for working towards the objective. This will provide an indication as to which actions within the AQMAs are likely contribute to an improvement in local air quality together with providing information with regard to quantifying the level of improvement.

This further assessment will provide an opportunity to supplement and refine the information already gathered from earlier review and assessment work. The further assessment will provide the justification for the measures the Council decides to include in its action plan.

The scenario modelling will in particular enable the Council to:

- Confirm/refine the original assessment against the objectives, and thus ensure designation of an AQMA is correct
- Calculate how the improvement required can be achieved, how much improvement in air quality each scenario will deliver in terms of actual concentrations,
- Take account of any suitable and available local monitoring data,
- Take account of local policy developments affecting air quality, for example NIHE change
- Check that the original designation is valid and does not need amending in any way, i.e. the level or extent of an AQMA.

d) Consultation

As the majority of the housing within the AQMAs is either existing or former NIHE stock consultation has already commenced with the Housing Executive with regard to their plans for converting from coal burning to natural gas in these areas.

JOHN MACINTYRE
Deputy Director Environmental Services **10 June 2004**

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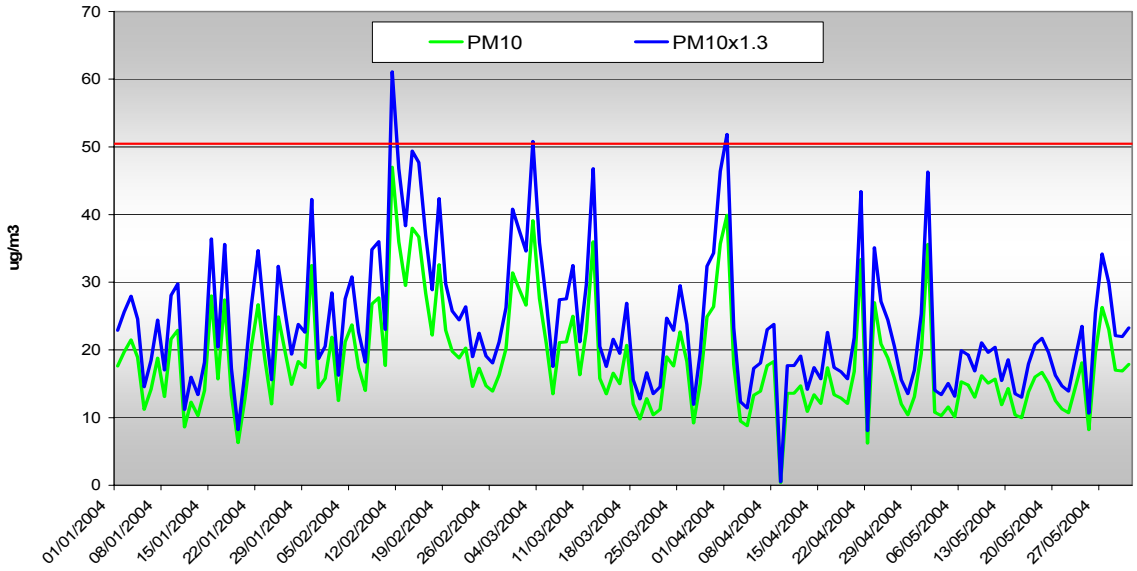
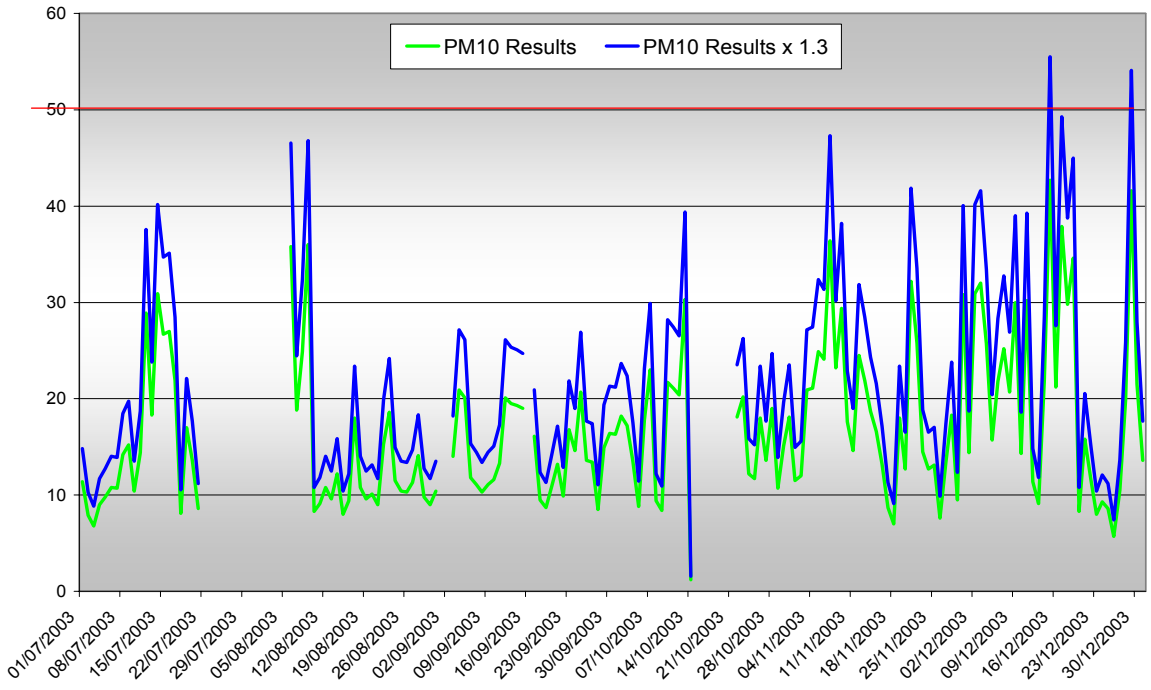
Appendix 1 PM10 Monitoring Results

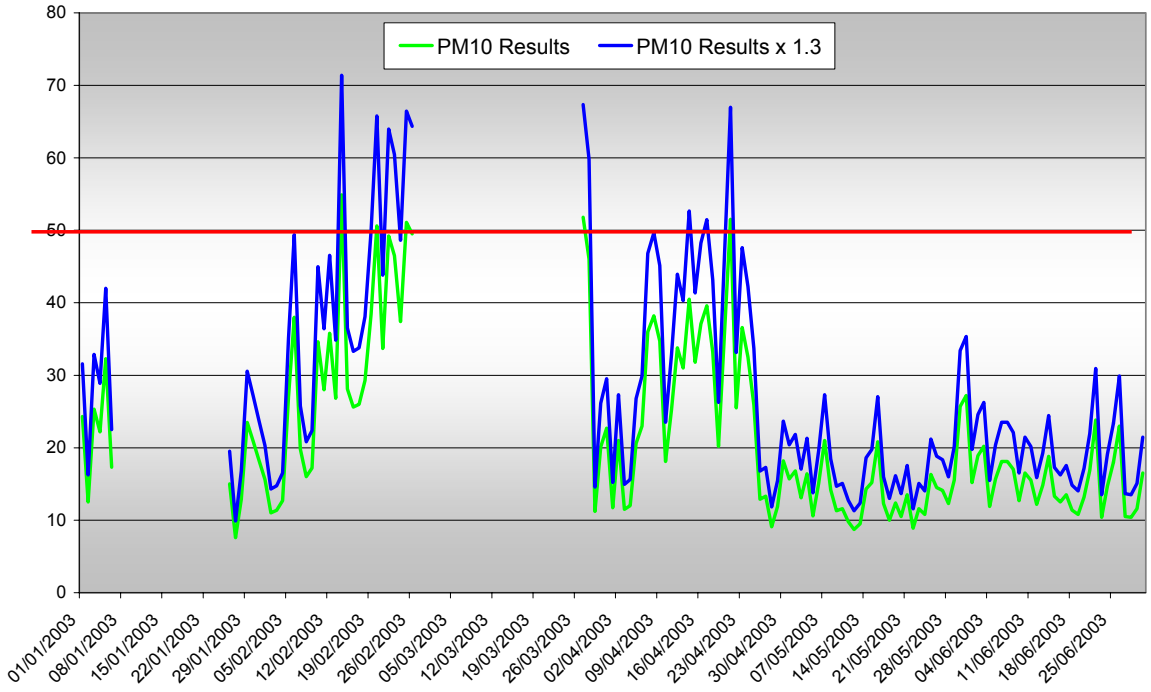
PM10 24Hr Mean Jan to May 04



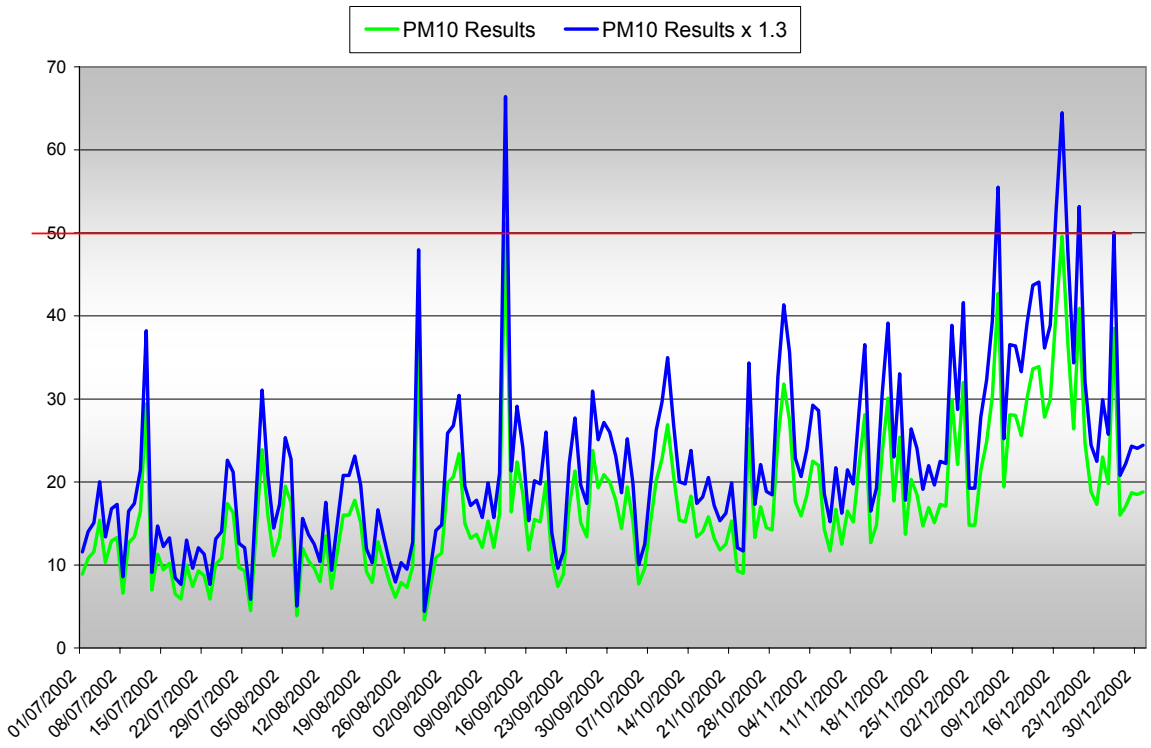
PM10 24Hr Mean July to Dec 03



PM10 24Hr Mean Jan to June 03



PM10 24Hr Mean July to Dec 02



Summary of PM10 Data

Time Period	Nos Exceedances PM10 24Hr Mean (Inc 1.3 Multiplier)	Capture Rate (Percentage)
July-Dec 2002	6	100
Jan-June 2003	11	74.5
July-Dec 2003	2	89
Jan-May 2004	3	100