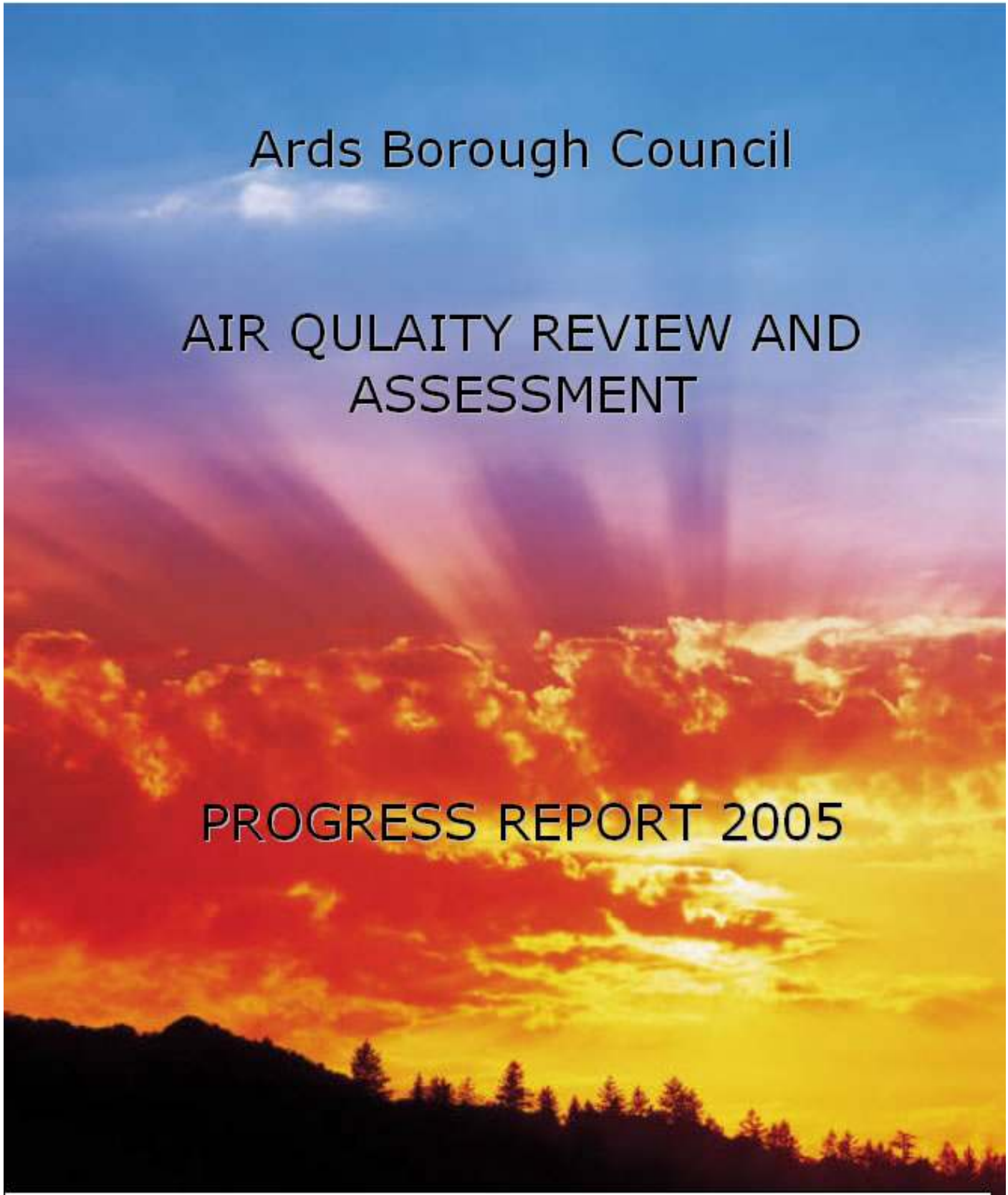


Ards Borough Council

AIR QULAITY REVIEW AND ASSESSMENT

PROGRESS REPORT 2005

Ards Borough Council Environmental Health Service

June 2004

Introduction

The Environment (Northern Ireland) Order 2002 requires local authorities to under take an Air Quality Review and Assessment in their local areas and to meet the local air quality targets and objectives set out in the UK National Air Quality Strategy (2000). The production of an annual air quality report is now a statutory duty for all local authorities. The process is set out in the Department of Environment's Local Air Quality Management Policy Guidance LAQM PGNI (03).

The council published a detailed Assessment of local air quality in June 2004 This Stage 2 & 3 review and assessment report concluded on the basis of results from a dispersion modeling exercise, that the National Air Quality Objective for PM_{10} may be marginally exceeded (24 hour mean). The council therefore declared an Air Quality Management Area.

Purpose of the Progress Report:

Progress reports are required to be undertaken in the years when the authority is not carrying out updating and screening assessment or a detailed assessment of air quality.

This report outlines the Council's progress on implementing local air quality management, and aims to:

- report progress in achieving or maintaining concentrations below the air quality objectives outlined in table 1.1

- provide information on recent air quality monitoring

- identify trends within monitoring results
  (It is normal practice only to consider a trend as being significant when five years worth of data is presented, therefore long term trends for the borough are not yet available).

- bring greater awareness within the local community of the importance of air quality issues

This report has been prepared in accordance with DOE Draft Progress Report Guidance LAQM. PRGNI (04).

Table 1.1 – The UK Air Quality Objectives included in the Air Quality (Northern Ireland) Regulations 2003

Substance	Air Quality Objective	Date to be achieved
Benzene	16.25 μg/m^3, when expressed as a running annual mean	31 December 2003
	3.25 μg/m^3, when expressed as a running annual mean	31 December 2010
1,3-Butadiene	2.25 μg/m^3, when expressed as a running annual mean	31 December 2003
Carbon Monoxide	10mg/m^3, maximum daily running 8-hour mean	31 December 2003
Lead	0.5 μg/m^3, when expressed as an annual mean	31 December 2004
	0.25 μg/m^3, when expressed as an annual mean	31 December 2008
Nitrogen Dioxide	200 μg/m^3 (hourly mean) not to be exceeded more than 18 times per year	31 December 2005
	40 μg/m^3 (annual mean)	31 December 2005
PM_{10}	40 μg/m^3 annual mean	31 December 2004
	50 μg/m^3 fixed 24-hour mean, to be exceeded no more than 35 days per year	31 December 2004
Sulphur Dioxide	350 μg/m^3 (1 hour mean) not to be exceeded more than 24 times a year	31 December 2004
	125 μg/m^3 (24 hour mean) not to be exceeded more than 3 times a year	31 December 2004
	266 μg/m^3 (15 minute mean) to be exceeded no more than 35	31 December 2005

	times per year	

Source: Local Air Quality Management Technical Guidance LAQM.TG(03)

NOTE: **$\mu g/m^3$ = micrograms per cubic metre.**

Summary of findings from previous review and assessment work

The first round of review and assessment carried out 2000 concluded that :

1. the risk of the air quality objectives for the following pollutants being exceeded was negligible:

   Benzene, 1,3 Butadiene, Lead

2. a progression to a second stage of review and assessment may be required for the following:

   Carbon monoxide, Nitrogen dioxide, PM_{10}, Sulphur Dioxide

The stage two & three review and assessment carried out in 2004 concluded that:

1. the risk of the air quality objectives for the following pollutants being exceeded was negligible:

   Carbon monoxide, Nitrogen Dioxide and Sulphur Dioxide

2 . the dispersion modelling exercise predicted potential marginal exceedences of the national air quality objective for

   PM_{10}

There have been no significant changes or developments likely to have a negative effect on air pollution within Ards since the completion of the stage 2/ 3 report. This report therefore supplements previous reports by providing additional detail about the monitoring locations and contains tables showing results over a number of years.

Monitoring of Air Quality within Newtownards

Automatic Air Quality Monitoring Station

Real time monitoring of Particulates and Sulphur Dioxide is currently carried out in Ards Borough Council. The automatic air quality monitoring station is located within the Glen Estate, Newtownards and continuously monitors pollutants from the high density of domestic coal burning properties within the area. Particulate Matter (PM_{10}) is monitored using an automatic TEOM sampler and Sulphur Dioxide is monitored using a UV fluorescence analyser (see location map in appendix 1). Since March 2003, the data from the automatic monitoring site has been managed and ratified by NETCEN (see appendix 2).

Semi Automatic eight port sampler

The councils 8 port sampler is located in the Scrabo Estate in Newtownards (see location map in appendix 1), this is also an area with high density of domestic coal burning properties. The 8 port sampler is used to measure sulphur dioxide and suspended particulate matter as black smoke. This method does not allow direct comparison with the national air quality objectives for sulphur dioxide andPM10, but it does provide a useful indicative measurement (see appendix 2 for results.)

Diffusion Tubes

Monitoring NO_2 by the passive diffusion tube method has been undertaken regularly since 1994 and the council is currently part of the national NO_2 Diffusion tube survey. The aim of this monitoring is to measure pollutant concentrations at busy roads and junctions especially near residential areas. In 2003 as part of the stage 1 review it was decided that two additional diffusion tubes should be positioned in order to monitor kerbside levels at two road junctions. The tubes were sited using guidelines from NETCEN, but are not part of the monitoring network. (see location map in appendix 1).

In order to be confident that the results of the tube analysis are accurate it is important to collocate tubes with an automatic monitor, and correct results with a bias adjustment factor. Neighbouring local authorites are currently undertaking a collocation study to determine a correction factor. Unfortunately due to circumstances beyond our control, this study has not been completed therefore the NO_2 results have not been corrected. In addition the Council recently changed laboratories for analysis of the diffusion tubes and a full year's data must be obtained before a correction factor is determined.

No monitoring is carried out for the other pollutants listed in table 1.1 as government guidance indicates that it is highly unlikely that there is a risk of the national standards being exceeded within the borough.

New Monitoring Results

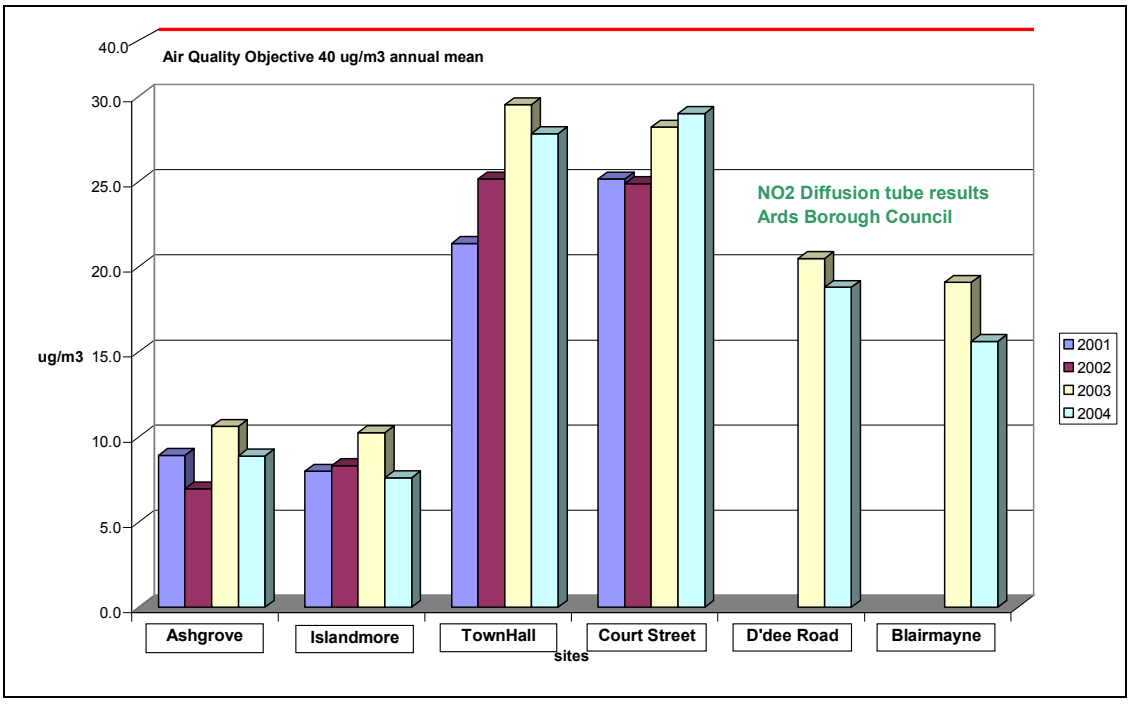
Nitrogen Dioxide

Objective: 200 micrograms per cubic metre or less, when expressed as an hourly mean, not to be exceeded more than 18 times a year, to be achieved by 31st December 2005. 40 micrograms per cubic metre or less, when expressed as an annual mean, to be achieved by 31st December 2005.

Diffusion tube monitoring results

Results for period 2001-2004 -Annual Mean

Year	Court Street kerbside	Town Hall Kerbside	Ash grove Background	Islandmore Background	Belfast Road	A20
2001	25	21	9	8	-	-
2002	25	25	7	9	-	-
2003	26	30	11	10	20.5	20.5
2004	29	30	9	8	19	14



Trends :

The above results show marked differences, with a significant increase noted at the town hall and court street locations over the past 2 years. However it is not possible to predict future trends, as the results have not been corrected with a bias adjustment factor.

The above results indicate that there have been no exceedences of the national air quality objectives for nitrogen dioxide.

Particulate Matter (PM_{10})

Objective: 50 micrograms per cubic metre or less when expressed as 24 hour mean, not be exceeded more than 35 times a year, to be achieved by 31st December 2004.
40 micrograms per cubic metre or less, when expressed as an annual mean, to be achieved by 31st December 2004

Automatic monitoring station data for 2003 & 2004

The data from the automatic monitoring station has been fully ratified by NETCEN, data capture rates must exceed 90% to allow for a meaningful analysis of air quality statistics to be undertaken.

	2003	**2004**
Data capture Rate	92.9%	94.6%
Max 15 min mean	316 ug/m-3	457 ug/m-3
Max hourly mean	167 ug/m-3	242 ug/m-3
Max 8 hourly mean	91 ug/m-3	76 ug/m-3
Max 24 hour mean	58 ug/m-3	41 ug/m-3
Max Daily mean	53 ug/m-3	38 ug/m-3
Annual mean	19 ug/m-3	16 ug/m-3
No. exceedences	12 (24 mean)	1 (24 mean)

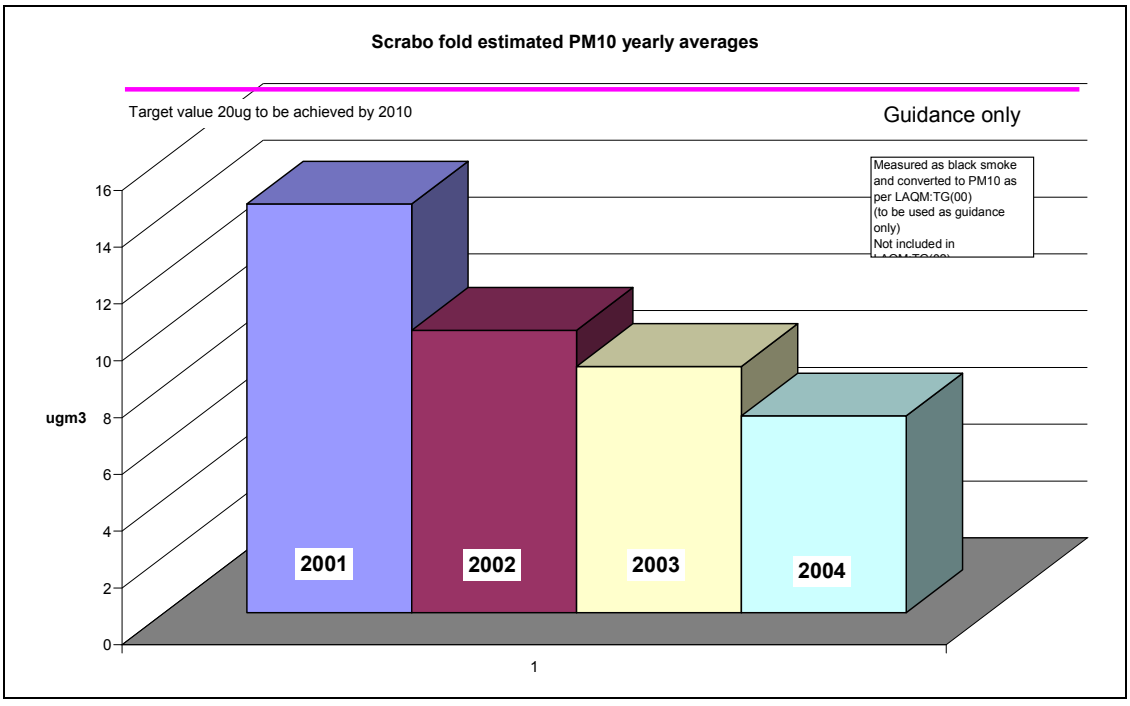
Trends :

It is difficult to make meaningful comment and predict future trends based on two years worth of PM_{10} data, therefore a furthers years monitoring and analysis will make it easier to identify any trends.

In 2003 there was 12 exceedences of the fixed 24 hour mean detected, which is below the 24 hour mean of 50ug/m3 not to be exceeded more than 35 times per year, and in 2004 there was only one exceedence detected. The National Air Quality Objective for PM_{10} has not been exceeded.

Annual Particulate Concentrations and data capture rates for the 8 port sampler:

	2001	2002	2003	2004
Annual mean concentrations Ug/m3	14.4	9.94	8.7	6.93
Data capture rate	99%	93%	91%	92%



Trends:
A decrease has been observed in the results from the 8 port sampler for concentrations of $PM_{10,}$ but no exceedence of the national objective.

While local authorities are only require to compare concentrations of PM_{10} with the 2004 Objective, it should be noted that based on the data collected to date at the automatic station, there are likely to be exceedences of the 2010 PM10 objective for both the 24 hour mean and the annual mean.

Sulphur Dioxide

Objective: 350 micrograms per cubic metre or less when expressed as a 1 hour mean not be exceeded more than 24 times a year, to be achieved by 31st December 2004.
125 micrograms per cubic metre or less when exceeded as a 24 hour mean, not to be exceeded more than 3 times a year, to be achieved by 31st December 2004.
266 micrograms per cubic metre when expressed as a 15 minute mean, not to be exceeded more than 35 times a year to be achieved by 31 December 2005.

Automatic monitoring station data for 2003 & 2004

The data from the automatic monitoring station has been fully ratified by NETCEN. Data capture rates must exceed 90% to allow for a meaningful analysis of air quality statistics to be undertaken.

	2003	**2004**
Data capture rate	96.7%	90.1%
Max 15 min mean	170 ug/m-3	132 ug/m-3
Max hourly mean	146 ug/m-3	94 ug/m-3
Max daily mean	42 ug/m-3	28 ug/m-3
Average	8 ug/m-3	6 ug/m-3
No. of exceedences	0	0

Trends:
No trends observed

It is difficult to make meaningful comment and predict future trends based on two years worth of SO_2 data, therefore a furthers years monitoring and analysis will make it easier to identify any trends.

No exceedences of the National Air Quality Objectives for sulphur dioxide have been detected,

Annual mean concentrations and data capture rates for the 8 port sampler

	2001	**2002**	**2003**	**2004**
Annual Mean Concentration ug/m3	19.4	16	9.1	10.3
Data capture rate	99%	93%	91%	92%

Trends :
The annual mean S02 concentrations for the 8 port sampler indicate that there has been a decrease in concentrations over the past number years. No exceedence of the national objective detected.

Additional Information

New local developments

There have been no new local developments within the borough that will have a significant impact on air quality monitoring results.

Planning Applications

The following planning applications have the potential to affect local air quality:

- Pet Incinerator to the north of the town
- Three Housing developments boarding the town

Action Planned

The dispersion modeling exercise carried out as part of the stage 2 &3 review and assessment, predicted that the national air quality objective for PM_{10} would marginally exceeded. Ards Borough Council declared an Air Quality Management Area for PM_{10} and produced an Air Quality Management Order in March 2005. The designated area was identified using the information obtained by the fuel use survey carried out carried out as part of the stage 2& 3 review. (see appendix 1map of AQMA) .

The council intends to relocate the automatic air quality monitoring equipment to a site within the area of exceedence predicted by the dispersion modeling exercise. Monitoring will therefore continue to allow for the actual monitored concentrations to be compared with the National Air Quality Objectives and the predicted concentrations. If the monitored concentrations are found to exceed the objectives then the council will investigate measures to reduce domestic PM_{10} emissions within the boundary of the Air Quality Management Area.

It is anticipated that within 12 months of declaring an Air Quality Management Area, the Council will produce an action plan. Consultation will take place with the Department of the Environment, neighbouring District Councils other relevant authorities including the NIHE, local businesses and community groups and other such bodies or persons as are considered appropriate.

The council is currently consulting the NI Housing Executive with regards to the planned fuel conversion programme for the Newtownards area, in connection with the their Air Quality Management role.

Conclusions

This progress report indicates that :

1. the findings of the 2004 Stage 2 & 3 report continue to be valid

2. based on the new monitoring results, there has not been any changes in local circumstances to indicate a possible exceedence of the air quality standards and objectives.

3. The future actions outlined in 2004 Stage 2 & 3 report continue to be valid. These are outlined below:

    - To continue monitoring nitrogen dioxide in key locations

    - To continue monitoring sulphur dioxide and black smoke concentrations using the 8 port sampler at the current location

    - To relocate the automatic monitoring station to a site within the area of predicted exceedence for PM_{10}

    - To continue monitoring at the new site, in order to confirm the location and magnitude of the exceedences.

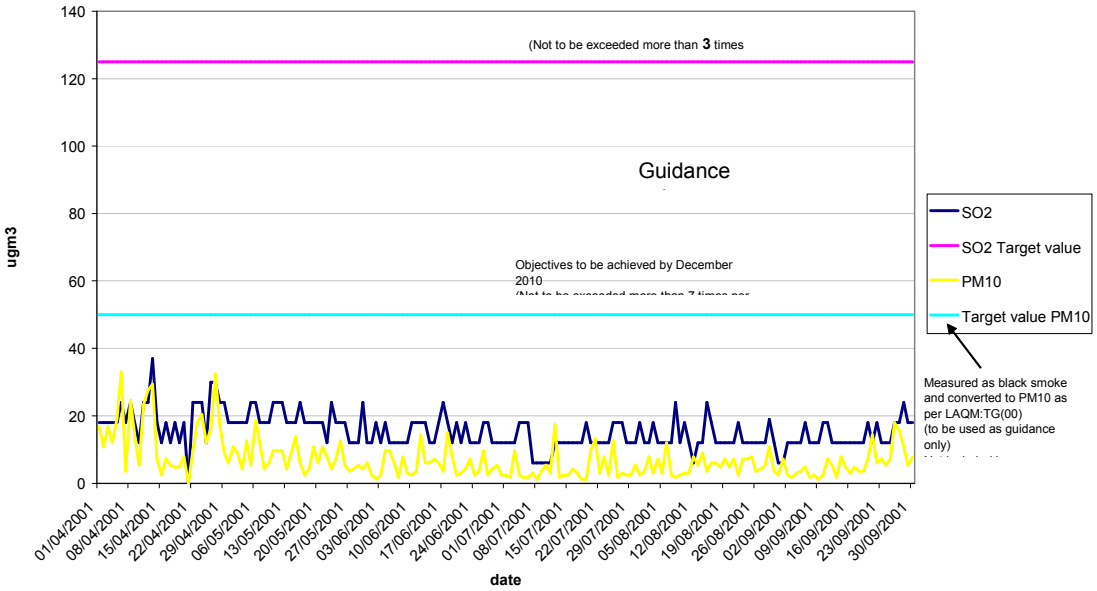
    - To continue to consult with other organisations to identify measures required to reduce pollutant emissions, and implement an action plan.

Further information concerning this report or local air quality issues in general may be obtained from the Environmental Health Services, 2 Church Street Newtownards, BT23 4AP. Contact number：02891824052.

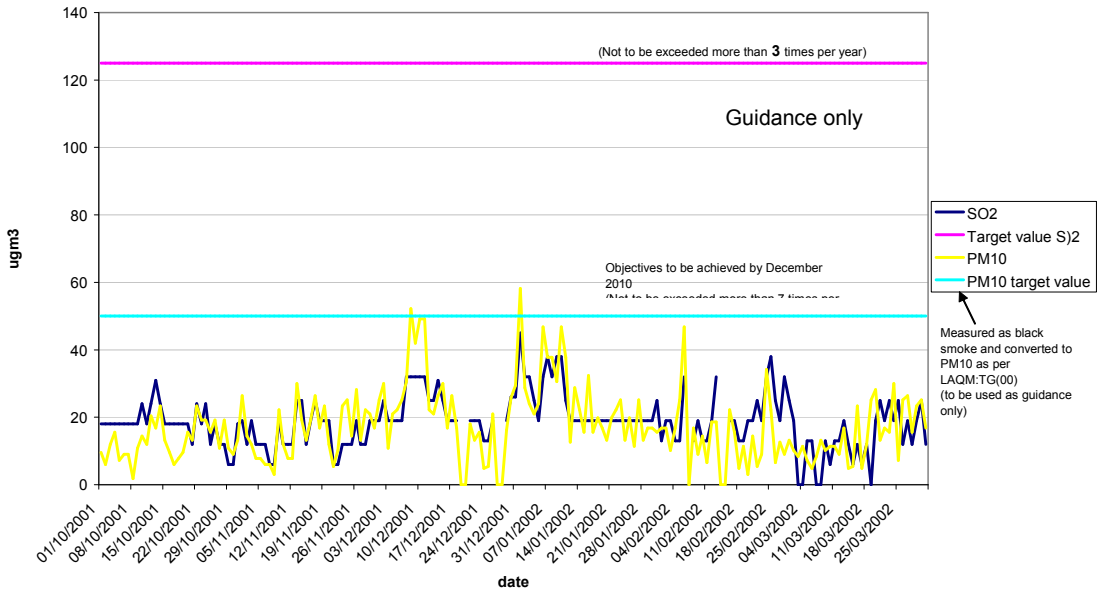
APPENDIX ONE

APPENDIX TWO

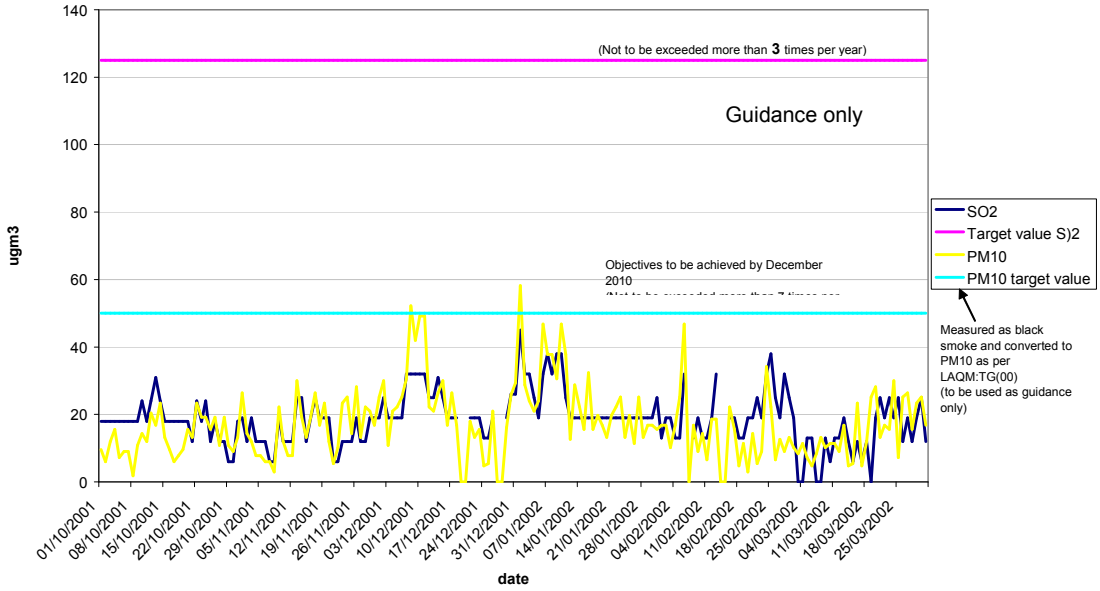
Scrabo fold 8-port sampler results summer 2001



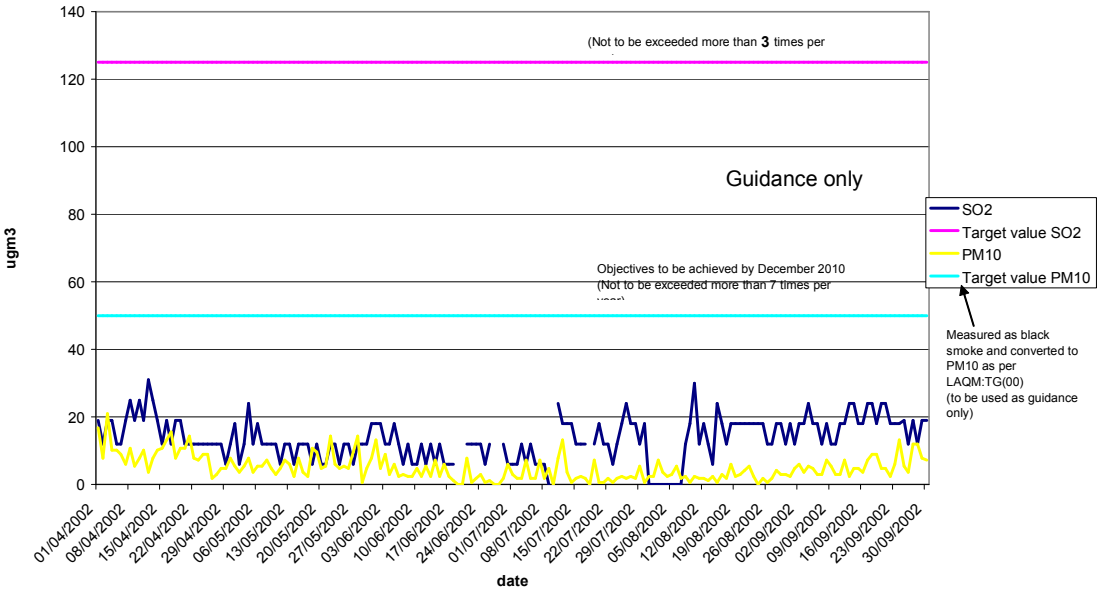
Scrabo Fold 8-Port sampler results winter 2001/2002



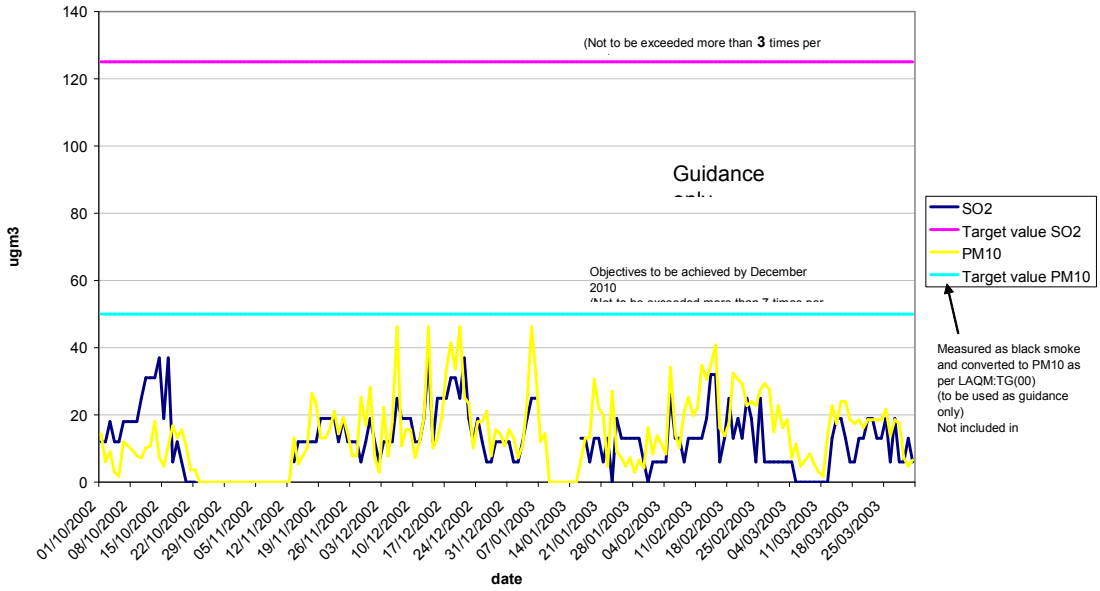
Scrabo Fold 8-Port sampler results winter 2001/2002



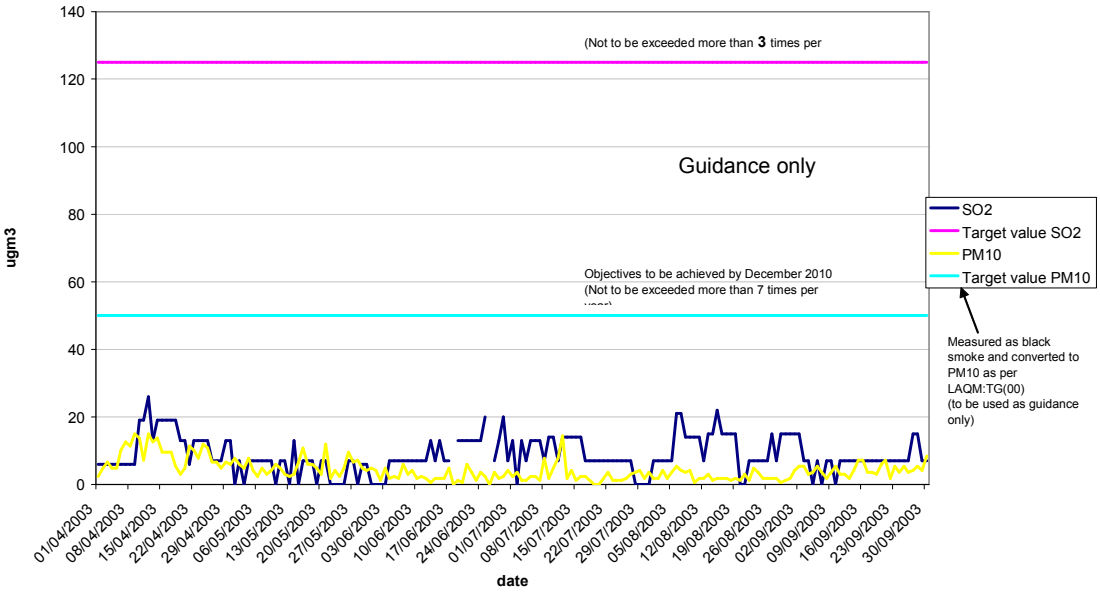
Scrabo Fold 8-Port sampler results summer 2002



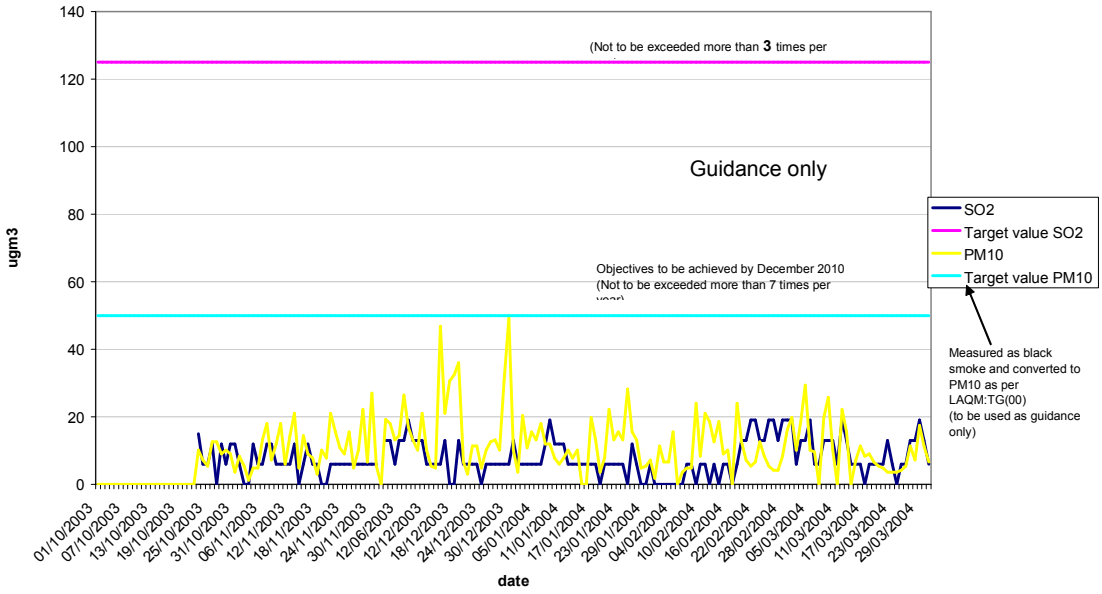
Scrabo Fold 8-Port sampler results winter 2002-2003



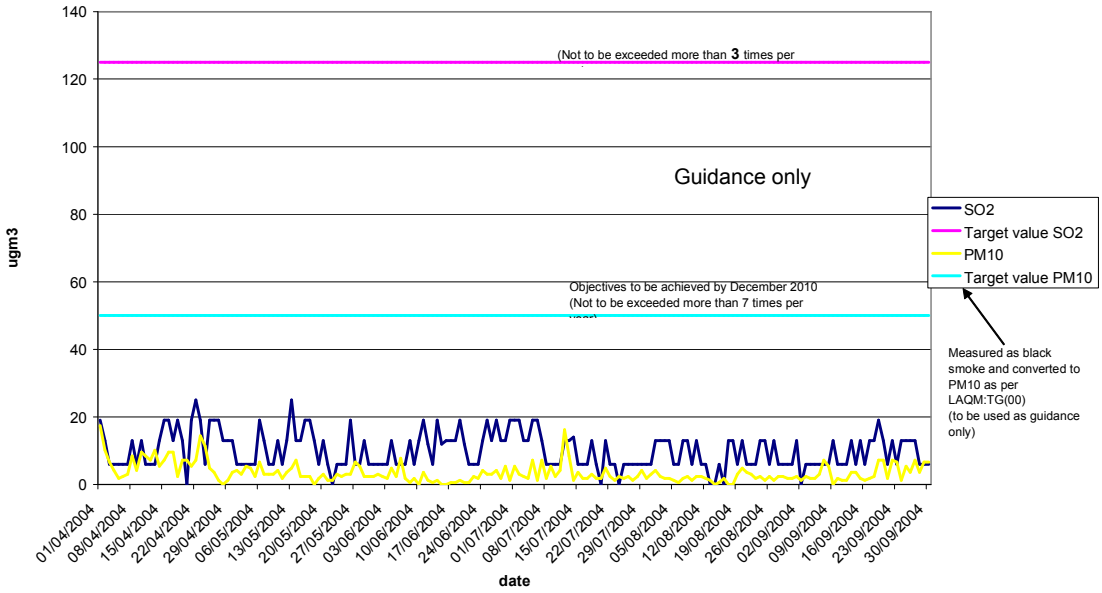
Scrabo Fold 8-Port sampler results summer 2003

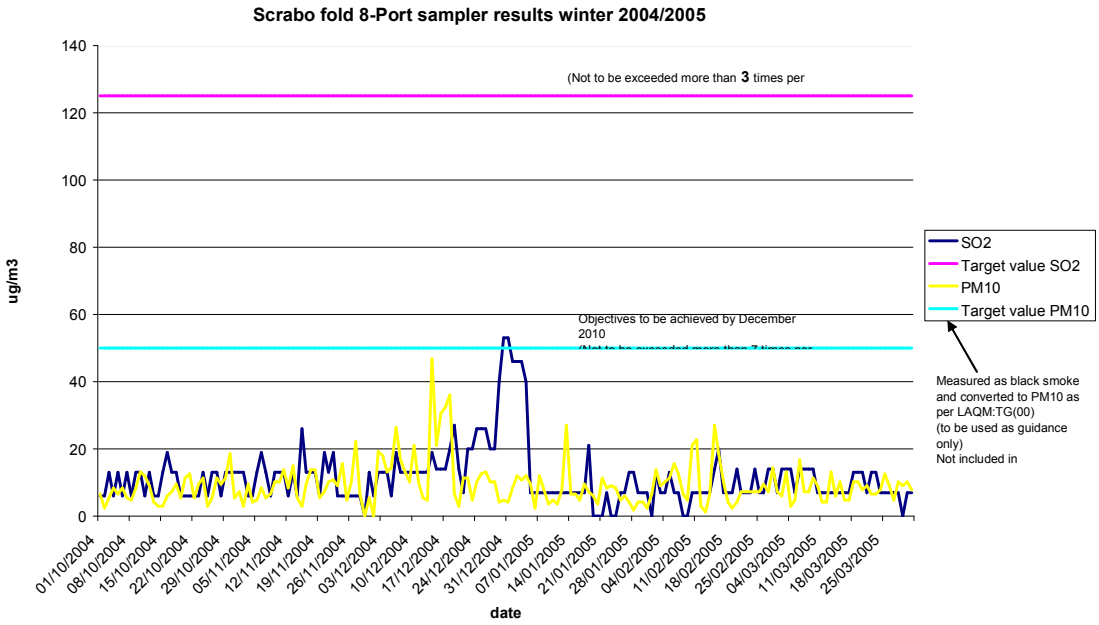


Scrabo Fold 8-Port sampler results winter 2003-2004



Scrabo Fold 8-Port sampler results summer 2004




Scrabo fold 8-Port sampler results winter 2004/2005
ug/m3
140
120
100
80
60
40
20
0
(Not to be exceeded more than 3 times per
Objectives to be achieved by December 2010
SO2
Target value SO2
PM10
Target value PM10
Measured as black smoke and converted to PM10 as per LAQM:TG(00) (to be used as guidance only)
Not included in
01/10/2004
08/10/2004
15/10/2004
22/10/2004
29/10/2004
05/11/2004
12/11/2004
19/11/2004
26/11/2004
03/12/2004
10/12/2004
17/12/2004
24/12/2004
31/12/2004
07/01/2005
14/01/2005
21/01/2005
28/01/2005
04/02/2005
11/02/2005
18/02/2005
25/02/2005
04/03/2005
11/03/2005
18/03/2005
25/03/2005
date

Produced by netcen on behalf of Ards Borough Council

ARDS
01 March 2003 to 28 February 2004

These data have been fully ratified by netcen

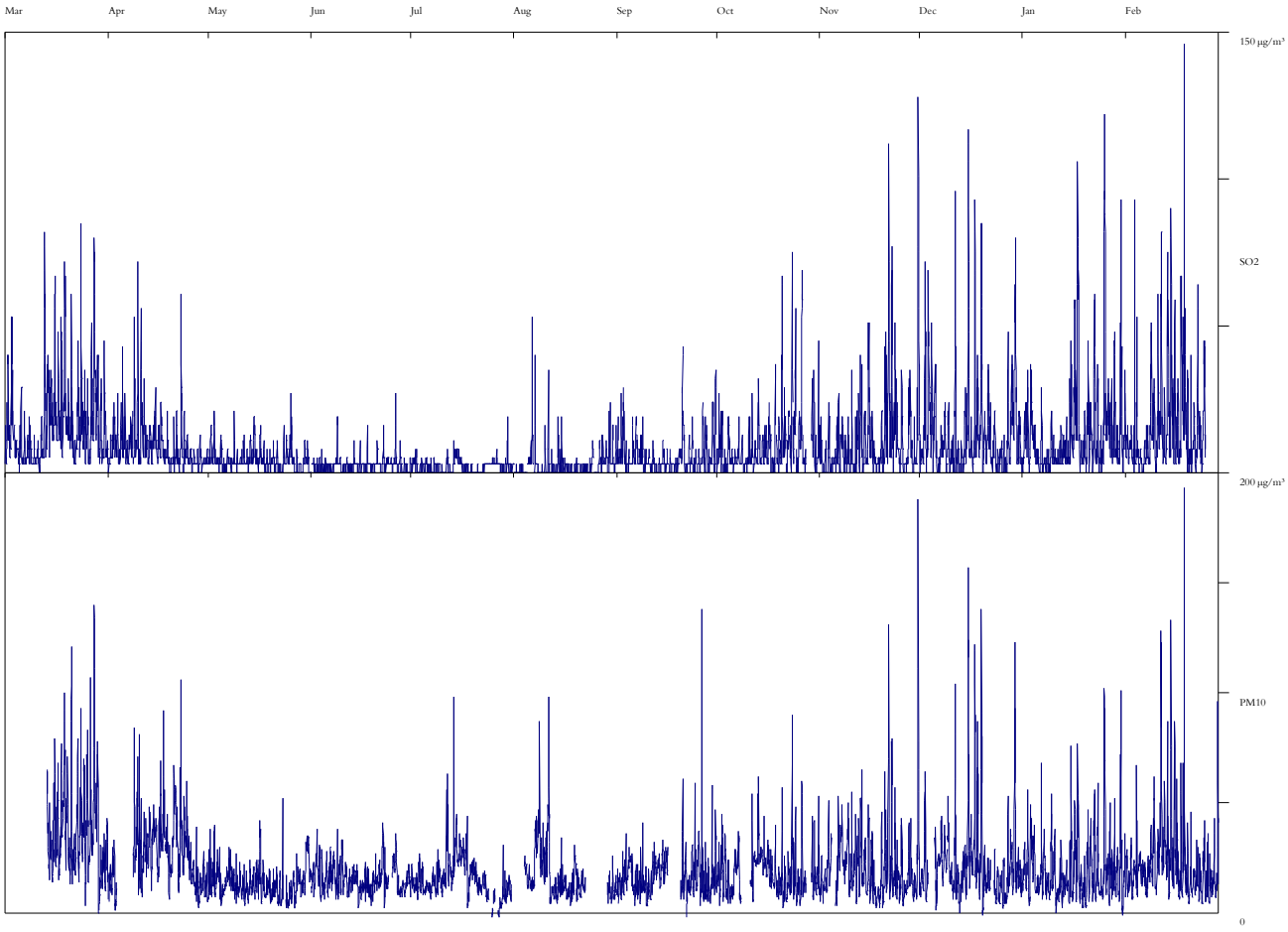
POLLUTANT	SO_2	PM_{10}
Number Very High	0	0
Number High	0	0
Number Moderate	0	83
Number Low	30615	7453
Maximum 15-minute mean	170 µg m^{-3}	338 µg m^{-3}
Maximum hourly mean	146 µg m^{-3}	193 µg m^{-3}
Maximum running 8-hour mean	87 µg m^{-3}	93 µg m^{-3}
Maximum running 24-hour mean	43 µg m^{-3}	61 µg m^{-3}
Maximum daily mean	42 µg m^{-3}	54 µg m^{-3}
Average	8 µg m^{-3}	19 µg m^{-3}
Data capture	97.0 %	87.6 %

All mass units are at 20'C and 1013mb

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Sulphur Dioxide	15-minute mean > 266 µg m^{-3}	0	0
Sulphur Dioxide	Hourly mean > 350 µg m^{-3}	0	0
Sulphur Dioxide	Daily mean > 125 µg m^{-3}	0	0
PM_{10} Particulate Matter (Gravimetric)	Daily mean > 50 µg m^{-3}	12	12
PM_{10} Particulate Matter (Gravimetric)	Annual mean > 40 µg m^{-3}	0	-

Produced by netcen on behalf of Ards Borough Council

Ards Air Monitoring
Hourly Mean Data for 01 March 2003 to 28 February 2004



For further information on air pollution monitoring please don't hesitate to contact:
David Madle Direct line 0870 190 6523
Environmental Quality Direct facsimile 0870 190 6377
AEA Technology e-mail david.madle@aeat.co.uk
Building 551
Harwell
Didcot
Oxfordshire

OX11 0QJ

Produced by netcen on behalf of Ards Borough Council

ARDS
01 September 2004 to 28 February 2005

These data have been fully ratified by netcen

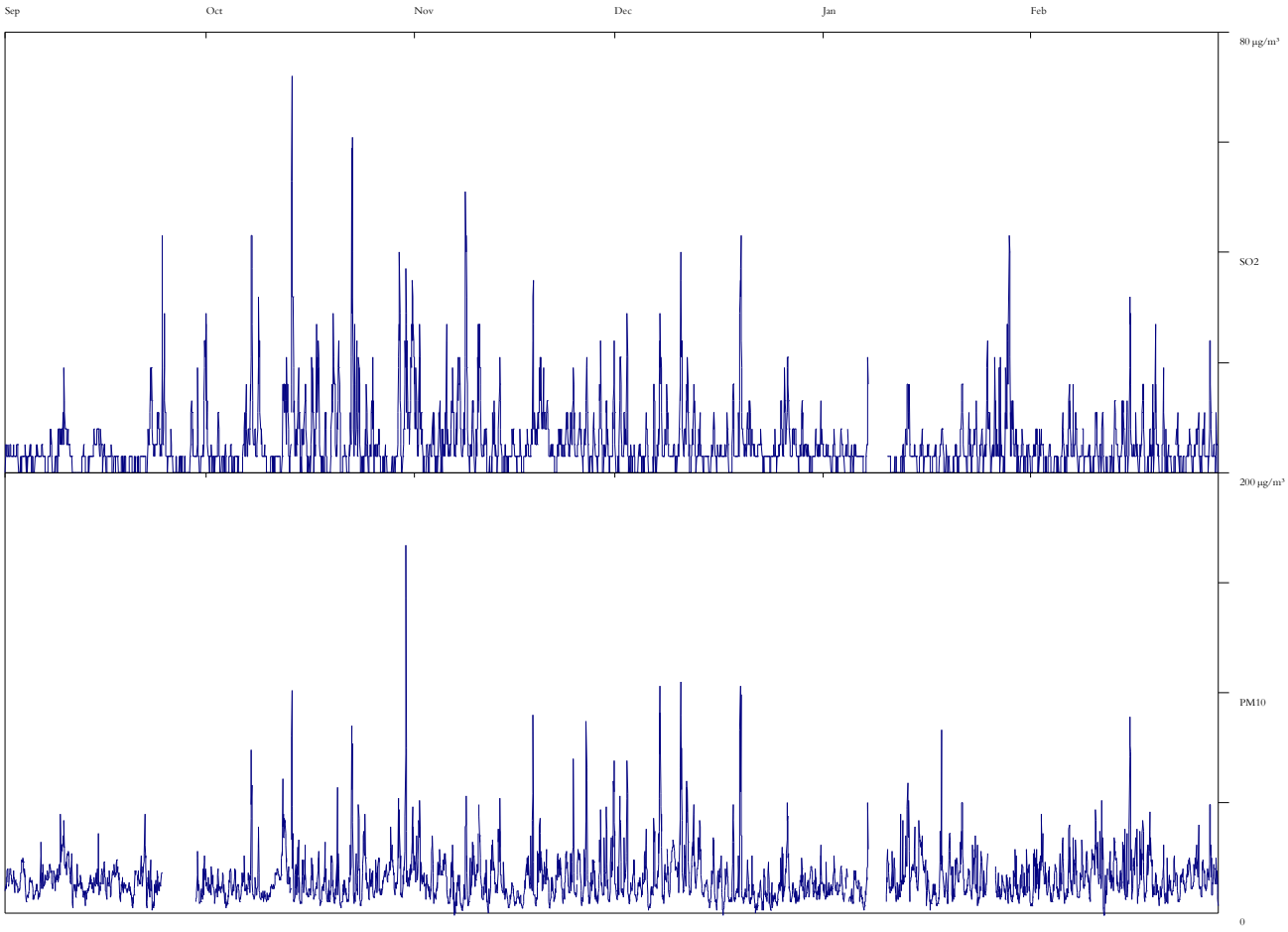
POLLUTANT	SO_2	PM_{10}
Number Very High	0	0
Number High	0	0
Number Moderate	0	0
Number Low	16658	4086
Maximum 15-minute mean	101 µg m^{-3}	369 µg m^{-3}
Maximum hourly mean	72 µg m^{-3}	167 µg m^{-3}
Maximum running 8-hour mean	39 µg m^{-3}	73 µg m^{-3}
Maximum running 24-hour mean	19 µg m^{-3}	38 µg m^{-3}
Maximum daily mean	18 µg m^{-3}	34 µg m^{-3}
Average	5 µg m^{-3}	16 µg m^{-3}
Data capture	97.9 %	94.5 %

All mass units are at 20'C and 1013mb

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Sulphur Dioxide	15-minute mean > 266 µg m^{-3}	0	0
Sulphur Dioxide	Hourly mean > 350 µg m^{-3}	0	0
Sulphur Dioxide	Daily mean > 125 µg m^{-3}	0	0
PM_{10} Particulate Matter (Gravimetric)	Daily mean > 50 µg m^{-3}	0	0
PM_{10} Particulate Matter (Gravimetric)	Annual mean > 40 µg m^{-3}	0	-

Produced by netcen on behalf of Ards Borough Council

Ards Air Monitoring
Hourly Mean Data for 01 September 2004 to 28 February 2005



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Produced by netcen on behalf of Ards Borough Council

ARDS
01 January to 31 December 2004

These data have been fully ratified by netcen

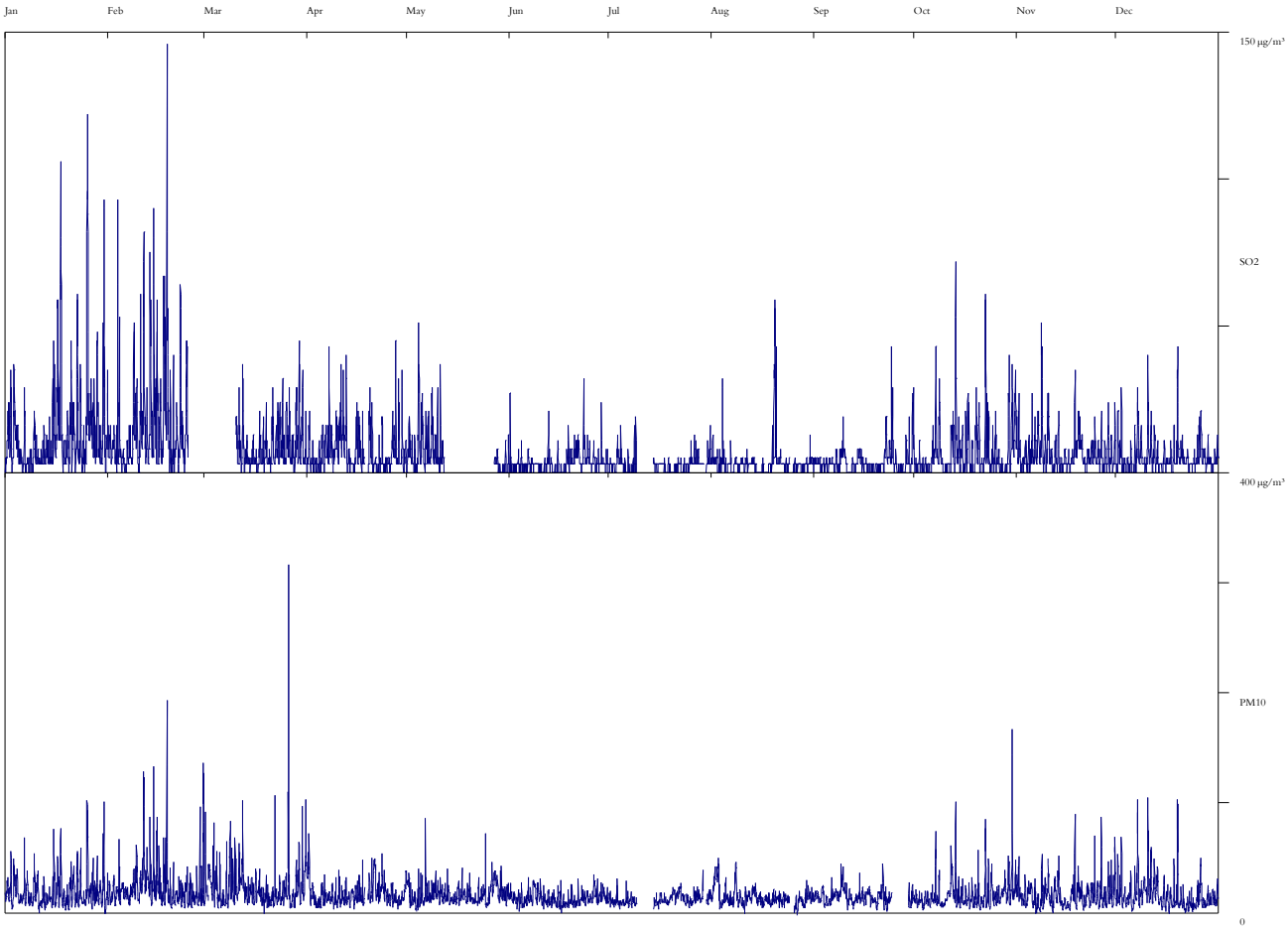
POLLUTANT	SO_2	PM_{10}
Number Very High	0	0
Number High	0	0
Number Moderate	0	19
Number Low	30855	8359
Maximum 15-minute mean	160 µg m^{-3}	545 µg m^{-3}
Maximum hourly mean	146 µg m^{-3}	316 µg m^{-3}
Maximum running 8-hour mean	87 µg m^{-3}	93 µg m^{-3}
Maximum running 24-hour mean	43 µg m^{-3}	55 µg m^{-3}
Maximum daily mean	42 µg m^{-3}	51 µg m^{-3}
Average	7 µg m^{-3}	16 µg m^{-3}
Data capture	89.7 %	95.8 %

All mass units are at 20'C and 1013mb

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Sulphur Dioxide	15-minute mean > 266 µg m^{-3}	0	0
Sulphur Dioxide	Hourly mean > 350 µg m^{-3}	0	0
Sulphur Dioxide	Daily mean > 125 µg m^{-3}	0	0
PM_{10} Particulate Matter (Gravimetric)	Daily mean > 50 µg m^{-3}	2	2
PM_{10} Particulate Matter (Gravimetric)	Annual mean > 40 µg m^{-3}	0	-

Produced by netcen on behalf of Ards Borough Council

Ards Air Monitoring
Hourly Mean Data for 01 January to 31 December 2004



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