2009 Air Quality Updating and Screening Assessment for *Ards Borough Council*

In fulfillment of Part IV of the Environment Act 1995
Local Air Quality Management

April 2009

Local Authority Officer	Marguerite Morris EHO Gareth Kinnear SEHO

Department	Environmental Health Department
Address	2 Church Street, Newtownards Co Down BT23 4AP
Telephone	028 91824051
e-mail	marguerite.morris@ards-council.gov.uk gareth.kinnear@ards-council.gov.uk

Report Reference number	USA report Ards Borough Council
Date	April 2009

Executive Summary

Good air quality is a fundamental requirement of human health. Increased priority has been given at both European and National levels to the assessment and management of air quality. Local Air Quality Management (LAQM) provides the framework within which air quality is managed by District Councils to review and assess a range of air pollutants against the objectives set out within the UK National Air Quality Strategy. The production of an annual air quality report is statutory duty for all local authorites.

Air quality in Northern Ireland has shown substantial improvement in recent years. In particular levels of pollutants associated with coal and oil combustion have declined significantly over the past decade. The 2006 review of the Air Quality Strategy reports that current average levels of manmade particulate pollution in the UK are estimated to reduce life expectancy by up to eight months. Continued effort to reduce air pollution is therefore important, together with monitoring to assess progress.

This Updating and Screening Assessment (USA) has been undertaken in accordance with the Local Air Quality Technical Guidance TG.09. It is part of a continual process of review and assessment of local air quality, and it provides an opportunity to update information on the local pollution climate and to revaluate conclusions from the previous assessments.

Within this updating and screening assessment possible sources of pollution in the Borough have been re-examined and any aspects that have changed since the previous round of review and assessment have been identified. New monitoring data has been used to assess compliance with the relevant national air quality objectives. The conclusions from the previous round of review and assessment continue to be valid and there is no need to proceed to a detailed assessment for any of the monitored pollutants.

Table of contents

1 Introduction 3

1.1 Description of Local Authority Area 3

1.2 Purpose of Report 3

1.3 Air Quality Objectives 4

1.4 Summary of Previous Review and Assessments 5

2 New Monitoring Data 6

2.1 Summary of Monitoring Undertaken 6

2.2 Comparison of Monitoring Results with AQ Objectives 8

3 Road Traffic Sources 16

3.1 Narrow congested streets with residential properties close to the kerb 16

3.2 Busy streets where people may spend 1-hour or more close to traffic 16

3.3 Roads with high flow of buses and/or HGVs. 16

3.4 Junctions and busy roads 16

3.5 New roads constructed or proposed since the last round of review and assessment 17

3.6 All roads with significantly changed traffic flows. 17

3.7 Bus and coach stations 18

4 Other Transport Sources 19

4.1 Airports 19

4.2 Railways (diesel and steam trains) 19

4.3 Ports (shipping) 19

5 Industrial Sources 20

5.1 New or Proposed Industrial Installations 20

5.2 Major fuel (petrol) storage depots 20

5.3 Petrol stations 21

5.4 Poultry farms 21

6 Commercial and Domestic Sources 22

6.1 Biomass combustion – Individual Installations 22

6.2 Biomass combustion – Combined Impacts 22

6.3 Domestic Solid-Fuel Burning 22

7 Fugitive or Uncontrolled Sources 23

8 Conclusions and Proposed Actions 24

8.1 Conclusions from New Monitoring Data 24

8.2 Conclusions from Assessment of Sources 24

8.3 Proposed Actions 24

9 References 24

Appendices

1 Introduction

1.1 Description of Local Authority Area

Ards Borough Council is situated east of Belfast on the shores of Strangford Lough, which is designated as an area of outstanding natural beauty and special scientific interest. The Borough comprises of 140 square miles, bounded by 90 miles of coastline. Ards remains one of the fastest growing boroughs with the Northern Ireland Statistics and Research Agency Mid 2006 population estimates standing at 76,179 representing 4.4% of the total population of Northern Ireland.

The Borough is of mixed urban and rural character. The main town of Newtownards is located at the northern end of Strangford Lough and is a natural basin surrounded by hills. The prevailing wind direction is south-westerly. The other main centres of population include Comber, Donaghadee and Portaferry. Neighbouring Councils include North Down Borough Council, Castlereagh Borough Council and Down District Council.

Map of Borough:

1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where exceedences are considered likely, the local authority must then declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM **in Northern Ireland** are set out in the Air Quality Regulations (Northern Ireland) 2003, Statutory Rules of Northern Ireland 2003, no. 342, and are shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre μg/m^3 (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

Table 1.1 Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in Northern Ireland.

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene			
	16.25 μg/m^3	Running annual mean	31.12.2003
	3.25 μg/m^3	Running annual mean	31.12.2010
1,3-Butadiene	2.25 μg/m^3	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 μg/m^3	Annual mean	31.12.2004
	0.25 μg/m^3	Annual mean	31.12.2008
Nitrogen dioxide	200 μg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 μg/m^3	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 μg/m^3, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 μg/m^3	Annual mean	31.12.2004
Sulphur dioxide	350 μg/m^3, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 μg/m^3, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 μg/m^3, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

This USA Report is part of a staged Review and Assessment process undertaken by all local authorites in the UK. The first round consisted of four stages which resulted in a number of authorites declaring air quality management areas (AQMAs) for particular pollutants and producing action plans to address air quality issues. The second round consists of a series of USA reports and detailed assessments where required, to ensure that the AQMAs and action plans are kept up to date. This report describes the second USA report of this round.

The stage one review and assessment completed in 2000 concluded that:

1. The air quality objectives for the following pollutants were not likely to be exceeded:

Benzene, 1,2- Butadiene and Lead

2. A detailed assessment was required for the following pollutants:

Carbon Monoxide, Sulphur Dioxide, Nitrogen dioxide and PM_{10}

The stage two & three assessment completed in 2004 concluded that:

1. The air quality objectives for the following pollutants were not likely to be exceeded:

Carbon Monoxide, Nitrogen Dioxide, and Sulphur Dioxide

2. Based on the predictions of the dispersion modelling exercise it was identified that the objective for the following pollutant would be marginally exceeded:

PM_{10}

The area of predicted PM_{10} exceedence was identified to be within the area of Bradshaw's Brae, based on the findings of the dispersion modelling exercise. The modelling was undertaken by BMT Cordah on behalf of the Council during 2003/2004. The findings were in part based on the real time monitoring for PM_{10} at the Glen Community Centre in Newtownards, and on a fuel usage survey carried out in April 2003. BMT Cordah concluded that the NAQS 24 hour mean would be marginally exceeded, as a result of the high level of domestic coal burning in the town.

The Council therefore declared an AQMA, and produced an action plan as a means to improve air quality in Newtownards. The AQMA encapsulated the areas within Newtownards that had the highest density of dwellings using solid fuel burning as the primary source of heating. The automatic monitoring station was relocated to a site within the AQMA, to confirm the findings of the dispersion modelling exercise. Initially there were some difficulties in finding a suitable location; however, the monitoring station was moved to a site within the grounds of Ards Leisure Centre during the spring of 2006. Information relating to the site, including the latest monitoring data, can be accessed at http://www.airqualityni.co.uk. The monitoring from this location indicated that it was unlikely that the objective for PM10 will be exceeded. As a result Ards Borough Council revoked the AQMA on 1st December 2007.

In addition it was felt it would be beneficial to identify any major changes in fuel consumption within the AQMA. A consultation exercise was undertaken with the NIHE, to assess the amount of fuel conversion carried out within their properties since 2003. The NIHE fuel conversion programme has been ongoing since 2003 and is due completion end of 2009, with an estimated 859 properties converted, therefore significantly reducing the emissions from domestic properties within the town.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

From mid 2002 until April 2006, an automatic monitoring station was located at an urban background Estate, Newtownards, to monitor pollutants from the high density of domestic coal burning properties in the area. PM_{10} is monitored using an automatic TEOM sampler and sulphur dioxide is monitored using a UV fluorescence analyser. Modelling carried out for the combined $2^{nd}/3^{rd}$ review indicated the possibility of exceedence of the PM_{10} objective. As a result an AQMA was declared in 2005 and the automatic monitoring station was moved to a location within the area of predicted exceedence in April 2006. The station is now located at the rear of Ards Leisure Centre, William Street, Newtownards. The monitoring results from this location indicate that it is unlikely that the objectives for PM_{10} or Sulphur Dioxide would be exceeded.

The reference method for PM_{10} is the gravimetric technique, in which the ambient concentration of PM_{10} is calculated from the mass of particulate matter collected on a filter. The TEOM has been found to underestimate relative to this reference method. As a result data obtained from the TEOM sampler has been multiplied by a factor of 1.3 to give the gravimetric equivalent.

Quality Assurance and Quality Control

Environmental Monitoring System (EMS) the supplier of the automated Sulphur Dioxide and PM10 analysers are currently contracted to undertake routine servicing and maintenance of the equipment. This aims to ensure a high percentage of data capture due to reduced delays in the execution of repairs, in the event of equipment breakdown.

The Council has engaged the services of NETCEN to undertake independent 6 –monthly calibrations. NETCEN is also responsible for data management which involves downloading data directly from the site on a daily basis and validating the data to provide reports at regular intervals. Any irregularities are notified immediately to the Council and officers can take measures to rectify any problems or notify EMS to carry out repairs if necessary. The Councils air quality officers undertake routine calibration and maintenance of the equipment following the QA/QC procedures set out by NETCEN. A data capture rate of 90% for ratified data is specified in the technical guidance and is the recommended as a target for automatic monitoring.

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA ?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Worst-case Location ?
Ards Leisure Centre	Urban background	348469 374516	PM_{10} SO_2	N	N	N/A	Y

2.1.2 Non-Automatic Monitoring

Since November 2000, a semi-automatic eight-port bubbler has been located in the Scrabo Estate in Newtownards. This area was identified as an area with high density of domestic coal burning properties. The 8-port bubbler apparatus was originally used to measure both sulphur dioxide and suspended particulate matter as black smoke, however, since 2007 it has only been used for black smoke. This method does not allow direct comparison with the National Air Quality Objectives, but it does provide a useful indicative measurement.

Ards Borough Council has monitored Nitrogen Dioxide by passive diffusion tubes regularly since 1994. Diffusion tube data cannot be compared directly with air quality limit values based on short-term averages; however, they can be used to help identify areas with high concentrations of NO_2, which require more detailed investigation. The aim of the NO2 monitoring undertaken has been to measure pollutant concentrations at busy roads and junctions especially near residential areas. The tubes are sited using guidelines from NETCEN but are not part of the monitoring network.

Table 2.2 Details of Non- Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQ MA?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Worst-case Location ?
2a East Street	Urban Background	349001 374242	Nitrogen Dioxide	N	Y	>50m from busy road	Y
Islandmore	Urban Background	349847 375132	Nitrogen Dioxide	N	Y	>50m from busy road	Y
Bangor Road	Roadside	349607 374267	Nitrogen Dioxide	N	Y	1.5m	Y
Talbot Street	Roadside	348994 374553	Nitrogen Dioxide	N	Y	1.5m	Y
Church Street	Roadside	348128 374364	Nitrogen Dioxide	N	Y	1.5m	Y
Court Street	Roadside	348945 373928	Nitrogen Dioxide	N	N	1.5m	N
Scrabo fold	Urban Background	348238 373590	Particulates (black smoke)	N	N/A	>50m from busy road	Y

Quality Assurance and Quality Control

The semi automatic eight port sampler in the Scrabo Estate was sited in accordance with NETCEN guidelines. The equipment is subject to routine in-house checks and is serviced and maintained at two year intervals, however is no independent calibration of the equipment.

All six of the Nitrogen Dioxide Tubes are sited in accordance with the NETCEN guidelines; however, there is no longer a national monitoring network. The NO_2 tubes are supplied by Gradko Anaylsed by Casella, (preparation method 10% TEA in water), which is a UKAS recognised laboratory for the provision and analysis of diffusion tubes. They participate in the Work Place Analysis Scheme for Proficiency (WASP) for NO_2. This scheme is an independent proficiency testing scheme operated by the Health and Safety Laboratory (HSL). Each month a diffusion tube doped with nitrite is distributed to each participating laboratory; participants then analyse the tube and report the result to the HSL. The nominal mass of nitrite on the doped tubes is different each month, and is intended to reflect the range encountered in actual monitoring.

The Technical guidance states that diffusion tube data should be appropriately bias corrected. Unfortunately the Council does not carry out continuous monitoring for NO_2, therefore can not undertake a collocation study. After consultation with the air quality officer for the Eastern Group it was decided that the Cassella's national standard bias adjustment factor for 2008 should be used. The overall correction factor for 2008 is 0.83, which was based on 9 co-located studies throughout the UK. Information on the correction factor can be obtained at:
www.uwe.ac.uk/aqm/review/R&Asupport/diffusiontube270207.xls

For Casella 2008 the diffusion tube precision is shown to be good, further information on the precision results for nitrogen dioxide diffusion tube collocation studies can be viewed at
www.uwe.ac.uk/aqm/review/R&Asupport/tube_precision2008(feb%2009)pdf

2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

Pollutant	Objective	Date to be achieved by
Nitrogen Dioxide	200ug/m3 hourly mean not to be exceeded >18 times per year	31st December 2005
	40ug/m3 annual mean	31st December 2005

Nitrogen dioxide (NO2) and metric oxide (NO) are both oxides of nitrogen and are collectively referred to as Nox. All combustion processes produce Nox emissions largely in the form of nitric oxide which is converted to nitrogen dioxide, mainly as a result of reactions with ozone in the atmosphere. It is Nitrogen Dioxide which is of most concern, as it is respiratory irritant.

The principal source of nitrogen dioxide is road transport. Major Roads carrying large volumes of high speed traffic are major contributors, as are city centres with congested streets. Other significant sources of nitrogen oxides emissions include power stations and domestic sources.

The conclusion from the previous round of review and assessment continues to be valid, and it is not necessary to proceed to a detailed assessment.

Diffusion Tube Monitoring Data

There is currently 6 diffusion tubes located throughout the town of Newtownards, all results from 2001-2008 are contained within appendix one. In 2007 it was decided to relocate the tube at the Town Hall, to 2a East Street, Newtownards and the tube at Ashgrove Avenue, to Church Street Newtownards as it felt there was no relevant exposure at either site.

The 2008 results (annual average) show no exceedences of the National Air Quality objective. Although the Court Street 2008 result is above the national standard there is currently no relevant exposure at this location. However, this location is considered to be the best possible location to allow for monitoring of the new A20 Newtownards Southern Relief Road which is currently under construction. This involves the construction of a 2.0km new link road, from the A20 Blaire Main Road South to the A21 Comber to the Portaferry Road, Newtownards.

The results for the past 8 years do not show any particular trends. Annual variation is more likely to be as a result of climatic conditions, rather than changes in emissions.

Table 2.4a Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Data Capture 2008 %	Annual mean concentrations 2008 ($\mu g/m^3$) Adjusted for bias
ABC1	East Street	N	83 (10 months)	19.1
ABC2	Court Street	N	100 (12months)	**45.7**
ABC3	Donaghadee Road	N	92 (11 months	28.7
ABC4	Islandmore Avenue	N	92 (11 months)	12
ABC5	Church Street	N	83 (10 months)	27.4
ABC6	Talbot Street	N	100 (12 months)	25.7

Table 2.4b Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Annual mean concentrations ($\mu g/m^3$) Adjusted for bias		
			2006 *	2007 *	2008
ABC1	East Street	N	-	-	19.1
ABC2	Court Street	N	35.7	39	45.7
ABC3	Donaghadee Road	N	23.9	27.4	
ABC4	Islandmore Avenue	N	10.6	12.6	
ABC5	Church Street	N	-	-	27.4
ABC6	Talbot Street	N	-	19.9	25.7
ABC7	Town Hall	N	43.2	43.9	-
ABC8	Ashmore	N	12.3	12.3	-

***Bias adjustment factors used**
2006 0.87
2007 0.92
2008 0.82

2.2.2 PM_{10}

Pollutant	Objective	To be achieved by
PM^{10}	24 hour mean 50 ug/m3 not to be exceeded more than 35 times a year	31.12.2004
	annual mean 40 ug/m3	31.12.2004
	*24 hour mean 50ug/m3 not to be exceeded more than 7 times per year	31.12.2010
	*annual mean 20 ug/m3	31.12.2010

* not prescribed in regulations for the purposes of local air quality management

Particulate matter is often associated with a range of medical conditions including effects on the respiratory and cardiovascular systems and asthma. Particulate matter in the atmosphere is composed of a wide range of material of various origins. There are a wide range of emission in the UK which can be divided into three main categories:
1. Primary particle emissions – which are derived directly from combustion sources including road traffic, power generation and industrial processes.
2. Secondary particles- which are formed by chemical reaction in the atmosphere
3. Coarse particles – comprise of emissions from a wide range of sources including re-suspended dusts from road traffic, construction works, and wind blown dusts and soils, and sea salt.

PM^{10} is the description given to particles falling below 10*u*m in diameter.

The conclusion from the previous round of review and assessment continues to be valid that it is not necessary to proceed to a detailed assessment for PM^{10}. Although the results from automatic monitoring station located in William Street, Newtownards indicates that there were no exceedences of the NAQO for PM^{10}, the data capture rate for 2008 was 73.2% which is below the 90% as required by the technical guidance. The data capture was intermittent as follows:

- data loss from 31st May to 10 June 2008 due to an air conditioning fault. Both instruments were switched off while waiting for repair.
- Various communications problems resulted in data loss 10th to 11th March, 19th to 25th and 15th to 16th August.
- the large gaps in the 2008 data set were due to flow problems highlighted at the external audits in March and July 2008, which have resulted in the following data rejection
- 1 to 19 March 2008 due to a low flow fault identified at the Audit on 5th March (instrument main flow -25% & total flow -17%). The TEOM pump was refurbished on 19th March
- 10 June to 7 August due to an intermittent flow fault and low flow identified at the audit on 30th July (instrument main flow -42% and total flow – 21% plus a major leak). The flow splitter was replaced and the pump refurbished during an engineer call out on 7th August 2008.

Produced by AEA on behalf of Ards Borough Council

ARDS LEISURE CENTRE
01 January to 31 December 2008

These data have been fully ratified by AEA

POLLUTANT	PM_{10}*+	PM_{10}+	SO_2
Number Very High	0	-	0
Number High	0	-	0
Number Moderate	0	-	0
Number Low	6393	-	30335
Maximum 15-minute mean	181 μgm^{-3}	139 μgm^{-3}	122 μgm^{-3}
Maximum hourly mean	121 μgm^{-3}	93 μgm^{-3}	85 μgm^{-3}
Maximum running 8-hour mean	70 μgm^{-3}	54 μgm^{-3}	36 μgm^{-3}
Maximum running 24-hour mean	48 μgm^{-3}	37 μgm^{-3}	19 μgm^{-3}
Maximum daily mean	48 μgm^{-3}	37 μgm^{-3}	19 μgm^{-3}
Average	20 μgm^{-3}	15 μgm^{-3}	3 μgm^{-3}
Data capture	73.2 %	73.2 %	88.3 %

* PM_{10} Indicative Gravimetric Equivalent µg m-3
+ PM_{10} as measured by a TEOM using a factor of 1.3 for Indicative Gravimetric Equivalence
All mass units are at 20'C and 1013mb

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

Produced by AEA on behalf of Ards Borough Council

Ards Leisure Centre
Hourly Mean Data for 01 January to 31 December 2008

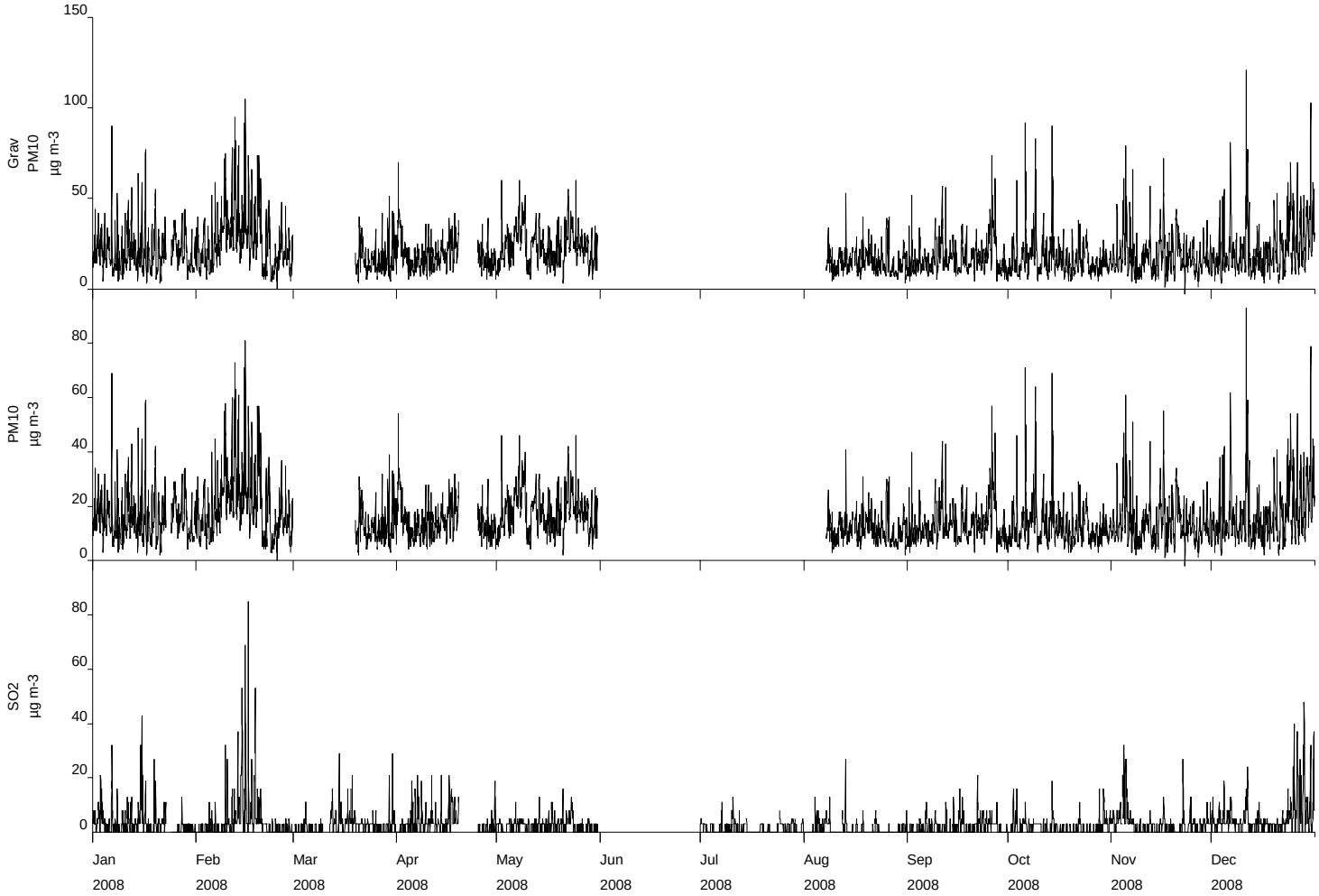


Table 2.5a Results of PM_{10} Automatic Monitoring: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2008 %	Annual mean concentrations ($\mu g/m^3$)		
				2006 *	2007 *	2008
1	Ards Leisure Centre	N	73.2	14	15	**20**

Table 2.5b Results of PM_{10} Automatic Monitoring: Comparison with 24-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2008 %	Number of Exceedences of hourly mean (50 $\mu g/m^3$) *If data capture < 90%, include the 90th %ile of hourly means in brackets.*		
				2006*	2007*	2008
1	Ards Leisure Centre	N	73.2	4	**3**	**0**

2.2.3 Sulphur Dioxide

Pollutant	Objective	To be achieved by
Sulphur Dioxide	1 hour mean: 350ug/m3 not to be exceeded more than 24 times a year	31.12.2004
	24 hour mean; 125 ug/m3 not to be exceeded more than 3 times a year	31.12.2004
	15 minute mean: 266 ug/m3 not to be exceeded more than 35 times a year	31.12.2005

Sulphur dioxide is an acute respiratory irritant. It is generated during the combustion of fuels containing sulphur. The most significant source is fossil fuelled power stations, other major sources include industrial emissions and commercial & domestic heating.

The conclusion from the first round of review and assessment continues to be valid, that the objective for this pollutant would not be exceeded and it is therefore not necessary to proceed to a detailed assessment.

There is currently no AQMA for Sulphur dioxide. The automatic monitoring station located at Ards Leisure Centre, William Street Newtownards and continually monitors sulphur dioxide using a UV Fluorescence analyser. The results indicate that during 2008 there were no exceedences. Although the results indicate that the NAQS objective was not exceeded unfortunately the data capture rate was intermittent as follows:

- data loss from 31st May to 10 June 2008 due to an air conditioning fault. Both instruments were switched off while waiting for repair.
- Various communications problems resulted in data loss 10th to 11th March, 19th to 25th and 15th to 16th August.
- S02 -data loss after the air conditioning fault from 10th to 30th June 2008. The instrument response was unstable and after ratification, the data was not representative of ambient concentrations and therefore was rejected.

The data capture rate was 88.3% for 2008, therefore the technical guidance requires the results to be shown as percentiles:

15 minute - 99th percentile = 45*u*g/m^3

1 hour - 99.7th percentile = 32*u*g/m^3

24 hour - 90th percentile = 14*u*g/m^3

Produced by AEA on behalf of Ards Borough Council

ARDS LEISURE CENTRE
01 January to 31 December 2008

These data have been fully ratified by AEA

POLLUTANT	PM_{10}*+	PM_{10}+	SO_2
Number Very High	0	-	0
Number High	0	-	0
Number Moderate	0	-	0
Number Low	6393	-	30335
Maximum 15-minute mean	181 μgm^{-3}	139 μgm^{-3}	122 μgm^{-3}
Maximum hourly mean	121 μgm^{-3}	93 μgm^{-3}	85 μgm^{-3}
Maximum running 8-hour mean	70 μgm^{-3}	54 μgm^{-3}	36 μgm^{-3}
Maximum running 24-hour mean	48 μgm^{-3}	37 μgm^{-3}	19 μgm^{-3}
Maximum daily mean	48 μgm^{-3}	37 μgm^{-3}	19 μgm^{-3}
Average	20 μgm^{-3}	15 μgm^{-3}	3 μgm^{-3}
Data capture	73.2 %	73.2 %	88.3 %

* PM_{10} Indicative Gravimetric Equivalent µg m-3
+ PM_{10} as measured by a TEOM using a factor of 1.3 for Indicative Gravimetric Equivalence
All mass units are at 20'C and 1013mb

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

2.2.3 Benzene

In the UK the Major source of Benzene is motor vehicle emissions, accounting for 64% of the total UK annual emissions. Petrol vehicles are the main source where benzene is released either as an un-burnt constituent of the fuel or as the product of the combustion of other hydrocarbons.

The maps available from the UK National Air Quality Archive indicate that the estimated background benzene concentrations for the Ards area are well below the objective. Ards Borough Council does not monitor for Benzene. The conclusion from the first round of review and assessment continues to be valid that it is unlikely that the 2010 objective will be exceeded. Therefore it will not be necessary to proceed to a detailed assessment for Benzene.

2.2.4 Other pollutants monitored

Ards Borough Council does not currently monitor for any other pollutants.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Ards Borough confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic

Ards Borough Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

3.3 Roads with a High Flow of Buses and/or HGVs.

Ards Borough Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

3.4 Junctions

The first round of review and assessment concluded that roads did not present a significant source of pollution in Ards. However the Council continues with the nitrogen dioxide tube monitoring at busy road junctions within Newtownards. The results from the diffusion tube survey can be found in appendix one. The results show that the National Air Quality Objective has not been exceeded at the monitored locations.

DMRB modelling was also carried out as part of the first round review and assessment to determine the impact of road traffic pollution. The sites modelled took into account busy road junctions within Newtownards, and identified that all junctions monitored met the air quality objectives for nitrogen dioxide.

Ards Borough Council confirms that there are no new/newly identified busy junctions/busy roads.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

3.5 New Roads Constructed or Proposed Since the Last Round of Review and Assessment

The following roads have been constructed or are currently being constructed since the last review and assessment:

A20 Nursery Road, Newtownards was completed in 2008, it created a direct link from Nursery Road, Newtownards to the Fredrick Street roundabout. This new section of road has reduced congestion and delays in the Scrabo Road area.

A20 Newtownards Southern Relief Road – this involves the construction of a 2.0km new link road, from the A20 Blaire Main Road South to the A21 Comber to the Portaferry Road in connection with the Castlebawn development. This construction will reduce congestion and delays while accommodating increasing traffic flows. Construction work commenced at the end of March 2008 and is currently progressing well it is expected that the road will be open for traffic late 2009.

An environmental impact assessment was carried out at the planning stage which adequately considered the impact on local air quality. Air quality assessments have shown no potential impact on the air quality objectives. However, when this new section of road is completed the Council may carry out NO2 monitoring at this location.

Ards Borough Council has assessed new/newly identified junctions meeting the criteria in Section A.5 of Box 5.3 in TG(09), and concluded that it will not be necessary to proceed to a Detailed Assessment.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

3.6 Roads with Significantly Changed Traffic Flows

The technical guidance defines a large increase in traffic as being more than 25% since the last review and assessment.

Based on the data from the annual traffic senses report there are no roads within the borough which meet this criteria.

Ards Borough Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

3.7 Bus and Coach Stations

The technical guidance states that for a bus station to have significant impact on air quality there needs to be a flow of vehicles greater than 2,500 buses per day.

The bus stations within the Borough would not meet this criteria.

Ards Borough Council confirms that there are no relevant bus stations in the District.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

4 Other Transport Sources

4.1 Airports

The Ards Borough Council Area does not have an airport, however there is am aerodrome located on the Portaferry Road, Newtownards. This services light aircraft movement and it is not considered to have a significant impact on local air quality.

Ards Borough Council confirms that there are no airports in the District.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

Ards Borough Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

4.2.2 Moving Trains

Ards Borough Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

4.3 Ports (Shipping)

Ards Borough Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

5 Industrial Sources

5.1 Industrial Installations

5.1.1 New or Proposed Installations for which an Air Quality Assessment has been carried out

Ards Borough Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been Introduced

Ards Borough Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment

Ards Borough Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

5.2 Major Fuel (Petrol) Storage Depots

There are no major fuel (petrol) storage depots within the Local Authority area.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

5.3 Petrol Stations

Ards Borough Council confirms that there are no petrol stations meeting the specified criteria**.**

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

5.4 Poultry Farms

Ards Borough Council confirms that there are no poultry farms meeting the specified criteria.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

Ards Borough Council confirms that there are no biomass combustion plants in the District.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

6.2 Biomass Combustion – Combined Impacts

Ards Borough Council confirms that there are no biomass combustion plants in the District.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

6.3 Domestic Solid-Fuel Burning

Newtownards is a densely populated area with a high concentration of domestic coal burning properties. During the previous round of review and assessment two domestic fuel use surveys were undertaken, this information was then used by BMT Cordah for advanced dispersion modelling. The modelling results showed no exceedences of the national air quality objectives. Since the last review and assessment the NIHE has carried out a large fuel conversion programme within Newtownards, which has significantly reduced the number of coal burning properties in the town. The results from automatic monitoring station located at the Ards Leisure Centre indicates that it the national air quality objectives for both PM_{10} and SO_2 have not been exceeded.

There are no new areas of relevant exposure within the Borough.

Ards Borough Council has assessed areas of significant domestic solid fuel use, and concluded that it will not be necessary to proceed to a Detailed Assessment.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

7 Fugitive or Uncontrolled Sources

Ards Borough Council confirms that there are no potential sources of fugitive particulate matter emissions in the District.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

The 2008 monitoring data has been assessed and has indicated no exceedences of the national air quality objectives. It is not necessary therefore to proceed to a detailed assessment for any of the pollutants, however monitoring should continue at key locations to allow for comparison in future rounds of review and assessment.

8.2 Conclusions from Assessment of Sources

The atmospheric emission sources in Ards have been examined and those aspects that have changed since the previous round of review and assessment have been identified. No new or significantly changed sources have been identified therefore it is not necessary to proceed to a detailed assessment.

8.3 Proposed Actions

The following actions as outlined in the previous round of review and assessment continue to be valid:

- To continue monitoring nitrogen dioxide in key locations
- To continue to use the 8 port sampler at the current location to monitor black smoke
- To continue to monitor at Ards Leisure Centre for PM_{10} and SO^2
- Submit a progress report April 2010

References

- Part IV of the Environment Act 1995 Local Air Quality Management Technical Guidance LAQM.TG (09)
- The UK National Air Quality Information Archive
- The Northern Ireland Air Quality Website - www.airquality,ni.gov.uk
- Air Pollution NI 2006- AEA/DOE pollution report

Appendix 1- Ards Borough Council NO2 results

LAB RESULTS

2001		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ards 1	Ashgrove	8.4	8.8	17.6	4.6	5.2	6.4	4.8	8.2	8.8	8.4	12.8	13.1
Ards 2	Islandmore Ave	9.0	11.5	0.0	2.7	5.2	5.8	3.2	7.2	7.0	8.6	13.3	14.5
Ards 3	D'Dee Road	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards 4	Blair Maine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards 5	Court street	23.4	27.4	14.2	15.9	24.0	27.4	18.8	30.9	26.0	23.6	35.7	34.7
Ards 6	Town Hall	21.2	23.8	5.3	12.9	14.4	21.6	14.6	27.2	22.9	27.7	34.4	30.5

2002		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ards 1	Ashgrove	2.9	6.6	9.0	7.1	7.2	2.2	3.9	4.8	8.3	8.8	11.3	11.4
Ards 2	Islandmore Ave	7.1	8.4	1.1	16.6	3.5	0.0	3.7	4.6	10.0	11.2	11.2	14.2
Ards 3	D'Dee Road	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards 4	Blair Maine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards 5	Court street	12.6	19.9	19.7	36.2	0.0	0.0	22.2	24.3	34.3	26.1	28.6	25.1
Ards 6	Town Hall	21.4	25.3	27.9	22.7	0.0	25.5	17.4	21.9	30.2	26.8	28.3	29.4

2003		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ards 1	Ashgrove	9.0	18.2	13.4	11.6	8.2	8.9	8.2	9.1	11.2	7.4	13.3	9.1
Ards 2	Islandmore Ave	11.9	20.3	12.8	10.0	6.1	9.3	8.1	7.2	9.5	6.8	11.6	9.6
Ards 3	D'Dee Road	0.0	24.2	20.6	22.9	20.6	20.0	17.4	20.5	20.6	15.6	23.0	20.0
Ards 4	Blair Maine	0.0	46.3	19.3	0.0	12.5	18.8	15.2	12.2	16.8	11.9	18.8	0.0
Ards 5	Court street	25.6	30.5	37.2	0.0	24.7	27.9	27.6	28.0	32.0	21.6	27.7	27.5
Ards 6	Town Hall	21.5	39.6	36.8	31.8	34.0	32.9	29.6	22.3	29.0	23.6	0.0	23.7

2004		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ards 1	Ashgrove	10.4	10.8	10.8	5.2	3.7	4.8	6.7	5.1	6.3	10.7	16.0	16.0
Ards 2	Islandmore Ave	10.3	7.6	4.6	4.5	4.9	3.7	4.8	4.1	4.1	9.7	17.0	16.0
Ards 3	D'Dee Road	22.5	23.8	19.1	15.5	18.7	14.6	2.6	10.8	12.2	0.0	36.0	31.0
Ards 4	Blair Maine	0.0	18.2	12.3	0.0	12.9	11.0	0.0	9.0	11.5	17.6	26.0	22.0
Ards 5	Court street	28.0	30.6	29.7	26.7	27.1	28.1	20.9	22.3	23.4	20.4	51.0	40.0
Ards 6	Town Hall	26.6	25.7	26.8	24.3	23.5	23.0	26.5	19.4	22.8	27.4	47.0	41.0

2005		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ards 1	Ashgrove	12.0	17.0	15.0	17.0	10.0	9.0	8.0	9.0	13.0	10.0	21.0	21.0
Ards 2	Islandmore Ave	11.0	16.0	12.0	12.0	9.0	9.0	7.0	11.0	11.0	11.0	22.0	23.0
Ards 3	D'Dee Road	29.0	35.0	37.0	28.0	31.0	20.0	19.0	29.0	30.0	24.0	49.0	45.0
Ards 4	Blair Maine	20.0	26.0	28.0	25.0	20.0	23.0	14.0	19.0	23.0	17.0	32.0	33.0
Ards 5	Court street	40.0	50.0	56.0	39.0	48.0	38.0	36.0	32.0	43.0	33.0	69.0	62.0
Ards 6	Town Hall	32.0	39.0	45.0	45.0	40.0	38.0	30.0	37.0	43.0	40.0	56.0	53.0

2006		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ards 1	Ashgrove	24.0	19.0	13.0	13.0	0.0	9.0	5.0	8.0	7.0	23.0	17.0	17.0
Ards 2	Islandmore Ave	21.0	17.0	12.0	13.0	0.0	8.0	7.0	8.0	5.0	13.0	14.0	16.0
Ards 3	D'Dee Road	41.0	35.0	33.0	34.0	0.0	25.0	17.0	14.0	20.0	22.0	27.0	34.0
Ards 4	Blair Maine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards 4	Talbot street	0.0	0.0	24.0	27.0	0.0	23.0	12.0	29.0	0.0	24.0	24.0	20.0
Ards 5	Court street	56.0	64.0	44.0	50.0	0.0	37.0	0.0	32.0	22.0	43.0	24.0	38.0
Ards 6	Town Hall	65.0	43.0	45.0	52.0	0.0	42.0	40.0	38.0	46.0	55.0	73.0	47.0

2007		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ards 1	Ashgrove	20.0	20.0	15.0	9.0	7.0	10.0	7.0	9.0	13.0	14.0	16.0	21.0
Ards 2	Islandmore Ave	18.0	20.0	13.0	7.0	8.0	6.0	10.0	6.0	12.0	31.0	19.0	15.0
Ards 3	D'Dee Road	39.0	38.0	39.0	19.0	1.0	21.0	23.0	33.0	37.0	31.0	42.0	36.0
Ards 4	Blair Maine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0
Ards 4	Talbot street	29.0	32.0	36.0	16.0	21.0	15.0	18.0	24.0	33.0	44.0	46.0	22.0
Ards 5	Court street	52.0	46.0	60.0	30.0	43.0	47.0	51.0	31.0	25.0	36.0	68.0	21.0
Ards 6	Town Hall	49.0	61.0	43.0	34.0	43.0	13.0	36.0	61.0	51.0	44.0	83.0	56.0

2008		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ards 1	Ashgrove	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards 2	Islandmore Ave	19.0	24.0	12.0	10.0	9.0	8.0	0.0	9.0	10.0	16.0	15.0	27.0
Ards 3	D'Dee Road	48.0	40.0	25.0	25.0	29.0	0.0	30.0	30.0	30.0	33.0	38.0	52.0
Ards 4	Blair Maine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards 4	Talbot street	64.0	29.0	27.0	21.0	28.0	21.0	23.0	19.0	29.0	29.0	35.0	47.0
Ards 5	Court street	64.0	76.0	48.0	39.0	64.0	56.0	42.0	45.0	44.0	49.0	60.0	74.0
Ards 6	Town Hall	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards 7	2A East Street	0.0	0.0	19.0	17.0	18.0	17.0	16.0	20.0	19.0	32.0	33.0	39.0
Ards 8	Church Street	0.0	0.0	34.0	25.0	24.0	28.0	26.0	30.0	34.0	36.0	37.0	56.0

2009		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ards	Ashgrove	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards 4	Islandmore Ave	21.0	24.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards 3	D'Dee Road	32.0	53.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards	Blair Maine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards 6	Talbot street	30.0	48.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards 2	Court street	50.0	79.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards	Town Hall	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards 1	2A East Street	31.0	38.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards 5	Church Street	40.0	53.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

BIAS APPLIED

2001		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ards 1	Ashgrove	11.5	12.1	24.2	6.3	7.1	8.8	6.6	11.3	12.1	11.5	17.6	18.0
Ards 2	Islandmore Ave	12.4	15.8	0.0	3.7	7.1	8.0	4.4	9.9	9.6	11.8	18.3	19.9
Ards 3	D'Dee Road	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards 4	Blair Maine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards 5	Court street	32.2	37.6	19.5	21.8	33.0	37.6	25.8	42.5	35.7	32.4	49.1	47.7
Ards 6	Town Hall	29.1	32.7	7.3	17.7	19.8	29.7	20.1	37.4	31.5	38.1	47.3	41.9

2002		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ards 1	Ashgrove	4.0	9.1	12.4	9.8	9.9	3.0	5.4	6.6	11.4	12.1	15.5	15.7
Ards 2	Islandmore Ave	9.8	11.5	1.5	22.8	4.8	0.0	5.1	6.3	13.7	15.4	15.4	19.5
Ards 3	D'Dee Road	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards 4	Blair Maine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards 5	Court street	17.3	27.3	27.1	49.7	0.0	0.0	30.5	33.4	47.1	35.9	39.3	34.5
Ards 6	Town Hall	29.4	34.8	38.3	31.2	0.0	35.0	23.9	30.1	41.5	36.8	38.9	40.4

2003		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ards 1	Ashgrove	12.4	25.0	18.4	15.9	11.3	12.2	11.3	12.5	15.4	10.2	18.3	12.5
Ards 2	Islandmore Ave	16.4	27.9	17.6	13.7	8.4	12.8	11.1	9.9	13.1	9.3	15.9	13.2
Ards 3	D'Dee Road	0.0	33.3	28.3	31.5	28.3	27.5	23.9	28.2	28.3	21.4	31.6	27.5
Ards 4	Blair Maine	0.0	63.6	26.5	0.0	17.2	25.8	20.9	16.8	23.1	16.4	25.8	0.0
Ards 5	Court street	35.2	41.9	51.1	0.0	33.9	38.3	37.9	38.5	44.0	29.7	38.1	37.8
Ards 6	Town Hall	29.5	54.4	50.6	43.7	46.7	45.2	40.7	30.6	39.8	32.4	0.0	32.6

2004		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Ards 1	Ashgrove	14.3	14.8	14.8	7.1	5.1	6.6	9.2	7.0	8.7	14.7	13.3	13.3
Ards 2	Islandmore Ave	14.2	10.4	6.3	6.2	6.7	5.1	6.6	5.6	5.6	13.3	14.1	13.3
Ards 3	D'Dee Road	30.9	32.7	26.2	21.3	25.7	20.1	3.6	14.8	16.8	0.0	29.9	25.7
Ards 4	Blair Maine	0.0	25.0	16.9	0.0	17.7	15.1	0.0	12.4	15.8	24.2	21.6	18.3
Ards 5	Court street	38.5	42.0	40.8	36.7	37.2	38.6	28.7	30.6	32.2	28.0	42.3	33.2
Ards 6	Town Hall	36.5	35.3	36.8	33.4	32.3	31.6	36.4	26.7	31.3	37.6	39.0	34.0

2005		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ards 1	Ashgrove	9.6	13.6	12.0	13.6	8.0	7.2	6.4	7.2	10.4	8.0	16.8	16.8
Ards 2	Islandmore Ave	8.8	12.8	9.6	9.6	7.2	7.2	5.6	8.8	8.8	8.8	17.6	18.4
Ards 3	D'Dee Road	23.2	28.0	29.6	22.4	24.8	16.0	15.2	23.2	24.0	19.2	39.2	36.0
Ards 4	Blair Maine	16.0	20.8	22.4	20.0	16.0	18.4	11.2	15.2	18.4	13.6	25.6	26.4
Ards 5	Court street	32.0	40.0	44.8	31.2	38.4	30.4	28.8	25.6	34.4	26.4	55.2	49.6
Ards 6	Town Hall	25.6	31.2	36.0	36.0	32.0	30.4	24.0	29.6	34.4	32.0	44.8	42.4

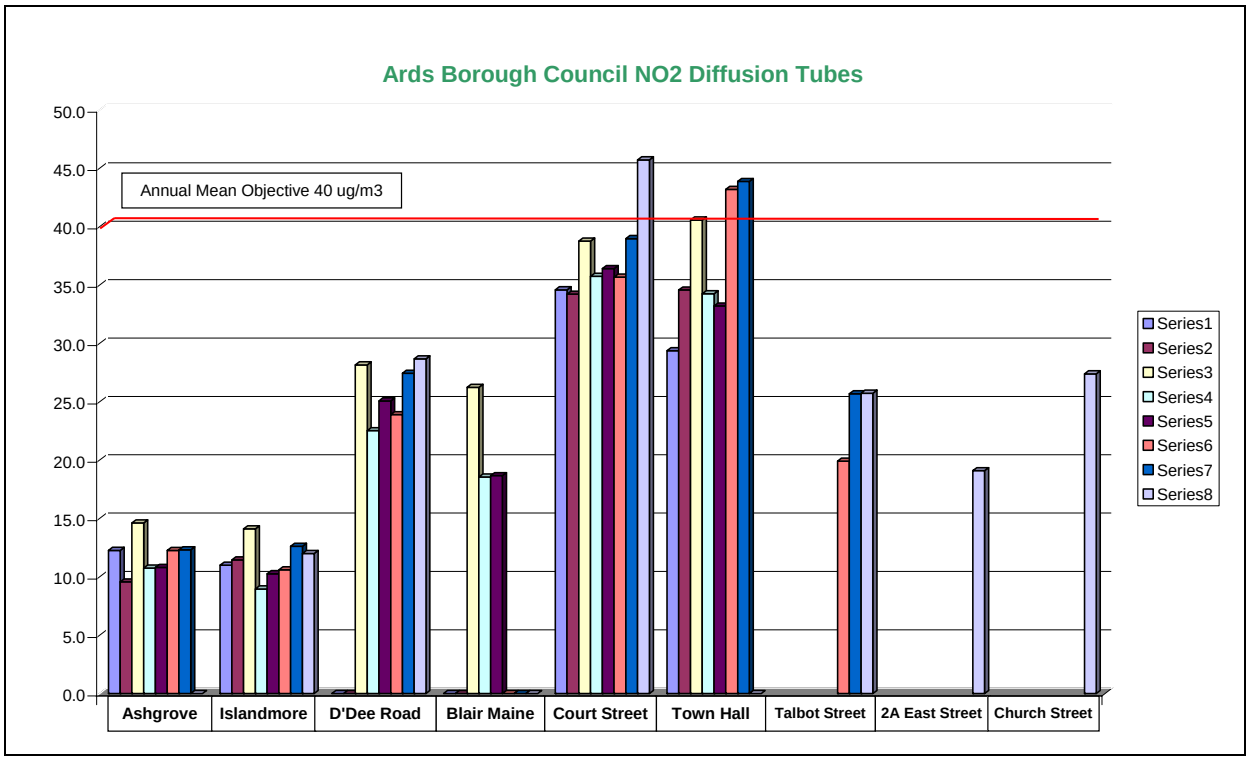
2006		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ards 1	Ashgrove	20.9	16.5	11.3	11.3	0.0	7.8	4.4	7.0	6.1	20.0	14.8	14.8
Ards 2	Islandmore Ave	18.3	14.8	10.4	11.3	0.0	7.0	6.1	7.0	4.4	11.3	12.2	13.9
Ards 3	D'Dee Road	35.7	30.5	28.7	29.6	0.0	21.8	14.8	12.2	17.4	19.1	23.5	29.6
Ards 4	Blair Maine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ards 4	Talbot street	0.0	0.0	20.9	23.5	0.0	20.0	10.4	25.2	0.0	20.9	20.9	17.4
Ards 5	Court street	48.7	55.7	38.3	43.5	0.0	32.2	0.0	27.8	19.1	37.4	20.9	33.1
Ards 6	Town Hall	56.6	37.4	39.2	45.2	0.0	36.5	34.8	33.1	40.0	47.9	63.5	40.9

2007		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ards 1	Ashgrove	18	18	14	8.3	6.4	9.2	6.4	8.3	12	13	15	19
Ards 2	Islandmore Ave	17	18	12	6.4	7.3	5.5	9.2	5.5	11	28	17	14
Ards 3	D'Dee Road	36	35	36	17	0.9	19	21	30	34	28	39	33
Ards 4	Blair Maine	0	0	0	0	0	0	0	0	0	0	0	0
Ards 4	Talbot street	27	29	33	15	19	14	17	22	30	40	42	20
Ards 5	Court street	48	42	55	28	39	43	47	28	23	33	62	19
Ards 6	Town Hall	45	56	39	31	39	12	33	56	47	40	76	51

2008		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ards 1	Ashgrove	0	0	0	0	0	0	0	0	0	0	0	0
Ards 2	Islandmore Ave	16	20	10	8.3	7.5	6.6	0	7.5	8.3	13	12	22
Ards 3	D'Dee Road	40	33	21	21	24	0	25	25	25	27	32	43
Ards 4	Blair Maine	0	0	0	0	0	0	0	0	0	0	0	0
Ards 4	Talbot street	53	24	22	17	23	17	19	16	24	24	29	39
Ards 5	Court street	53	63	40	32	53	46	35	37	37	41	50	61
Ards 6	Town Hall	0	0	0	0	0	0	0	0	0	0	0	0
Ards 7	2A East Street	0	0	16	14	15	14	13	17	16	27	27	32
Ards 8	Church Street	0	0	28	21	20	23	22	25	28	30	31	46

No2 Diffusion Tube Annual Averages

	2001	2002	2003	2004	2005	2006	2007	2008
Ashgrove	12.3	9.6	14.6	10.7	10.8	12.3	12.3	0.0
Islandmore Ave	11.0	11.4	14.1	9.0	10.3	10.6	12.6	12.0
D'Dee Road	0.0	0.0	28.2	22.5	25.1	23.9	27.4	28.7
Blair Maine	0.0	0.0	26.2	18.5	18.7	0.0	0.0	0.0
Court street	34.6	34.2	38.8	35.7	36.4	35.7	39.0	45.7
Town Hall	29.4	34.6	40.6	34.3	33.2	43.2	43.9	0.0
Talbot Street						19.9	25.7	25.7
2A East Street								19.1
Church Street								27.4



Appendix2: QA:QC Data

Diffusion Tube Bias Adjustment Factors

Information regarding casella's Bias Adjustment can be viewed at:

www.uwe.ac.uk/aqm/review/R&Asupport/diffusiontube270209.xls

Information regarding the tube precision can be viewed at:

www.uwe.ac.uk/aqm/review/R&Asupport/tube_precision2008(feb%2009)pdf.

PM Monitoring Adjustment

The reference method for PM_{10} is the gravimetric technique, in which the ambient concentration of PM_{10} is calculated from the mass of particulate matter collected on a filter. The TEOM has been found to underestimate relative to this reference method. As a result data obtained from the TEOM sampler has been multiplied by a factor of 1.3 to give the gravimetric equivalent.

QA/QC of automatic monitoring

Environmental Monitoring System (EMS) the supplier of the automated Sulphur Dioxide and PM10 analysers are currently contracted to undertake routine servicing and maintenance of the equipment. This aims to ensure a high percentage of data capture due to reduced delays in the execution of repairs, in the event of equipment breakdown.

The Council has engaged the services of NETCEN to undertake independent 6 –monthly calibrations. NETCEN is also responsible for data management which involves downloading data directly from the site on a daily basis and validating the data to provide reports at regular intervals. Any irregularities are notified immediately to the Council and officers can take measures to rectify any problems or notify EMS to carry out repairs if necessary. The Councils air quality officers undertake routine calibration and maintenance of the equipment following the QA/QC procedures set out by NETCEN. A data capture rate of 90% for ratified data is specified in the technical guidance and is the recommended as a target for automatic monitoring.

QA/QC of diffusion tube monitoring

Quality Assurance and Quality Control

The semi automatic eight port sampler in the Scrabo Estate was sited in accordance with NETCEN guidelines. The equipment is subject to routine in-house checks and is serviced and maintained at two year intervals, however is no independent calibration of the equipment.

All six of the Nitrogen Dioxide Tubes are sited in accordance with the NETCEN guidelines; however, there is no longer a national monitoring network. The NO_2 tubes are supplied by Gradko Anaylsed by Casella, (preparation method 10% TEA in water), which is a UKAS recognised laboratory for the provision and analysis of diffusion tubes. They participate in the Work Place Analysis Scheme for Proficiency (WASP) for NO_2