

# Eastern Group Air Quality Progress Report

On Behalf Of:-

Ards Borough Council

Castlereagh Borough Council

Down District Council

Lisburn City Council

North Down Borough Council

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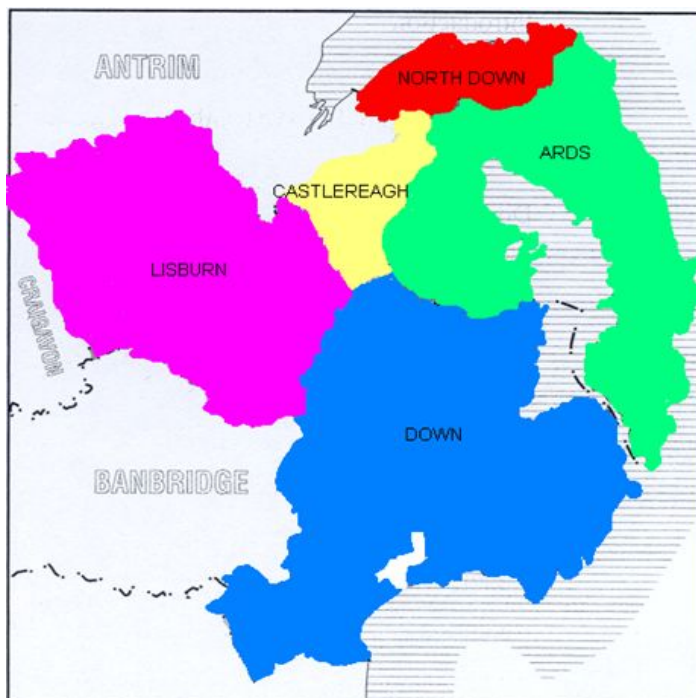
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## 1. Introduction

The Environment (Northern Ireland) Order 2002, requires local authorities to undertake 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). This year the Eastern Group of Councils decided to produce the progress report on a group basis to facilitate comparison and to give an overall view of the state of air quality in the area. This report, therefore, relates to the Ards Borough Council, Castlereagh Borough Council, Down District Council, Lisburn City Council and North Down Borough Council areas.

The Councils published detailed updating and screening assessments in May 2006. These reports were concluded on the basis of results from automatic and passive monitoring equipment. As a result of the Updating and Screening Assessment, Castlereagh has decided to move its PM<sub>10</sub> monitoring station from Espie Way to Upper Newtownards Road Dundonald and combine this with NO<sub>2</sub> measurement (and remove SO<sub>2</sub> measurement). Lisburn has moved its SO<sub>2</sub> monitoring equipment to Dunmurry to facilitate comparison with PAH monitoring and Ards has moved its SO<sub>2</sub> and PM<sub>10</sub> monitor to a more appropriate location, in relation to the area that was indicated by modelling as likely to give rise to exceedences.

**Figure 1 Map of Eastern Group**



## 1.1 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 Eastern Group of Councils progress on implementing local air quality management, and aims to:

- Report progress in achieving or maintaining concentrations below the air quality objectives outlined in the table below.
- 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. However, all Councils have, at least, four years ratified data for the automatic stations and this has been presented to give an idea of what type of trend may be developing. Five years data in relation to passive NO<sub>2</sub> tubes is available.

- Bring greater awareness within the local community of the importance of air quality issues.
- Identify planning applications that are likely to have a significant effect on the emissions of pollutants.
- Identify new IPC processes that might have an impact on the Air Quality objectives.

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

**Figure 2 Air Quality Objectives**

Summary of objectives of the National Air Quality Strategy			
Pollutant	Objective	Measured as	To be achieved by
<b>Benzene</b> All Authorities	16.25 µg/m <sup>3</sup>	Running Annual Mean	31 December 2003
<b>Benzene</b> Authorities in England	5 µg/m <sup>3</sup>	Annual Mean	31 December 2010

and Wales only			
<b>Benzene</b> Authorities in Scotland and Northern Ireland only	3.25 µg/m <sup>3</sup>	Running Annual Mean	31 December 2010
<b>1,3-Butadiene</b>	2.25 µg/m <sup>3</sup>	Running Annual Mean	31 December 2003
<b>Carbon monoxide</b> Authorities in England, Wales and Northern Ireland only	10.0 mg/m <sup>3</sup>	Maximum daily running 8 Hour Mean	31 December 2003
<b>Carbon monoxide</b> Authorities in Scotland only	10.0 mg/m <sup>3</sup>	Running 8 Hour Mean <sup>a</sup>	31 December 2003
<b>Lead</b>	0.5 µg/m <sup>3</sup>	Annual Mean	31 December 2004
	0.25 µg/m <sup>3</sup>	Annual Mean	31 December 2008
<b>Nitrogen dioxide<sup>b</sup></b>	200 µg/m <sup>3</sup> Not to be exceeded more than 18 times per year	1 Hour Mean	31 December 2005
	40 µg/m <sup>3</sup>	Annual Mean	31 December 2005
<b>Nitrogen Oxides**</b>	(V) 30 µg/m <sup>3</sup>	Annual Mean	31 December 2000
<b>Ozone*</b>	100 µg/m <sup>3</sup>	Running 8 hour Mean Daily maximum of running 8 hr mean not to be exceeded more than 10 times per year	31 December 2005
<b>Particles (PM10) (gravimetric)<sup>c</sup></b> All authorities	50 µg/m <sup>3</sup> Not to be exceeded more than 35 times per year	24 Hour Mean	31 December 2004
	40 µg/m <sup>3</sup>	Annual Mean	31 December 2004

<b>Particles (PM10)</b> Authorities in Scotland only <sup>d</sup>	50 µg/m <sup>3</sup> Not to be exceeded more than 7 times per year	24 Hour Mean	31 December 2010
	18 µg/m <sup>3</sup>	Annual Mean	31 December 2010
<b>Poly aromatic hydrocarbons<sup>e</sup></b>	0.25 ng/m <sup>3</sup> B(a)P	Annual Mean	31 December 2010
<b>Sulphur dioxide</b>	266 µg/m <sup>3</sup> Not to be exceeded more than 35 times per year	15 Minute Mean	31 December 2005
	350 µg/m <sup>3</sup> Not to be exceeded more than 24 times per year	1 Hour Mean	31 December 2004
	125 µg/m <sup>3</sup> Not to be exceeded more than 3 times per year	24 Hour Mean	31 December 2004
	(V) 20 µg/m <sup>3</sup>	Annual Mean	31 December 2000
	(V) 20 µg/m <sup>3</sup>	Winter Mean (01 October - 31 March)	31 December 2000

**Notes:**

a. The Quality Objective in Scotland has been defined in Regulations as the running 8-hour mean, in practice this is equivalent to the maximum daily running 8-hour mean.

b. The objectives for nitrogen dioxide are provisional.

c. Measured using the European gravimetric transfer sampler or equivalent.

d. These 2010 Air Quality Objectives for PM 10 apply in Scotland only, as

set out in the Air Quality (Scotland) Amendment Regulations 2002.

e. Not included in regulations

$\mu\text{g}/\text{m}^3$  - micrograms per cubic metre

$\text{mg}/\text{m}^3$  - milligrams per cubic metre

\*Ozone is not included in the Regulations

\*\* Assuming NOx is taken as NO2

(V) These standards are adopted for the protection of vegetation and ecosystems. All of the remainder are for the protection of human health.

New particle objectives for England, Wales, Northern Ireland and Greater London not included in Regulations

<b>Region</b>	<b>Objective</b>	<b>Measured as</b>	<b>To be achieved by</b>
<b>Greater London</b>	50 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 10 times per year	24-hour Mean	31 December 2010
<b>Greater London</b>	23 $\mu\text{g}/\text{m}^3$	Annual Mean	31 December 2010
<b>Greater London</b>	20 $\mu\text{g}/\text{m}^3$	Annual Mean	31 December 2015
<b>Rest of England, Wales and Northern Ireland</b>	50 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 7 times per year	24-hour Mean	31 December 2010
<b>Rest of England, Wales and Northern Ireland</b>	20 $\mu\text{g}/\text{m}^3$	Annual Mean	31 December 2010

## **1.2 Structure of the report**

The report is divided into a detailed section for each Council according to the parameters listed in 1.1.

## 2 Ards Borough Council

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 fastest growing boroughs with the population currently standing at 74,400 representing 4.4% of the total population of Northern Ireland.

The Borough is of mixed and urban 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. Air pollution problems are associated with the high dependency on coal fired domestic heating combined with the geographical features of the area that may result in temperature inversions. 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.

Ards Borough Council's air quality monitoring site is located at the rear of the Ards Borough Council Leisure Centre on West Street, Newtownards. This is within the area declared as an AQMA in relation to PM<sub>10</sub>

The Newtownards site is in an area of high density housing with a significant proportion of solid fuel burning.

Six NO<sub>2</sub> diffusion tubes are mounted at the following locations to monitor roadside emissions.

**Figure 3 Ards Passive NO<sub>2</sub> Sites**

7 Ash Grove
19 Islandmore Avenue
Town Hall 18 FRANCES ST (OPP.),
8 Court Street
Donaghadee Road Roundabout
Talbot Street/North Street Junction

### 2.1 Progress in the past year.

Since mid-2002, an automatic monitoring station has been located at an urban background site in the Glen Estate, Newtownards, to monitor pollutants from the high density of domestic coal-burning properties in the area. PM<sub>10</sub> is monitored using an automatic TEOM sampler and sulphur dioxide is monitored using a UV fluorescence analyser. Modelling carried out for the combined 2<sup>nd</sup>/3<sup>rd</sup> review indicated the possibility of exceedence of the PM<sub>10</sub> objective. As a result an AQMA was Declared in 2005. The automatic

monitoring station was moved to a location within the area of predicted exceedence and became operational in April 2006. The station is now located at the rear of Ards Leisure Centre, William Street, Newtownards. The preliminary monitoring results from this location indicate that it is unlikely that the objective for PM<sub>10</sub> will be exceeded. As a result Ards BC may seek to have the AQMA for the area revoked. Despite this the Council has been active in discussing a fuel conversion programme in the area with the NIHE, to reduce domestic emissions further.

## 2.2 Recent Air Quality Monitoring

The automatic station has only been in operation for a year at the Ards Leisure Centre, William Street site. During this period there have been seven exceedences of 50 µg m<sup>-3</sup>. Though not all of the data relating to this period of monitoring has been ratified the result is well within the current objective for PM<sub>10</sub>.

Produced by AEA Energy & Environment on behalf of  
Ards Borough Council

### ARDS LEISURE CENTRE 01 January to 31 December 2006

These data are provisional from 01/09/2006 and may be subject to further quality control

Figure 4 Ards AEA Summary Data 2006

POLLUTANT	SO <sub>2</sub>	PM <sub>10</sub>	GR <sub>10</sub>
Number Very High	0	0	-
Number High	0	5	-
Number Moderate	0	20	-
Number Low	23873	6082	-
Maximum 15-minute mean	160 µg m <sup>-3</sup>	656 µg m <sup>-3</sup>	853 µg m <sup>-3</sup>
Maximum hourly mean	85 µg m <sup>-3</sup>	300 µg m <sup>-3</sup>	390 µg m <sup>-3</sup>
Maximum running 8-hour mean	15 µg m <sup>-3</sup>	169 µg m <sup>-3</sup>	220 µg m <sup>-3</sup>
Maximum running 24-hour mean	8 µg m <sup>-3</sup>	79 µg m <sup>-3</sup>	103 µg m <sup>-3</sup>
Maximum daily mean	7 µg m <sup>-3</sup>	73 µg m <sup>-3</sup>	95 µg m <sup>-3</sup>
Average	2 µg m <sup>-3</sup>	15 µg m <sup>-3</sup>	20 µg m <sup>-3</sup>
Data capture	69.7 %	69.5 %	69.5 %

PM<sub>10</sub> is measured with a TEOM instrument.

GR<sub>10</sub> is the PM<sub>10</sub> data converted to 'Gravimetric Equivalent' units using a conversion factor of 1.3

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 <sup>-3</sup>	0	0
Sulphur Dioxide	Hourly mean > 350 µg m <sup>-3</sup>	0	0
Sulphur Dioxide	Daily mean > 125 µg m <sup>-3</sup>	0	0
Sulphur Dioxide	Annual mean > 20 µg m <sup>-3</sup>	0	-
PM <sub>10</sub> Particulate Matter (Gravimetric)	Daily mean > 50 µg m <sup>-3</sup>	4	4

PM <sub>10</sub> Particulate Matter (Gravimetric)	Annual mean > 40 µg m <sup>-3</sup>	0	-
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Produced by AEA Energy & Environment on behalf of  
Ards Borough Council

## ARDS LEISURE CENTRE 01 April 2006 to 31 March 2007

These data are provisional from 01/09/2006 and may be subject to further quality control

POLLUTANT	SO <sub>2</sub>	PM <sub>10</sub>	GR <sub>10</sub>
Number Very High	0	0	-
Number High	0	5	-
Number Moderate	0	39	-
Number Low	32189	8096	-
Maximum 15-minute mean	160 µg m <sup>-3</sup>	656 µg m <sup>-3</sup>	853 µg m <sup>-3</sup>
Maximum hourly mean	85 µg m <sup>-3</sup>	300 µg m <sup>-3</sup>	390 µg m <sup>-3</sup>
Maximum running 8-hour mean	15 µg m <sup>-3</sup>	169 µg m <sup>-3</sup>	220 µg m <sup>-3</sup>
Maximum running 24-hour mean	8 µg m <sup>-3</sup>	79 µg m <sup>-3</sup>	103 µg m <sup>-3</sup>
Maximum daily mean	7 µg m <sup>-3</sup>	73 µg m <sup>-3</sup>	95 µg m <sup>-3</sup>
Average	2 µg m <sup>-3</sup>	16 µg m <sup>-3</sup>	21 µg m <sup>-3</sup>
Data capture	93.9 %	92.9 %	92.9 %

PM<sub>10</sub> is measured with a TEOM instrument.

GR<sub>10</sub> is the PM<sub>10</sub> data converted to 'Gravimetric Equivalent' units using a conversion factor of 1.3

All mass units are at 20°C and 1013mb

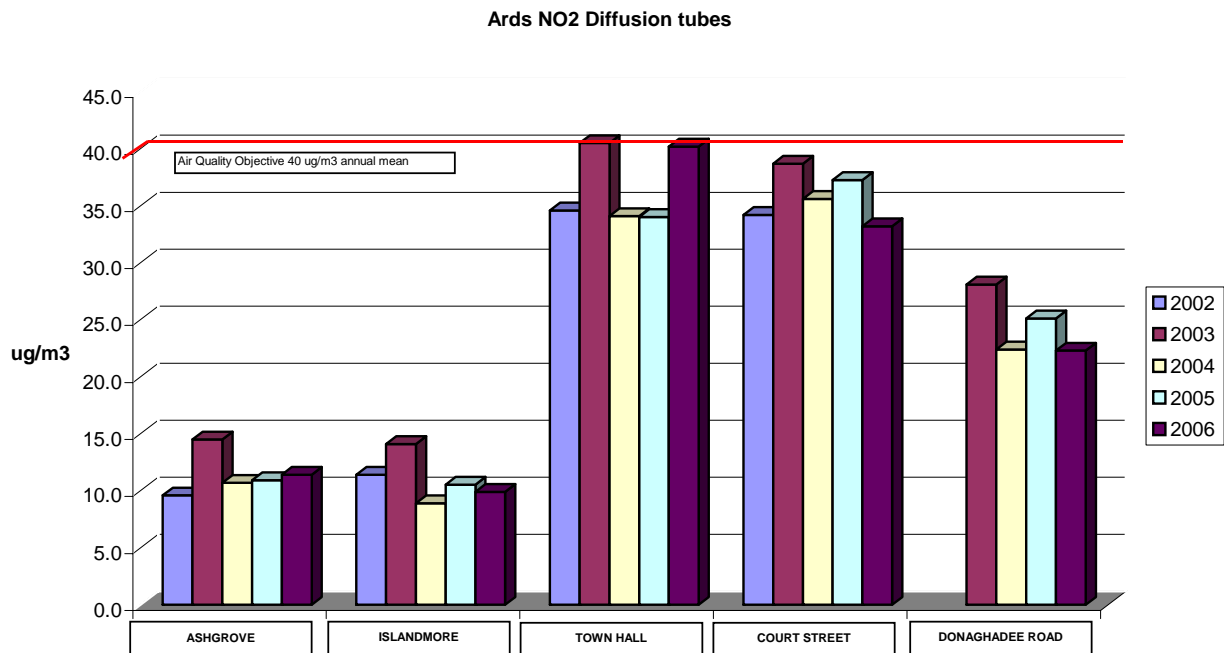
Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Sulphur Dioxide	15-minute mean > 266 µg m <sup>-3</sup>	0	0
Sulphur Dioxide	Hourly mean > 350 µg m <sup>-3</sup>	0	0
Sulphur Dioxide	Daily mean > 125 µg m <sup>-3</sup>	0	0
Sulphur Dioxide	Annual mean > 20 µg m <sup>-3</sup>	0	-
PM <sub>10</sub> Particulate Matter (Gravimetric)	Daily mean > 50 µg m <sup>-3</sup>	7	7
PM <sub>10</sub> Particulate Matter (Gravimetric)	Annual mean > 40 µg m <sup>-3</sup>	0	-

### 2.3 Trends in results

There is insufficient data to give trend results for the automatic station at the Ards Leisure Centre, William Street site.

Ards Borough Council has maintained a number of NO<sub>2</sub> diffusion tubes at roadside sites for a number of years. The diffusion tube studies for Ards for the past five 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.

**Figure 5 Ards Diffusion Tube Results**



### 2.4 Significant New Development

The following roads have been proposed since before the last updating and screening assessment but have not yet commenced. The net effect of these proposals is likely to be a reduction in the NO<sub>2</sub> measurements at the Town Hall and Court Street passive monitoring sites shown above.

1. A20 Newtownards Southern Relief Road

This involves the construction of a new link road connecting the main A20 via Blaire Main Road South to the A21 Comber. Construction is expected to commence 2007.

An Environmental Impact Assessment was carried out at the planning stage, which adequately considered the impact on local air quality.

2. A20 Frederick Street Link, Newtownards

This involves creating a direct link from Nursery Road, Newtownards to the Frederick Street roundabout.

This road is currently awaiting approval.

## ***2.5 Significant New PPC Processes***

None.

## ***2.6 Summary in relation to Air quality Objectives.***

Consultation is already in place with the NIHE, with regard to the fuel conversion programme for Newtownards. It appears that none of the current air quality objectives are being exceeded in the area. Further monitoring is taking place at the Ards Leisure Centre, William Street site with a view to revocation of the AQMA in relation to PM<sub>10</sub>.

### 3 Castlereagh Borough Council

Castlereagh Borough Council covers an administrative area of 84Km<sup>2</sup> to the southeast of Belfast and in 2005 was home to a population of 66,700. The Borough is of mixed and urban rural character and the predominant wind direction is from the southwest.

Castlereagh Borough Council's air quality monitoring sites are located at Espie Way and at the side of the A55 in the vicinity of Lough View Drive.

The Espie Way site is in an area of high density housing with a significant proportion of solid fuel burning, burning predominantly smokeless fuel. The AADT for site at the edge of the A55 is 40,000 vehicles on a four-lane dual carriageway.

Castlereagh has 6 NO<sub>2</sub> diffusion tube sites at the following locations.

**Figure 6 Ards Passive NO<sub>2</sub> Sites**

<b>Cregagh Road</b>
<b>Everton Drive</b>
<b>Downshire Park East</b>
<b>Upper Newtownards Road</b>
<b>Newtownbreda Road</b>
<b>Saintfield Road</b>

In addition three diffusion tubes are co-located with the Lough View Drive automatic site.

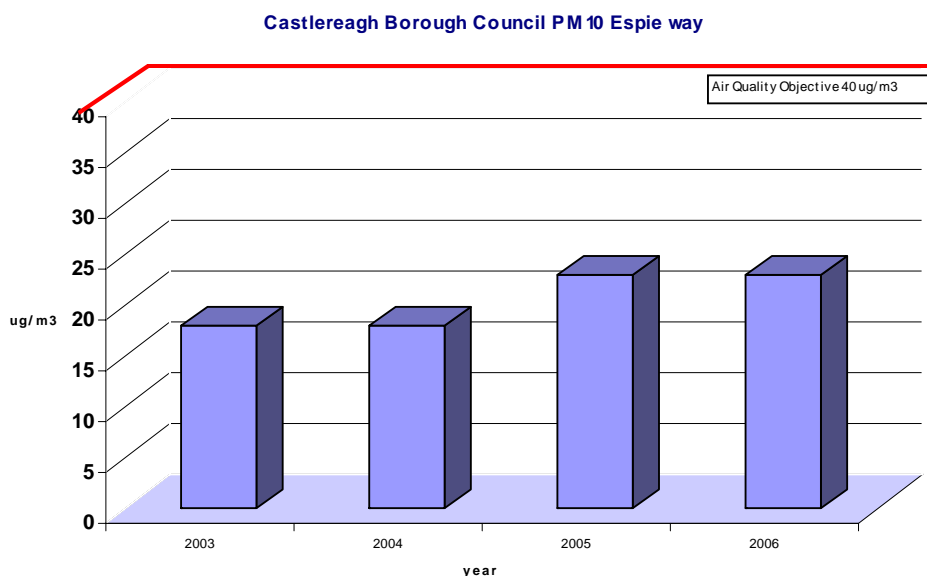
#### **3.1 Progress in the past year.**

The Updating and Screening Assessment completed in 2006 indicated that current objectives in relation to SO<sub>2</sub> NO<sub>2</sub> and PM<sub>10</sub> would be achieved at the location of the automatic monitoring stations. However, a diffusion tube survey at the A20 in Dundonald indicated the possibility of exceedences in relation to NO<sub>2</sub>. Therefore, the automatic station at Espie Way has been decommissioned and the PM10 monitor together with a new NO<sub>2</sub> monitor has been installed in a roadside cabinet at the A20 in Dundonald. While the traffic flow in this area is 22,000 AADT, buildings in this area produce a significant canyon effect and there is relevant exposure at this location. Results from automatic monitoring at this location are not available as yet.

### 3.2 Recent Air Quality Monitoring

PM<sub>10</sub> results for Espie way are well within current objectives though showing a slight increase in 2005-2006. However, this area may require further monitoring should the proposed annual objective of 20 µg m<sup>-3</sup> be adopted. SO<sub>2</sub> readings at this location have been consistently low.

**Figure 7 PM10 Results 2003-2006 at Castlereagh Espie Way**



Produced by AEA Energy & Environment on behalf of  
Castlereagh Borough Council

## CASTLEREAGH ESPIE WAY 01 January to 31 December 2006

These data have been fully ratified by AEA Energy & Environment

**Figure 8 Castlereagh BC AEA Summary Results 2006**

POLLUTANT	SO <sub>2</sub>	PM <sub>10</sub>	GR <sub>10</sub>
Number Very High	0	0	-
Number High	0	0	-
Number Moderate	0	0	-
Number Low	32402	8135	-
Maximum 15-minute mean	77 µg m <sup>-3</sup>	204 µg m <sup>-3</sup>	265 µg m <sup>-3</sup>
Maximum hourly mean	61 µg m <sup>-3</sup>	77 µg m <sup>-3</sup>	100 µg m <sup>-3</sup>
Maximum running 8-hour mean	34 µg m <sup>-3</sup>	56 µg m <sup>-3</sup>	73 µg m <sup>-3</sup>
Maximum running 24-hour mean	24 µg m <sup>-3</sup>	49 µg m <sup>-3</sup>	64 µg m <sup>-3</sup>
Maximum daily mean	20 µg m <sup>-3</sup>	49 µg m <sup>-3</sup>	64 µg m <sup>-3</sup>
Average	4 µg m <sup>-3</sup>	17 µg m <sup>-3</sup>	23 µg m <sup>-3</sup>
Data capture	94.5 %	92.3 %	92.3 %

PM<sub>10</sub> is measured with a TEOM instrument.

GR<sub>10</sub> is the PM<sub>10</sub> data converted to 'Gravimetric Equivalent' units using a conversion factor of 1.3

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 <sup>-3</sup>	0	0
Sulphur Dioxide	Hourly mean > 350 µg m <sup>-3</sup>	0	0
Sulphur Dioxide	Daily mean > 125 µg m <sup>-3</sup>	0	0
Sulphur Dioxide	Annual mean > 20 µg m <sup>-3</sup>	0	-
PM <sub>10</sub> Particulate Matter (Gravimetric)	Daily mean > 50 µg m <sup>-3</sup>	5	5
PM <sub>10</sub> Particulate Matter (Gravimetric)	Annual mean > 40 µg m <sup>-3</sup>	0	-

Produced by AEA Energy & Environment on behalf of  
Castlereagh Borough Council

## CASTLEREAGH LOUGH VIEW DRIVE 01 April 2006 to 31 March 2007

These data are provisional from 01/01/2007 and may be subject to further quality control

POLLUTANT	NO <sub>2</sub>	PM <sub>10</sub>	GR <sub>10</sub>
Number Very High	0	0	-
Number High	0	0	-
Number Moderate	0	27	-
Number Low	7562	8446	-
Maximum 15-minute mean	309 µg m <sup>-3</sup>	205 µg m <sup>-3</sup>	267 µg m <sup>-3</sup>
Maximum hourly mean	128 µg m <sup>-3</sup>	132 µg m <sup>-3</sup>	172 µg m <sup>-3</sup>
Maximum running 8-hour mean	76 µg m <sup>-3</sup>	72 µg m <sup>-3</sup>	94 µg m <sup>-3</sup>
Maximum running 24-hour mean	60 µg m <sup>-3</sup>	65 µg m <sup>-3</sup>	85 µg m <sup>-3</sup>
Maximum daily mean	55 µg m <sup>-3</sup>	61 µg m <sup>-3</sup>	80 µg m <sup>-3</sup>
Average	22 µg m <sup>-3</sup>	18 µg m <sup>-3</sup>	23 µg m <sup>-3</sup>
Data capture	86.3 %	96.7 %	96.7 %

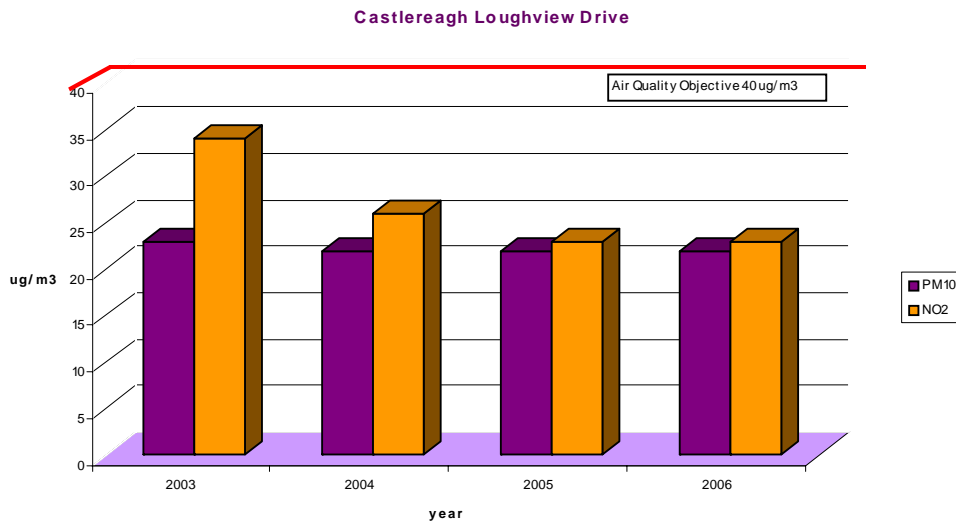
PM<sub>10</sub> is measured with a TEOM instrument.

GR<sub>10</sub> is the PM<sub>10</sub> data converted to 'Gravimetric Equivalent' units using a conversion factor of 1.3

All mass units are at 20°C and 1013mb

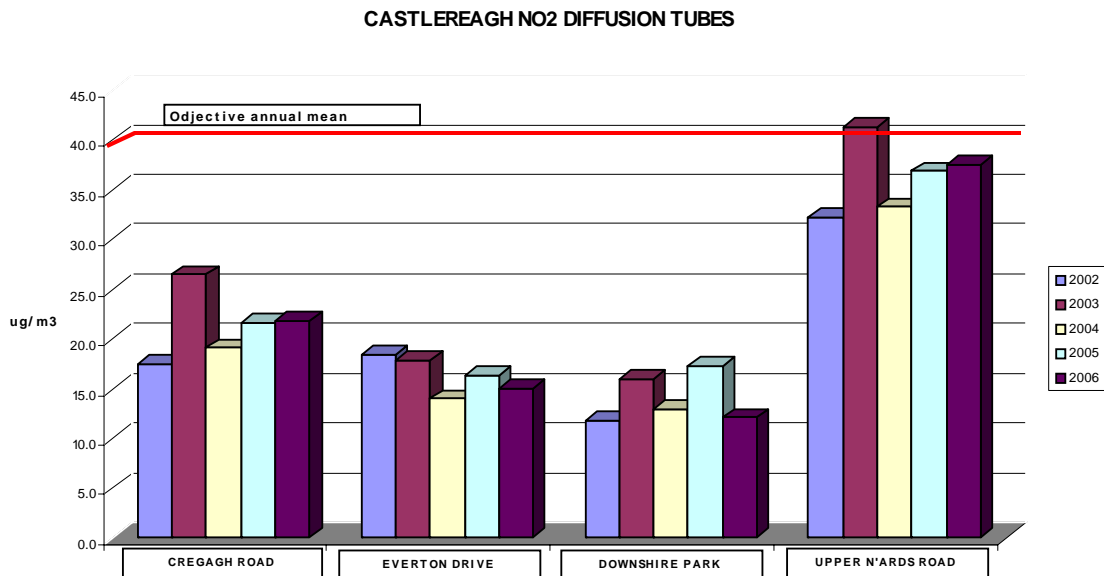
Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Nitrogen Dioxide	Annual mean > 40 µg m <sup>-3</sup>	0	-
Nitrogen Dioxide	Hourly mean > 200 µg m <sup>-3</sup>	0	0
PM <sub>10</sub> Particulate Matter (Gravimetric)	Daily mean > 50 µg m <sup>-3</sup>	6	6
PM <sub>10</sub> Particulate Matter (Gravimetric)	Annual mean > 40 µg m <sup>-3</sup>	0	-

**Figure 9 NO2 and PM10 results 2003-2006 A55 Lough View Drive**



### 3.3 Trends in results

**Figure 10 Castlereagh Passive NO2 Results**



Castlereagh Borough Council has maintained a number of NO<sub>2</sub> diffusion tubes at roadside sites for a number of years. The diffusion tube studies for Castlereagh for the past five 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.

### **3.4 Significant New Development**

Castlereagh Borough Council has a number of housing and commercial developments under construction or planned for the area. These are as follows.

Housing Carryduff  
Housing Castlereagh  
Housing Dundonald  
New Shopping Centre Newtownbreda

Individually none of these developments are likely to give rise to exceedance of the objectives. However, in common with all areas within the group the cumulative effect of numerous small developments may eventually lead to objectives being exceeded.

### **3.5 Significant New PPC Processes**

None

### **3.6 Summary in relation to Air quality Objectives.**

None of the objectives are currently being exceeded in the Castlereagh Borough Council area. A relocation of the suburban monitoring Station at Espie Way has taken place due to the low measurement values for SO<sub>2</sub> and PM<sub>10</sub>. PM<sub>10</sub> in this area is predominately caused by road traffic. The Station has been moved to a location at Dundonald village and combined with an NO<sub>2</sub> meter. This should provide useful monitoring data at this site considering the near objective indicative monitoring from NO<sub>2</sub> tubes at this location.

## 4 Down District Council

Down District Council comprises a largely rural area of around 65,000 hectares in the south east of Northern Ireland, with a population of some 66,000. The District is of rural character and the predominant wind direction is from the southwest.

Down have 10 passive NO<sub>2</sub> monitoring sites at the following locations.

**Figure 11 Down NO<sub>2</sub> Sites**

Irish Street
St. Patricks Avenue
St. Patricks Drive
Orchard Way
Stream Street
Newcastle
Saintfield
Ballynahinch
Killyleagh

### ***4.1 Progress in the past year.***

The highest annual average NO<sub>2</sub> recorded in the Down area 2006 is 39.2 µg/m<sup>3</sup> at Irish Street, Downpatrick. LAQM.TG(03) states that as the annual mean is not greater than 40 µg/m<sup>3</sup> there is no need to proceed to a detailed assessment. However, as the value as close to the air quality objective Down District relocated diffusion tubes to the façade of the nearest residential property at the Irish Street junction will monitor the levels for an additional year. Projected values for NO<sub>2</sub> in 2010 will meet the air quality objective at all monitoring sites.

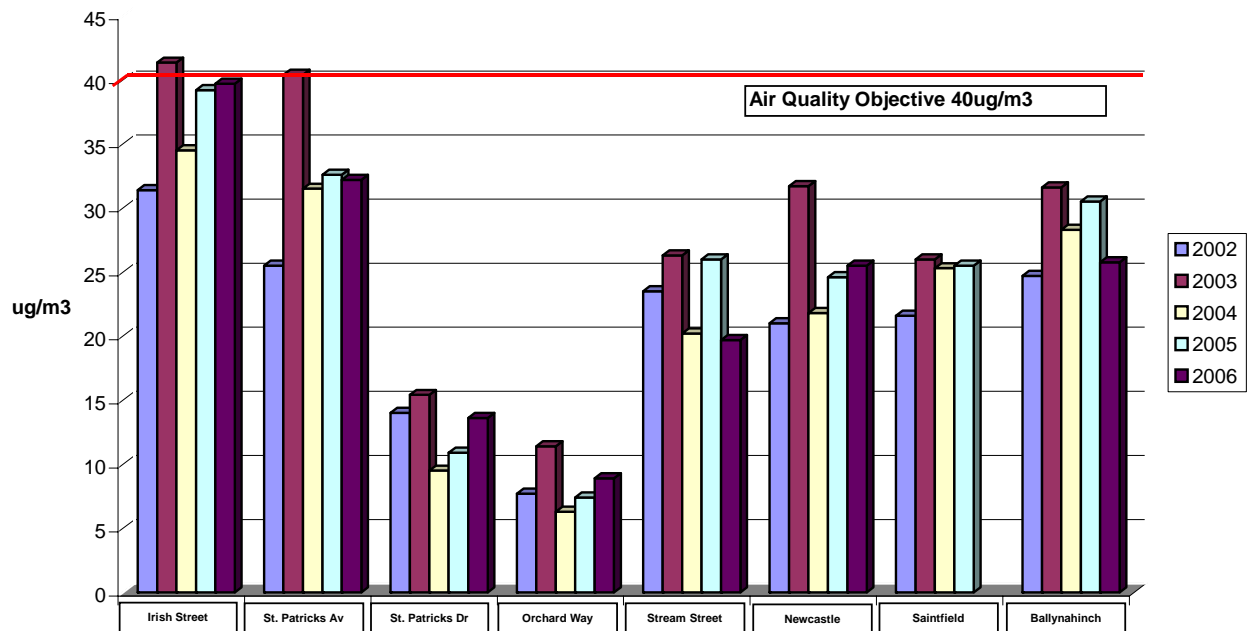
### ***4.2 Recent Air Quality Monitoring***

Down District Council has no automatic monitoring sites.

### ***4.3 Trends in results***

**Figure 12 Down DC Passive NO<sub>2</sub> Results**

### DOWN PATRICK NO2 DIFFUSION TUBES



Down District Council has maintained a number of NO<sub>2</sub> diffusion tubes at roadside sites for a number of years. The diffusion tube studies for Down for the past five 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.

#### **4.4 Significant New Development**

None.

#### **4.5 Significant New PPC Processes**

None.

#### **4.6 Summary in relation to Air quality Objectives.**

None of the current air quality objectives are being exceeded in the Down area. Down District Council will continue to keep a watching brief in relation to NO<sub>2</sub> levels at the Irish Street Junction though there is no relevant exposure currently at this location.

## 5 Lisburn City Council

Lisburn City Council is located southwest of Belfast. It spans 174 square miles of southwest Antrim and northwest Down and stretches from Glenavy and Dundrod in the north to Dromara and Hillsborough in the south and from Drumbo in the east to Moira and Aghalee in the west. The population of the area is over 108,000. The Borough is of mixed and urban rural character and the predominant wind direction is from the southwest.

Lisburn City's automatic air quality monitoring sites are located at Lagan Valley Hospital on the A1, at the Council, Island Civic Centre and at Dunmurry High School

Lisburn has 6 NO<sub>2</sub> diffusion tube sites at the following locations.

**Figure 13 Lisburn Passive NO<sub>2</sub> Sites**

Northern Bank
Antrim Road
Ventnor Park
Edgewater
Moira
Dunmurry Kingsway
Dunmurry Beechlawn
Sprucefield Court
Benford Park

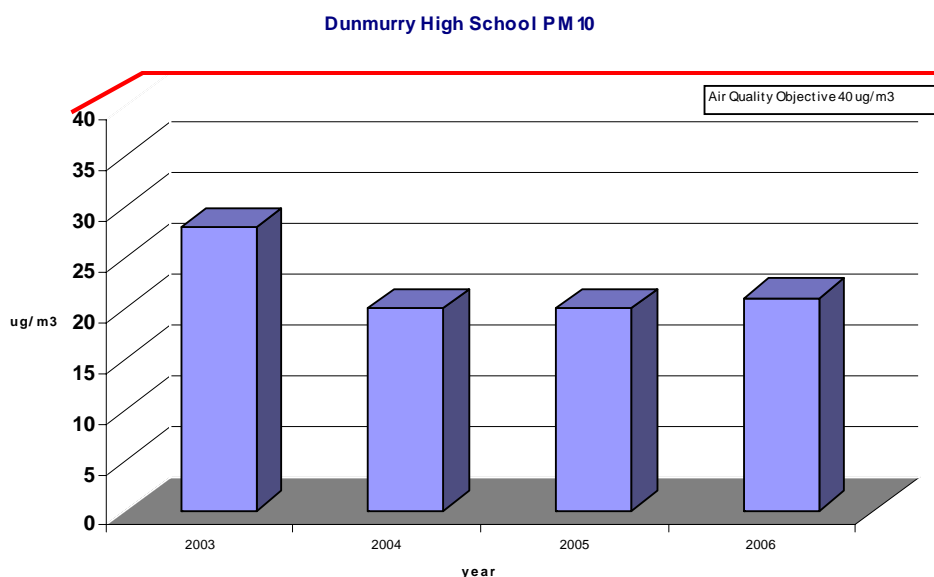
### **5.1 Progress in the Past Year**

While currently outside the remit of the Air Quality objectives, previous monitoring has indicated elevated Poly aromatic hydrocarbon levels in the Area. Lisburn City council is currently seeking Grant aid in order to acquire daily PAH measurements in the area, with a view to isolating the source.

### **5.2 Recent Air Quality Monitoring**

PM<sub>10</sub> and NO<sub>2</sub> results for the Lisburn City Council Area are well within current objectives without an emerging pattern as to whether measured levels are rising or falling. PM<sub>10</sub> levels in the Lisburn area may require further monitoring should the proposed annual objective of 20 µg m<sup>-3</sup> be adopted as annual averages in excess of this figure are common. SO<sub>2</sub> readings at the Island Civic centre location have been consistently low in common with all SO<sub>2</sub> measurements throughout the Eastern group area.

**Figure 14 Lisburn Dunmurry PM10 2003-2006**



**Figure 15 Lisburn Dunmurry Automatic Monitoring Results 2006**

Produced by AEA Energy & Environment on behalf of  
Lisburn City Council

**LISBURN DUNMURRY HIGH SCHOOL**  
**01 January to 31 December 2006**

These data have been fully ratified by AEA Energy & Environment

POLLUTANT	SO <sub>2</sub>	PM <sub>10</sub>	GR <sub>10</sub>
Number Very High	0	0	-
Number High	0	0	-
Number Moderate	0	31	-
Number Low	6916	8366	-
Maximum 15-minute mean	40 µg m <sup>-3</sup>	142 µg m <sup>-3</sup>	185 µg m <sup>-3</sup>
Maximum hourly mean	35 µg m <sup>-3</sup>	133 µg m <sup>-3</sup>	173 µg m <sup>-3</sup>
Maximum running 8-hour mean	26 µg m <sup>-3</sup>	108 µg m <sup>-3</sup>	141 µg m <sup>-3</sup>
Maximum running 24-hour mean	15 µg m <sup>-3</sup>	64 µg m <sup>-3</sup>	83 µg m <sup>-3</sup>
Maximum daily mean	14 µg m <sup>-3</sup>	50 µg m <sup>-3</sup>	65 µg m <sup>-3</sup>
Average	4 µg m <sup>-3</sup>	16 µg m <sup>-3</sup>	21 µg m <sup>-3</sup>
Data capture	20.2 %	94.2 %	94.2 %

PM<sub>10</sub> is measured with a TEOM instrument.

GR<sub>10</sub> is the PM<sub>10</sub> data converted to 'Gravimetric Equivalent' units using a conversion factor of 1.3

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 <sup>-3</sup>	0	0
Sulphur Dioxide	Hourly mean > 350 µg m <sup>-3</sup>	0	0
Sulphur Dioxide	Daily mean > 125 µg m <sup>-3</sup>	0	0

Sulphur Dioxide	Annual mean > 20 $\mu\text{g m}^{-3}$	0	-
PM <sub>10</sub> Particulate Matter (Gravimetric)	Daily mean > 50 $\mu\text{g m}^{-3}$	8	8
PM <sub>10</sub> Particulate Matter (Gravimetric)	Annual mean > 40 $\mu\text{g m}^{-3}$	0	-

Figure 16 Lisburn Island Civic Centre PM10 Results 2003-2006

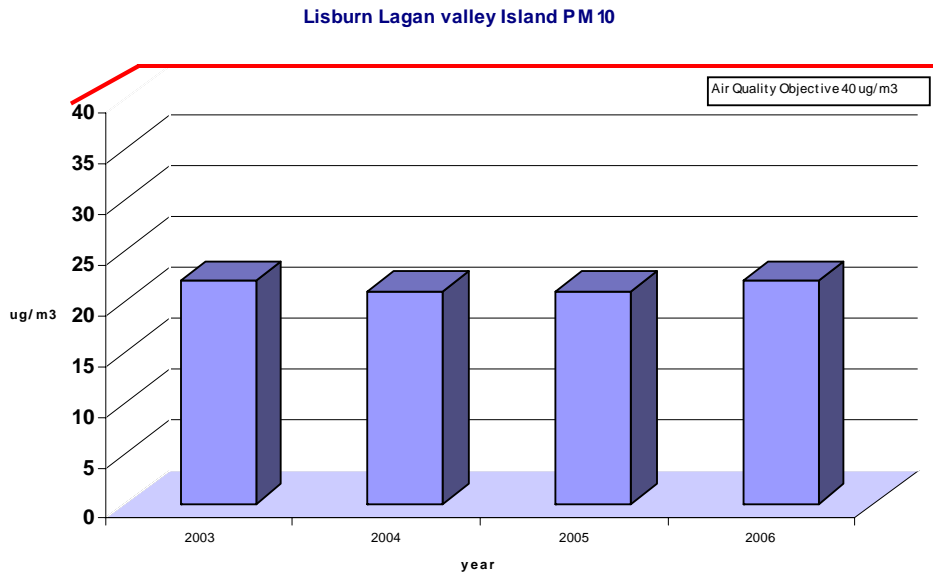


Figure 17 Lisburn Island Civic Centre Automatic Results 2006

Lisburn City Council

**LISBURN ISLAND CIVIC CENTRE**  
**01 January to 31 December 2006**

These data have been fully ratified by AEA Energy & Environment

POLLUTANT	SO <sub>2</sub>	PM <sub>10</sub>	GR <sub>10</sub>
Number Very High	0	0	-
Number High	0	0	-
Number Moderate	0	34	-
Number Low	25146	8335	-
Maximum 15-minute mean	67 $\mu\text{g m}^{-3}$	158 $\mu\text{g m}^{-3}$	205 $\mu\text{g m}^{-3}$
Maximum hourly mean	48 $\mu\text{g m}^{-3}$	138 $\mu\text{g m}^{-3}$	179 $\mu\text{g m}^{-3}$
Maximum running 8-hour mean	27 $\mu\text{g m}^{-3}$	101 $\mu\text{g m}^{-3}$	131 $\mu\text{g m}^{-3}$
Maximum running 24-hour mean	22 $\mu\text{g m}^{-3}$	60 $\mu\text{g m}^{-3}$	78 $\mu\text{g m}^{-3}$
Maximum daily mean	22 $\mu\text{g m}^{-3}$	46 $\mu\text{g m}^{-3}$	59 $\mu\text{g m}^{-3}$
Average	3 $\mu\text{g m}^{-3}$	17 $\mu\text{g m}^{-3}$	22 $\mu\text{g m}^{-3}$
Data capture	73.3 %	95.1 %	95.1 %

PM<sub>10</sub> is measured with a TEOM instrument.

GR<sub>10</sub> is the PM<sub>10</sub> data converted to 'Gravimetric Equivalent' units using a conversion factor of 1.3

All mass units are at 20°C and 1013mb

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Sulphur Dioxide	15-minute mean > 266 $\mu\text{g m}^{-3}$	0	0
Sulphur Dioxide	Hourly mean > 350 $\mu\text{g m}^{-3}$	0	0
Sulphur Dioxide	Daily mean > 125 $\mu\text{g m}^{-3}$	0	0
Sulphur Dioxide	Annual mean > 20 $\mu\text{g m}^{-3}$	0	-
PM <sub>10</sub> Particulate Matter (Gravimetric)	Daily mean > 50 $\mu\text{g m}^{-3}$	9	9
PM <sub>10</sub> Particulate Matter (Gravimetric)	Annual mean > 40 $\mu\text{g m}^{-3}$	0	-

Figure 18 A1 lagan Valley Hospital PM10 and NO2 Results 2003-2006

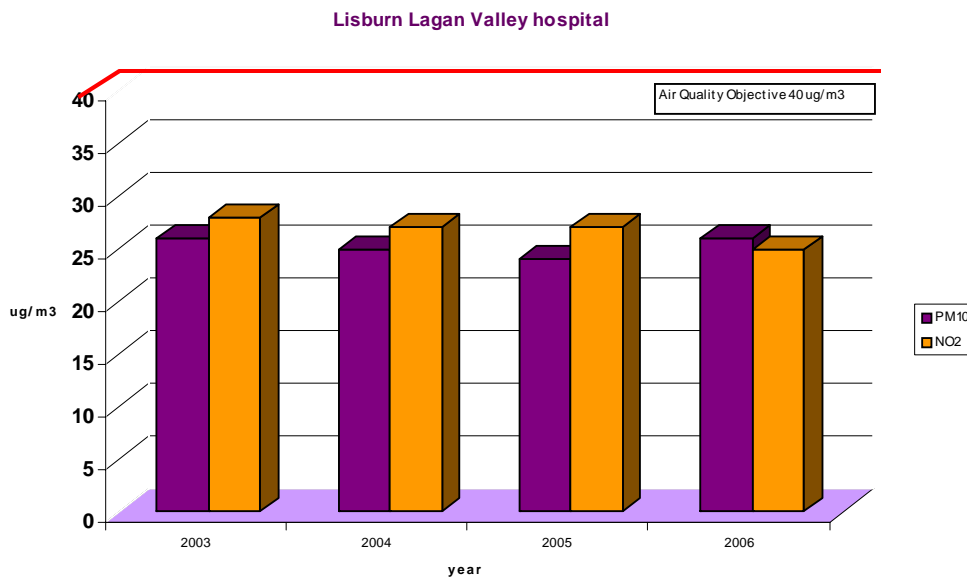


Figure 19 Lagan Valley Hospital Automatic Results 2006

Produced by AEA Energy & Environment on behalf of  
Lisburn City Council

### LISBURN LAGAN VALLEY HOSPITAL

01 January to 31 December 2006

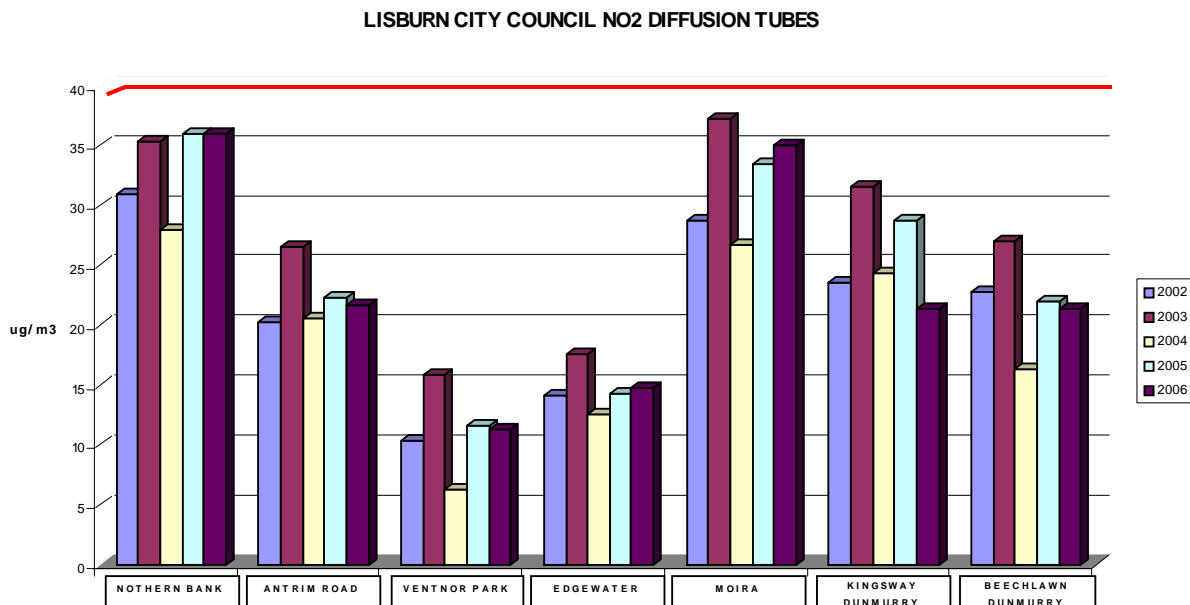
These data have been fully ratified by AEA Energy & Environment

POLLUTANT	NO <sub>2</sub>	PM <sub>10</sub>	GR <sub>10</sub>
Number Very High	0	0	-
Number High	0	0	-
Number Moderate	0	97	-
Number Low	8634	8081	-
Maximum 15-minute mean	208 $\mu\text{g m}^{-3}$	297 $\mu\text{g m}^{-3}$	386 $\mu\text{g m}^{-3}$
Maximum hourly mean	178 $\mu\text{g m}^{-3}$	202 $\mu\text{g m}^{-3}$	263 $\mu\text{g m}^{-3}$
Maximum running 8-hour mean	100 $\mu\text{g m}^{-3}$	112 $\mu\text{g m}^{-3}$	146 $\mu\text{g m}^{-3}$
Maximum running 24-hour mean	80 $\mu\text{g m}^{-3}$	65 $\mu\text{g m}^{-3}$	84 $\mu\text{g m}^{-3}$
Maximum daily mean	75 $\mu\text{g m}^{-3}$	56 $\mu\text{g m}^{-3}$	73 $\mu\text{g m}^{-3}$
Average	25 $\mu\text{g m}^{-3}$	20 $\mu\text{g m}^{-3}$	26 $\mu\text{g m}^{-3}$
Data capture	98.6 %	93.0 %	93.0 %

PM<sub>10</sub> is measured with a TEOM instrument.  
 GR<sub>10</sub> is the PM<sub>10</sub> data converted to 'Gravimetric Equivalent' units using a conversion factor of 1.3  
 All mass units are at 20°C and 1013mb

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Nitrogen Dioxide	Annual mean > 40 µg m <sup>-3</sup>	0	-
Nitrogen Dioxide	Hourly mean > 200 µg m <sup>-3</sup>	0	0
PM <sub>10</sub> Particulate Matter (Gravimetric)	Daily mean > 50 µg m <sup>-3</sup>	18	18
PM <sub>10</sub> Particulate Matter (Gravimetric)	Annual mean > 40 µg m <sup>-3</sup>	0	-

### 5.3 Trends in results



Lisburn City Council has maintained a number of NO<sub>2</sub> diffusion tubes at roadside sites for a number of years. The diffusion tube studies for Lisburn for the past five 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. All monitoring has shown results well below the current objectives.

### 5.4 Significant New Development

None.

### 5.5 Significant New PPC Processes

None.

### 5.6 Summary in Relation to Air Quality Objectives.

It continues to be the case that no current air quality objectives are being exceeded in the Lisburn City Council area. If the air quality objective of 50  $\mu\text{g}/\text{m}^3$  not to be exceeded more than 7 times per year with an annual mean of 20  $\mu\text{g}/\text{m}^3$  is adopted for 2010, however this objective may not be met.

## 6 North Down Borough Council

The Borough of North Down is geographically one of the smallest Council areas in Northern Ireland. Population has increased steadily over recent years and is now in the region of 78,000.

Air quality in North Down is generally good as there is good ventilation from sea breezes. There are few industrial processes in the area that are significantly detrimental to air quality and heavy fuel oil is not widely used for heat generation.

There is significant use of solid fuel within the Borough for domestic heating. There are a number of very busy trunk roads in the area

North Down Borough Council's air quality monitoring sites are located at Clandeboye Road, Bangor and at the side of the A2 in Holywood.

The Bangor site is in an area of high density housing with a significant proportion of solid fuel burning. A fuel use survey was completed in May 2002, in the most densely populated 1Km<sup>2</sup> within the Borough that comprised 1677 dwellings. This Survey indicated that 14% of households used coal as a sole heating source roughly 59 houses per 500m<sup>2</sup>, with a further 22% (98 houses per 500m<sup>2</sup>) using coal as a secondary means of heating.

The site in Holywood is located at the A2 in the vicinity of Marine Parade. Approximately this area has a AADT flow of 42,000 vehicles with a low HGV component of roughly 3%.

Nine NO<sub>2</sub> diffusion tubes are mounted at the following locations to monitor roadside emissions.

### Figure 20 North Down Passive NO<sub>2</sub> Monitoring Sites

Ava Bar Main Street Bangor
Kosmos Bingham Street Bangor
Rathmore Road Bangor West
17 Rathgael Rd A2 Bangor
163 Rathgael Rd A21 Bangor
Ballyrobert A2
Seahill A2
Cultra A2
Marine Parade Holywood A2

In addition, three tubes are co-located at the A2 Holywood.

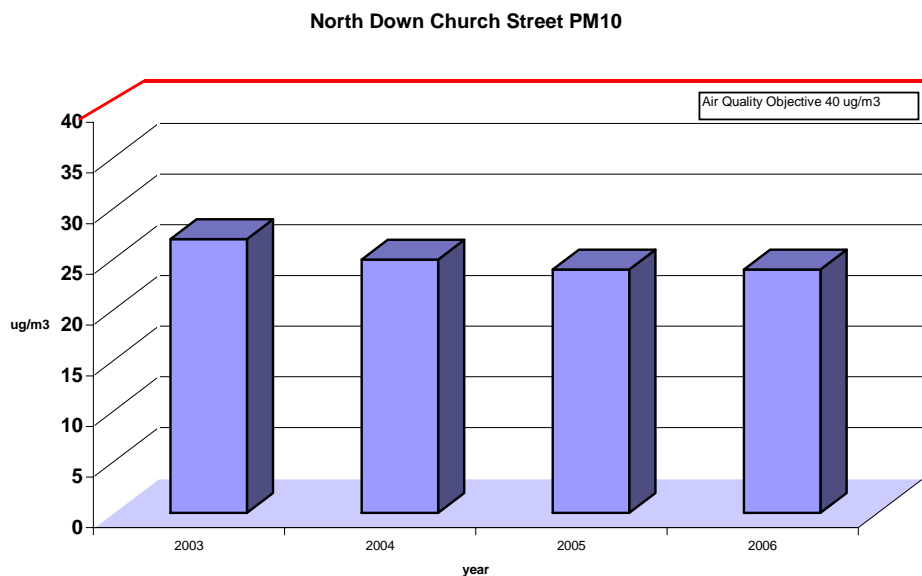
### 6.1 Progress in the past year.

The Updating and Screening Assessment completed in 2006 indicated that current objectives in relation to SO<sub>2</sub> NO<sub>2</sub> and PM<sub>10</sub> would be achieved. It is evident, however, that the proposed objectives in relation to PM<sub>10</sub> (2010) may not be met in relation to the A2 at Marine Parade and at the Clandeboye Road

in terms of exceedences and annual averages. The measured levels of SO<sub>2</sub> at Clandeboye Road are so low the monitoring of this pollutant may be dropped.

## 6.2 Recent Air Quality Monitoring

Figure 21 North Down Bangor PM<sub>10</sub> 2003-2006



There appears to be a slight downward trend in relation to average annual PM<sub>10</sub> levels at the North Down Bangor site. This is possibly associated with reduced reliance on solid fuel for heating in the area as older housing is refurbished and coal fires are replaced with gas and oil.

Figure 22 North down Bangor Automatic Results 2006

### NORTH DOWN BANGOR 01 January to 31 December 2006

These data have been fully ratified by AEA Energy & Environment

POLLUTANT	SO <sub>2</sub>	PM <sub>10</sub>	GR <sub>10</sub>
Number Very High	0	0	-
Number High	0	0	-
Number Moderate	0	75	-
Number Low	33742	8510	-
Maximum 15-minute mean	98 µg m <sup>-3</sup>	250 µg m <sup>-3</sup>	325 µg m <sup>-3</sup>
Maximum hourly mean	69 µg m <sup>-3</sup>	203 µg m <sup>-3</sup>	264 µg m <sup>-3</sup>
Maximum running 8-hour mean	49 µg m <sup>-3</sup>	120 µg m <sup>-3</sup>	157 µg m <sup>-3</sup>
Maximum running 24-hour mean	28 µg m <sup>-3</sup>	65 µg m <sup>-3</sup>	84 µg m <sup>-3</sup>
Maximum daily mean	25 µg m <sup>-3</sup>	60 µg m <sup>-3</sup>	79 µg m <sup>-3</sup>
Average	5 µg m <sup>-3</sup>	18 µg m <sup>-3</sup>	24 µg m <sup>-3</sup>
Data capture	98.4 %	98.1 %	98.1 %

PM<sub>10</sub> is measured with a TEOM instrument.

GR<sub>10</sub> is the PM<sub>10</sub> data converted to 'Gravimetric Equivalent' units using a conversion factor of 1.3

All mass units are at 20°C and 1013mb

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Sulphur Dioxide	15-minute mean > 266 $\mu\text{g m}^{-3}$	0	0
Sulphur Dioxide	Hourly mean > 350 $\mu\text{g m}^{-3}$	0	0
Sulphur Dioxide	Daily mean > 125 $\mu\text{g m}^{-3}$	0	0
Sulphur Dioxide	Annual mean > 20 $\mu\text{g m}^{-3}$	0	-
PM <sub>10</sub> Particulate Matter (Gravimetric)	Daily mean > 50 $\mu\text{g m}^{-3}$	16	16
PM <sub>10</sub> Particulate Matter (Gravimetric)	Annual mean > 40 $\mu\text{g m}^{-3}$	0	-

Figure 23 North Down Holywood A2 NO2 and PM10 Results 2003-2006

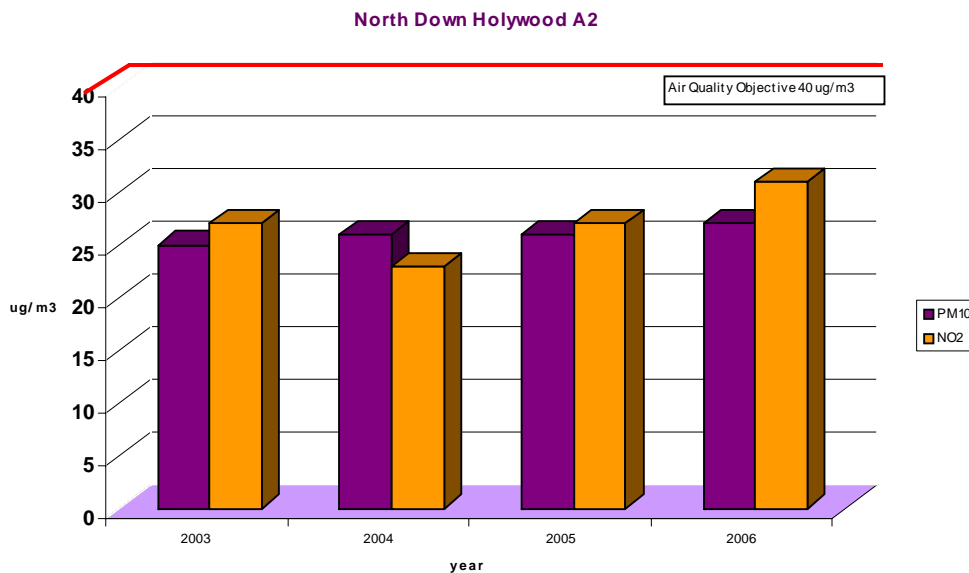


Figure 24 North Down Holywood A2 Results 2006

Produced by AEA Energy & Environment on behalf of  
North Down Borough Council

## NORTH DOWN HOLYWOOD A2 01 January to 31 December 2006

These data have been fully ratified by AEA Energy & Environment

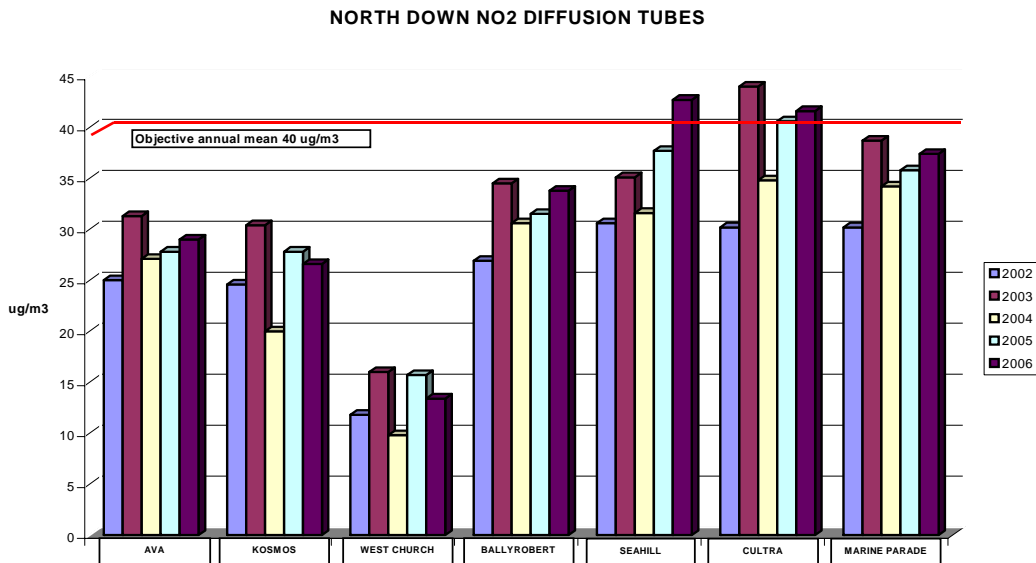
POLLUTANT	NO <sub>2</sub>	PM <sub>10</sub>	GR <sub>10</sub>
Number Very High	0	0	-
Number High	0	0	-
Number Moderate	0	55	-
Number Low	8293	8463	-
Maximum 15-minute mean	189 $\mu\text{g m}^{-3}$	388 $\mu\text{g m}^{-3}$	504 $\mu\text{g m}^{-3}$
Maximum hourly mean	160 $\mu\text{g m}^{-3}$	147 $\mu\text{g m}^{-3}$	191 $\mu\text{g m}^{-3}$
Maximum running 8-hour mean	125 $\mu\text{g m}^{-3}$	85 $\mu\text{g m}^{-3}$	111 $\mu\text{g m}^{-3}$
Maximum running 24-hour mean	90 $\mu\text{g m}^{-3}$	52 $\mu\text{g m}^{-3}$	68 $\mu\text{g m}^{-3}$
Maximum daily mean	84 $\mu\text{g m}^{-3}$	51 $\mu\text{g m}^{-3}$	67 $\mu\text{g m}^{-3}$
Average	31 $\mu\text{g m}^{-3}$	21 $\mu\text{g m}^{-3}$	27 $\mu\text{g m}^{-3}$
Data capture	94.7 %	96.8 %	96.8 %

PM<sub>10</sub> is measured with a TEOM instrument.  
 GR<sub>10</sub> is the PM<sub>10</sub> data converted to 'Gravimetric Equivalent' units using a conversion factor of 1.3

All mass units are at 20°C and 1013mb

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Nitrogen Dioxide	Annual mean > 40 µg m <sup>-3</sup>	0	-
Nitrogen Dioxide	Hourly mean > 200 µg m <sup>-3</sup>	0	0
PM <sub>10</sub> Particulate Matter (Gravimetric)	Daily mean > 50 µg m <sup>-3</sup>	18	18
PM <sub>10</sub> Particulate Matter (Gravimetric)	Annual mean > 40 µg m <sup>-3</sup>	0	-

### 6.3 Trends in results



Automatic station and passive station results in relation to the A2 from Bangor to Holywood are showing a slight increase in relation to NO<sub>2</sub> while PM<sub>10</sub> Levels have remained fairly constant. This is consistent with an increase in Belfast bound commuter traffic, offsetting improvements in vehicle emissions in relation to cars with EURO 3 and EURO 4 abatement technology. Passive tubes at Seahill and Cultra have indicated exceedences of the NO<sub>2</sub> objective. However, there is no relevant exposure at these locations, but there is land adjacent to these locations with development potential.

### 6.4 Significant New Development

None.

### 6.5 Significant New PPC Processes

None.

### 6.6 Summary in Relation to Air Quality Objectives

It continues to be the case that no current air quality objectives are being exceeded in the North Down Borough Council area. If, however, the air

quality objective of  $50 \mu\text{g}/\text{m}^3$  not to be exceeded more than 7 times per year with an annual mean of  $20 \mu\text{g}/\text{m}^3$  is adopted for 2010, this objective is unlikely to be met at Clandeboye RD or the A2 at Marine Parade.

## 7 Overall Conclusion

Monitoring indicated that no current air quality objective is being exceeded in the Eastern Group Area. Nevertheless, a number of factors could conspire to change this situation over the next few years. It is evident from the above that there are no single major developments in the area as a whole, that are likely to have a detrimental impact on air quality. However, there is a growing trend to small-scale infill developments on domestic and commercial Brownfield sites.

Individually this type of development does not have a significant effect, but cumulatively the effect can be considerable, particularly in Ards Castlereagh, and Lisburn areas, where this type of development often houses Belfast commuters. Therefore, local roads and feeder roads to the main trunk roads become more congested leading to a rise in pollutants. Recently this has been offset by an increasing proportion of EURO 3 and EURO 4 compliant vehicles on the roads. However, the gains from vehicle emissions reductions is diminishing and increased vehicle numbers and congestion on the main Belfast Arterial routes may lead to future exceedences in relation to NO<sub>2</sub> and PM<sub>10</sub>.

It is also apparent that the proposed 2010 PM<sub>10</sub> objective of 50 µg/m<sup>3</sup> not to be exceeded more than 7 times per year with an annual mean of 20 µg/m<sup>3</sup> may be exceeded by a number of Councils in the Group.

## 8 References

1. Progress Report Guidance LAQM.PRGNI(04) November 2004
2. Technical Guidance LAQM.TG(03) January 2003.
3. LAQM.TG(03) – Update. January 2006
4. The Air Quality Regulations NI (2003)
5. DETR (2000) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. Department of the Environment, Transport and the Regions. Cm 4548, SE 2000/3, NIA 7