

**Carrickfergus Borough Council**

**Local Air Quality  
Management  
Progress Report**

**September 2007**



## 1. Introduction

The local air quality management (LAQM) system was introduced by the Environment (Northern Ireland) Order 2002 and subsequent Regulations. Under this legislation District councils are required to review the present quality of air and the likely future quality of air and assess whether the nationally prescribed objectives are likely to be achieved.

This Progress Report is a requirement of Government guidance issued in 2003 (LAQM.PGNI(03)) which set out the timescales for submission of the various reports on air quality. This report has been prepared in accordance with EHS guidance LAQM.PRGNI(04).

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

Air quality monitoring of NO<sub>2</sub> and SO<sub>2</sub> using diffusion tubes has been ongoing Carrickfergus Borough since March 1997. Real time monitoring of SO<sub>2</sub> and PM<sub>10</sub> commenced in July 2002 at the Councils Rosebrook Grove site and continues to date.

The First Stage Air Quality Review and Assessment completed February 2001 concluded that the pollutants indicated in the following table namely, NO<sub>2</sub> from roads and industrial sources, SO<sub>2</sub> from industrial and domestic sources and PM<sub>10</sub> from industrial and domestic sources, should be examined during the second stage review.

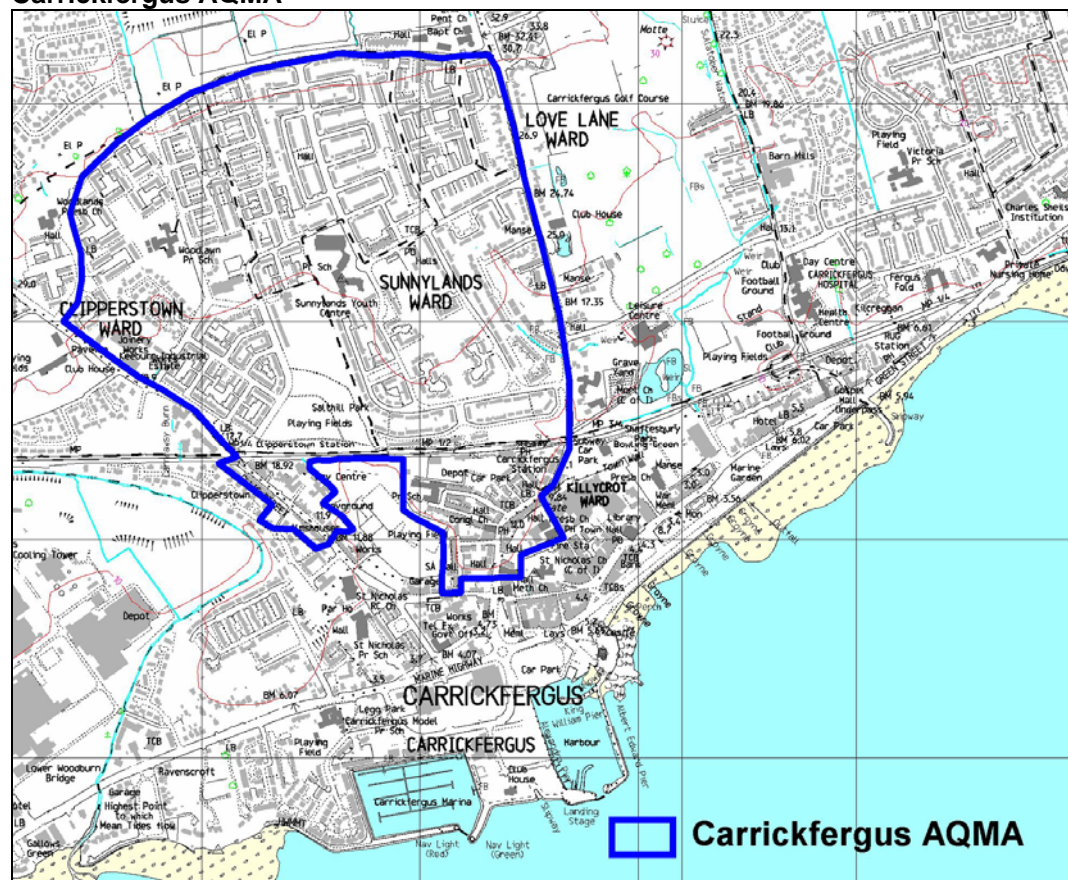
| Pollutant        | Exceedance Road Sources | Exceedance Industrial Sources | Exceedance Domestic Sources | Progress to Second Stage Review | Progress to Third Stage Review | Progress to Fourth Stage Review | Exceedances Predicted at Update Screening Assessment |
|------------------|-------------------------|-------------------------------|-----------------------------|---------------------------------|--------------------------------|---------------------------------|--|
| Carbon Monoxide  | None                    | None                          | None                        | No                              | No                             | No                              | None   |
| Benzene          | None                    | None                          | None                        | No                              | No                             | No                              | None   |
| 1,3 Butadiene    | None                    | None                          | None                        | No                              | No                             | No                              | None   |
| Lead             | None                    | None                          | None                        | No                              | No                             | No                              | None   |
| Nitrogen Dioxide | Yes                     | Yes                           | None                        | Yes                             | No                             | No                              | None   |
| Sulphur Dioxide  | None                    | Yes                           | Yes                         | Yes                             | Yes                            | No                              | None   |
| PM <sub>10</sub> | Yes                     | None                          | Yes                         | Yes                             | Yes                            | Yes                             | None   |



The Second Stage Assessment completed in February 2002 excluded SO<sub>2</sub> and PM<sub>10</sub> from industrial sources and NO<sub>2</sub> from industrial and road sources.

Third Stage Review and Assessment concentrated on the assessment of the remaining pollutants namely PM<sub>10</sub> from domestic sources and road sources and SO<sub>2</sub> from domestic sources. Modelling of these pollutants excluded PM<sub>10</sub> from road sources and SO<sub>2</sub> from domestic sources, but predicted exceedances for PM<sub>10</sub> from domestic sources in both Carrickfergus town and Greenisland and resulted in the declaration of two Air Quality Management Areas.

### Carrickfergus AQMA



Fourth Stage Review and Assessment was commenced at the end of 2004 with an updating of fuel use survey information within the AQMAs and was completed by the autumn of 2005.

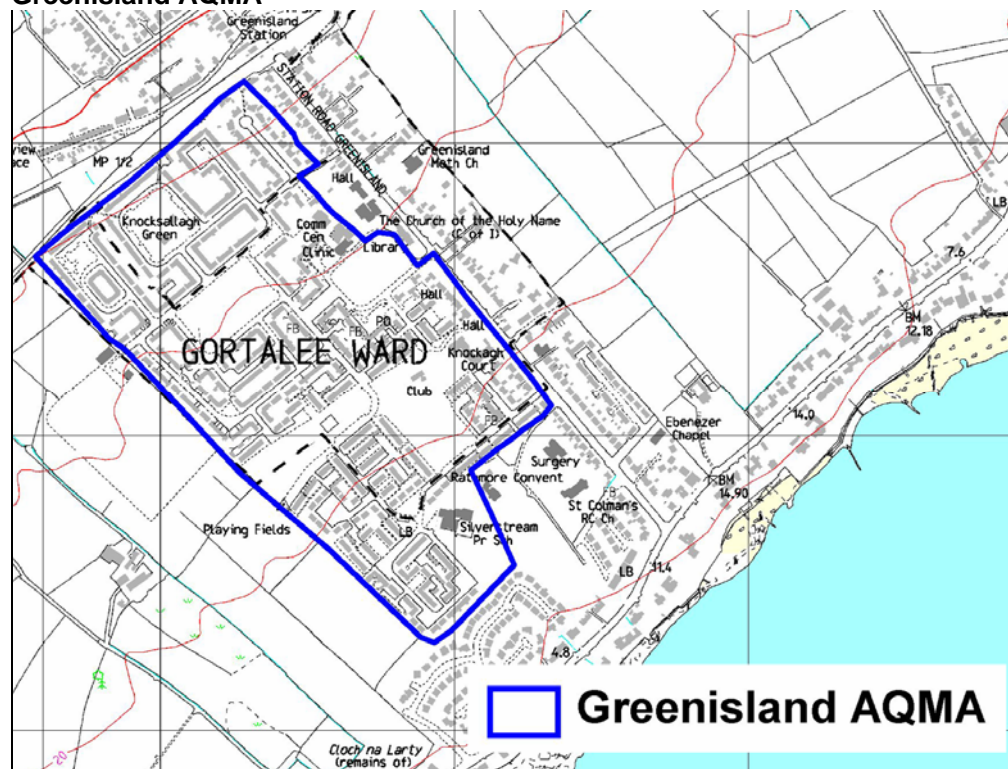
The conclusions Air Quality Review and Assessment Stage 4 - Detailed Modelling for Domestic Fuel Combustion indicated that PM<sub>10</sub> and SO<sub>2</sub> emissions arising from domestic fuel combustion in Carrickfergus Borough Council are not predicted to cause an exceedance of the PM<sub>10</sub> objectives at relevant receptors within the assessed areas. This has been confirmed by the monitoring data collected. Netcen who carried out the fourth stage modelling recommended,



*“Carrickfergus Borough Council may wish to consider revocation of the AQMA on the basis of these results”*

As a consequence of the Netcen recommendation and its subsequent appraisal and acceptance by U.W.E, Carrickfergus Borough Council revoked the two Air Quality Management Areas for PM<sub>10</sub> from domestic sources, in Carrickfergus town and Greenisland on the 6<sup>th</sup> February 2007.

### Greenisland AQMA



The Review and Assessment of Air Quality, Updating and Screening Assessment completed in October 2006 concluded that,

*“Of the seven key pollutants updated, screened and assessed, the likelihood of the air quality objectives for carbon monoxide, benzene, 1,3 – butadiene, lead, sulphur dioxide, nitrogen dioxide, and fine particles (PM<sub>10</sub>) being exceeded is negligible. There is therefore no requirement to proceed to a detailed assessment for any of these pollutants in the Carrickfergus Borough Council area”.*





### 3. Air Quality Monitoring Locations

Council currently maintains 13 NO<sub>2</sub> diffusion tubes, five SO<sub>2</sub> diffusion tubes and a real time Air Quality Monitoring Station at Rosebrook Grove in Carrickfergus Town. This station monitors PM<sub>10</sub>, SO<sub>2</sub> and meteorological data. The diffusion tubes are located throughout the Borough in a variety of roadside urban, urban background and rural locations, see map below.

#### Location of Air Quality Monitoring Points





#### 4. Summary Tables of PM<sub>10</sub> and Sulphur Dioxide Concentrations

### CARRICKFERGUS ROSEBROOK AVENUE

**01 January to 30 June 2006**

**These data are provisional from 01/04/2006 and may be subject to further quality control**

| POLLUTANT                    | SO <sub>2</sub>        | PM <sub>10</sub> *     |
|------------------------------|------------------------|------------------------|
| Number Very High             | 0                      | -                      |
| Number High                  | 0                      | -                      |
| Number Moderate              | 0                      | -                      |
| Number Low                   | 15626                  | -                      |
| Maximum 15-minute mean       | 114 µg m <sup>-3</sup> | 278 µg m <sup>-3</sup> |
| Maximum hourly mean          | 77 µg m <sup>-3</sup>  | 148 µg m <sup>-3</sup> |
| Maximum running 8-hour mean  | 45 µg m <sup>-3</sup>  | 98 µg m <sup>-3</sup>  |
| Maximum running 24-hour mean | 25 µg m <sup>-3</sup>  | 63 µg m <sup>-3</sup>  |
| Maximum daily mean           | 21 µg m <sup>-3</sup>  | 62 µg m <sup>-3</sup>  |
| Average                      | 5 µg m <sup>-3</sup>   | 22 µg m <sup>-3</sup>  |
| Data capture                 | 91.9 %                 | 98.7 %                 |

\* PM<sub>10</sub> in gravimetric units, instrument is a TEOM. Gravimetric correction using a 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    |
| 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>             | -           | -    |



## CARRICKFERGUS ROSEBROOK AVENUE 01 July 2006 to 30 June 2007

These data are provisional from 01/04/2007 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                      | 0                      | -                      |
| Number Moderate              | 0                      | 0                      | -                      |
| Number Low                   | 34083                  | 8454                   | -                      |
| Maximum 15-minute mean       | 176 µg m <sup>-3</sup> | 390 µg m <sup>-3</sup> | 507 µg m <sup>-3</sup> |
| Maximum hourly mean          | 82 µg m <sup>-3</sup>  | 120 µg m <sup>-3</sup> | 156 µg m <sup>-3</sup> |
| Maximum running 8-hour mean  | 34 µg m <sup>-3</sup>  | 62 µg m <sup>-3</sup>  | 80 µg m <sup>-3</sup>  |
| Maximum running 24-hour mean | 18 µg m <sup>-3</sup>  | 49 µg m <sup>-3</sup>  | 64 µg m <sup>-3</sup>  |
| Maximum daily mean           | 18 µg m <sup>-3</sup>  | 47 µg m <sup>-3</sup>  | 61 µg m <sup>-3</sup>  |
| Average                      | 4 µg m <sup>-3</sup>   | 15 µg m <sup>-3</sup>  | 19 µg m <sup>-3</sup>  |
| Data capture                 | 99.4 %                 | 96.4 %                 | 96.4 %                 |

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

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

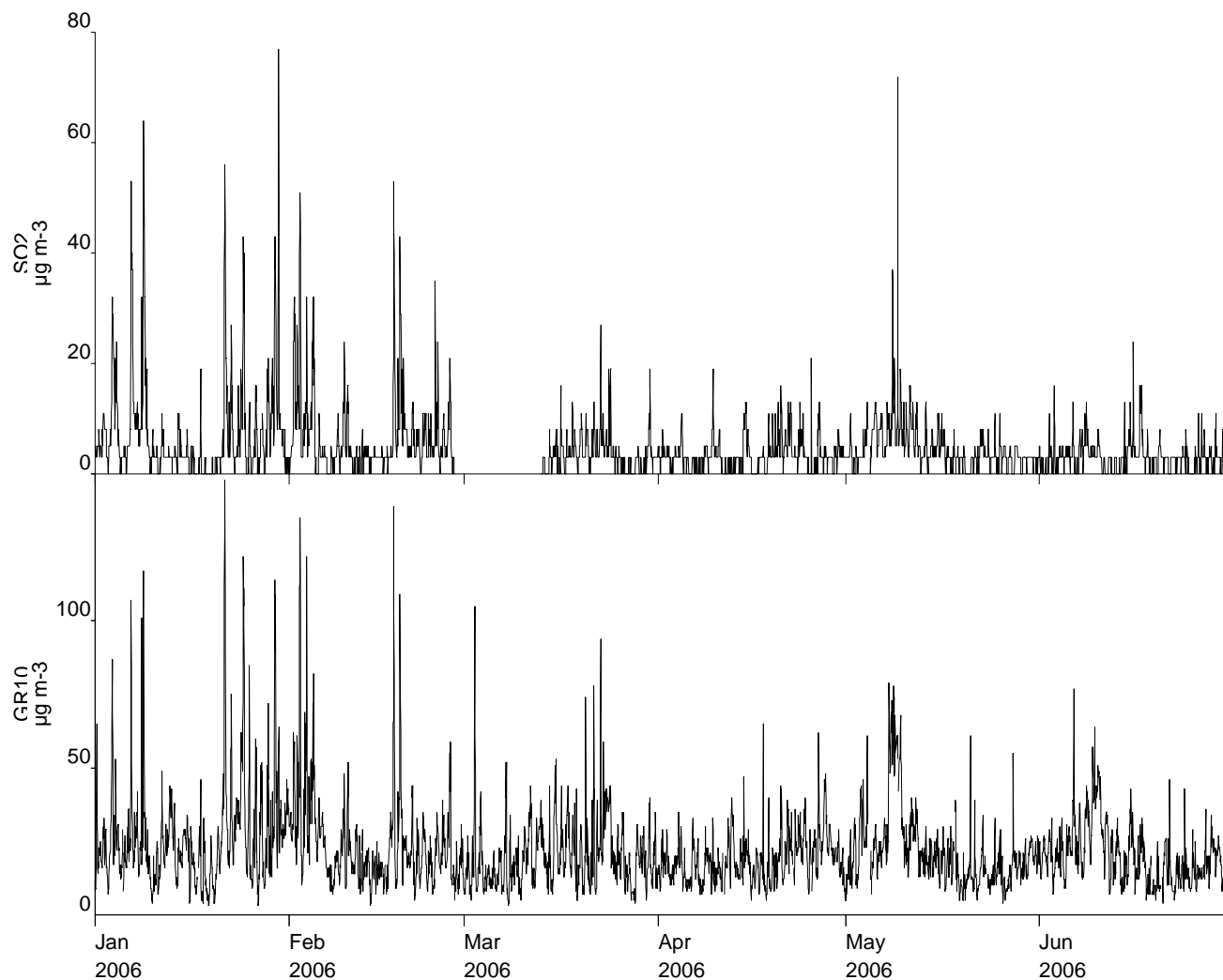
All mass units are at 20°C and 1013mb

| Pollutant  | Air Quality Regulations<br>(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    |
| PM <sub>10</sub> Particulate Matter<br>(Gravimetric) | Daily mean > 50 µg m <sup>-3</sup>                 | 4           | 4    |
| PM <sub>10</sub> Particulate Matter<br>(Gravimetric) | Annual mean > 40 µg m <sup>-3</sup>                | 0           | -    |

**Produced by AEA Energy & Environment on behalf of Carrickfergus Borough Council**



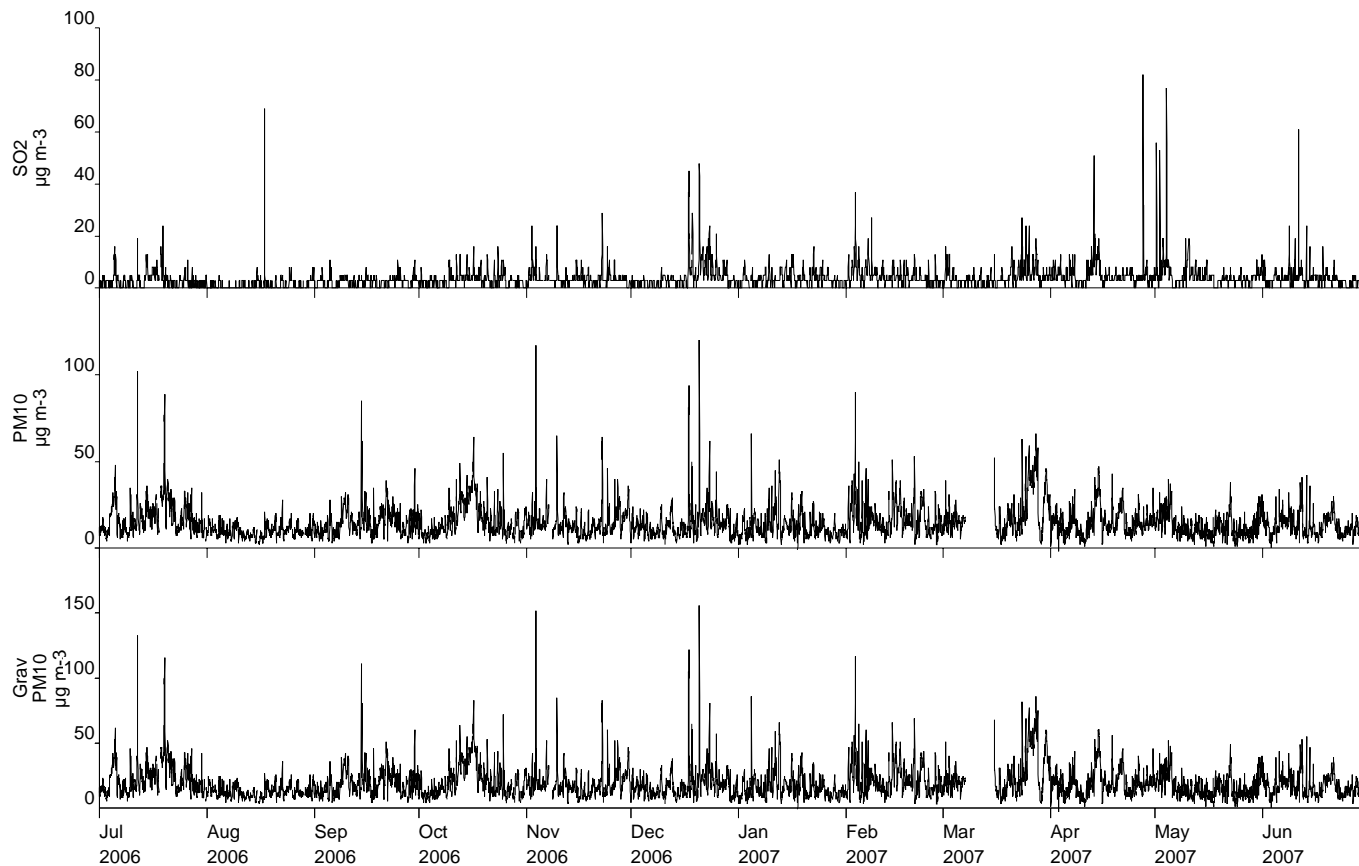
## Carrickfergus Rosebrook Avenue Air Monitoring Hourly Mean Data for 01 January to 30 June 2006







## Carrickfergus Rosebrook Avenue Air Monitoring Hourly Mean Data for 01 July 2006 to 30 June 2007



**Produced by AEA Energy & Environment on behalf of Carrickfergus Borough Council**

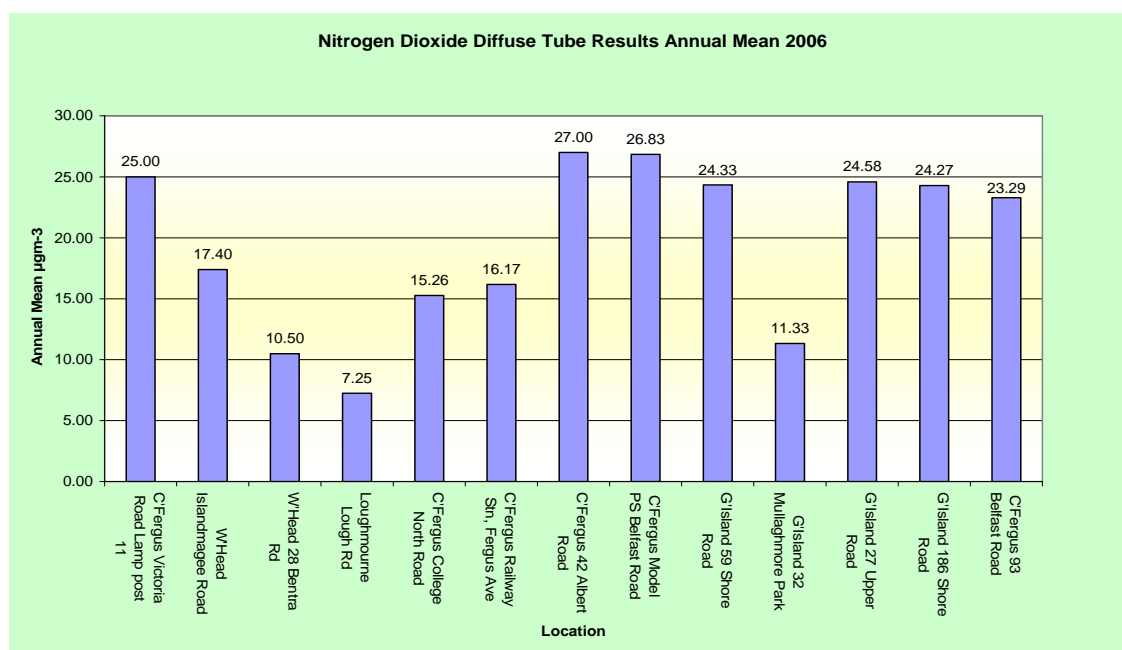


## 5. Nitrogen Dioxide Diffusion Tubes

| Location                            | 2007 | CBC Site Nos | Site Type        |
|-------------------------------------|------|--------------|------------------|
| C'Fergus Victoria Road Lamp post 11 |      | 13           | Kerbside         |
| W'Head Islandmagee Road             |      | 5            | Kerbside         |
| W'Head 28 Bentra Rd                 |      | 11           | Rural            |
| Loughmourne Lough Rd                |      | 7            | Rural            |
| C'Fergus College North Road         |      | 2            | Urban Background |
| C'Fergus Railway Stn, Fergus Ave    |      | 3            | Intermediate     |
| C'Fergus 42 Albert Road             |      | 8            | Kerbside         |
| C'Fergus Model PS Belfast Road      |      | 6            | Kerbside         |
| G'Island 59 Shore Road              |      | 10           | Kerbside         |
| G'Island 32 Mullaghmore Park        |      | 1            | Urban Background |
| G'Island 27 Upper Road              |      | 9            | Kerbside         |
| G'Island 186 Shore Road             |      | 12           | Kerbside         |
| C'Fergus 93 Belfast Road            |      | 4            | Kerbside         |

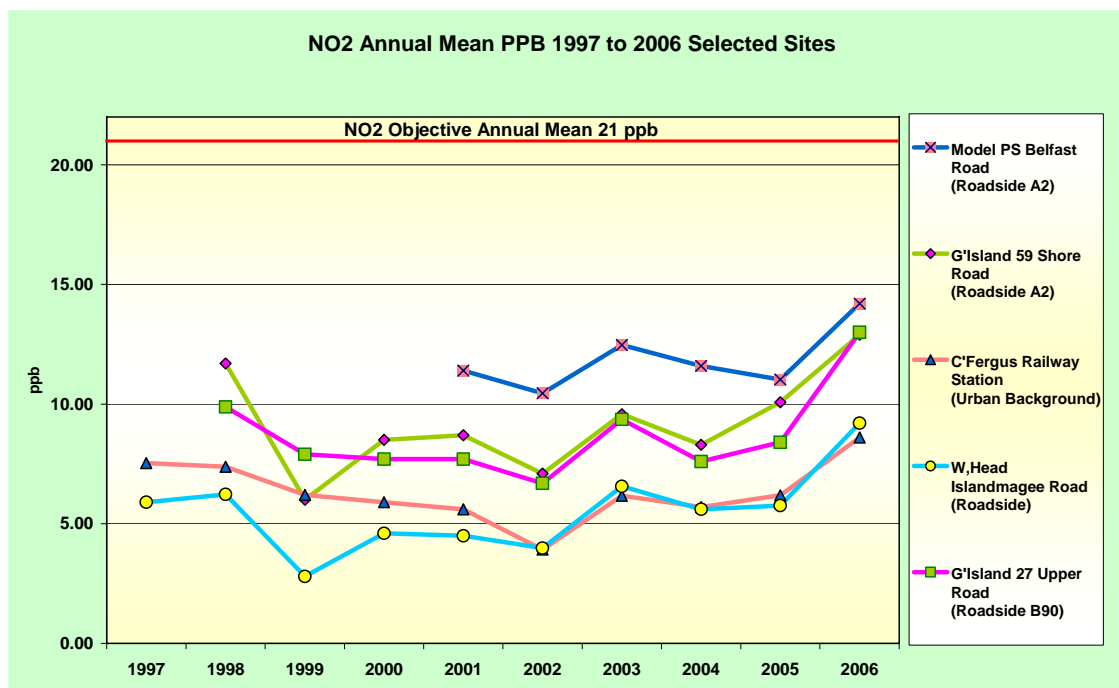
The graph below illustrated the results from a selection of the NO<sub>2</sub> monitoring points between 1997 and 2006. The highest readings are obtained from sites along the A2 Shore Road which carries approximately 30000 vehicles per day. The next highest results are from a location on the B90 Upper Road which carries approximately 15000 vehicles per day. None of the NO<sub>2</sub> monitoring site exceeds the annual objective of 21ppb.

## Nitrogen Dioxide Diffusion Tube Results





The analysis was carried out by Eurofins labs and the bias adjustment factor is 0.99



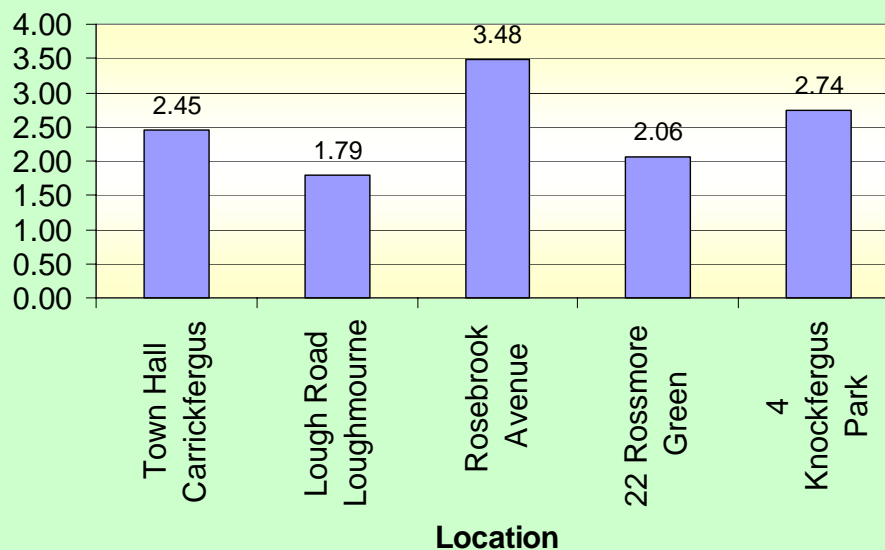
## 6. Sulphur Dioxide Diffusion Tubes

Carrickfergus Borough Council has maintained a number of sulphur dioxide diffusion tube sites in the Borough since 1997, listed below. The results from these sites are displayed in the graph below.

| Location                       | Site   |
|--------------------------------|--|
| Town Hall Carrickfergus        | Urban  |
| Lough Road Loughmourne         | Rural  |
| Rosebrook Avenue Carrickfergus | Urban Co-located with real time SO2 Analyser |
| 22 Rossmore Green Greenisland  | Urban  |
| 4 Knockfergus Park Greenisland | Urban  |

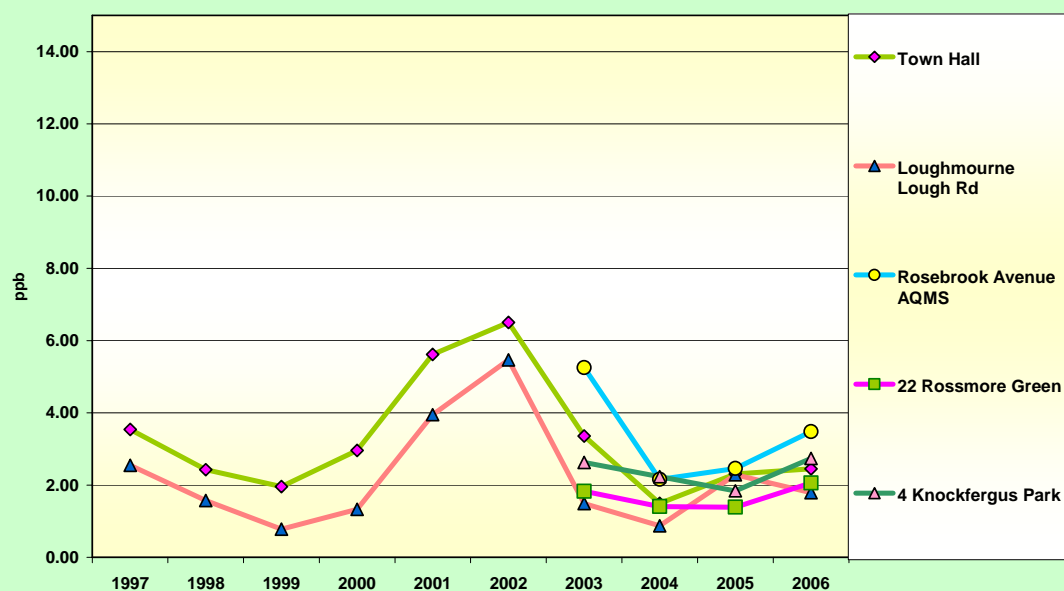


### Sulphur Dioxide Diffusion tube Results $\mu\text{g}/\text{m}^3$ 2006



The analysis was carried out by Eurofins labs and the bias adjustment factor is 0.99

### SO<sub>2</sub> Annual Mean PPB 1997 to 2006 Diffusion Tube Sites





## 8. Planning Applications that may have the Potential to Impact on Air Quality

### Residential Applications

| ADDRESS                  | TOWN          | APP_NOS       | PROPOSAL               | TOTAL NOS |
|--------------------------|---------------|---------------|------------------------|-----------|
| 19 Downshire Road        | Carrickfergus | V/2005/0005/O | 32 Apts and townhouses | 32        |
| 90-97 Larne Road         | Carrickfergus | V/2005/0030/F | Housing Development    | 33        |
| 7 North Road             | Carrickfergus | V/2005/0054/O | Housing Development    | 18        |
| 108 Larne Road           | Carrickfergus | V/2005/0071/F | Housing Development    | 27        |
| 45 Shore Road            | Greenisland   | V/2005/0121/F | 3 Apts Blocks          | 30        |
| Redfort Drive            | Carrickfergus | V/2005/0126/O | Housing Development    | 276       |
| Land 41 Farm Lodge Dr    | Greenisland   | V/2005/0132/F | Housing Development    | 16        |
| 1 Larne Road             | Carrickfergus | V/2005/0256/O | 18 Apartments          | 18        |
| 75 Belfast Road          | Carrickfergus | V/2005/0289/F | 176 Apartments         | 176       |
| Land Nth of Brackenridge | Carrickfergus | V/2005/0307/F | Semis and Detached     | 154       |
| 32-38 Scotch Quarter     | Carrickfergus | V/2005/0326/F | 22 Apt & 6 Bus units   | 22        |
| S of Farm Lodge Park     | Greenisland   | V/2005/0342/F | 24 Dwellings           | 24        |
| 3 Old Shore Road         | Trooperslane  | V/2006/0009/F | 15 Apartments          | 15        |
| 62 Larne Road            | Carrickfergus | V/2006/0018/O | 3 apartment blocks     | 20        |
| 1 Upper Road             | Greenisland   | V/2006/0075/F | detach and semis       | 19        |
| 102 Prince Andrew Way    | Carrickfergus | V/2006/0063/O | Townhouses and Apts    | 18        |
| Donegal Rise             | Carrickfergus | V/2006/0125/F | Housing Development    | 15        |
| 4 Upper Station Road     | Greenisland   | V/2006/0168/F | 31 New Dwellings       | 31        |
| Lands w of Shorelands    | Greenisland   | V/2006/0189/F | Housing development    | 69        |
| 44-50 Ellis Street       | Carrickfergus | V/2006/0279/F | Demolition & 16 apts   | 16        |
| Plot 8c Marina           | Carrickfergus | V/2006/0270/F | Office and Apts        | 25        |
| Lands S of Priory Drive  | Carrickfergus | V/2006/0293/F | 130 Dwellings          | 130       |
| 8-14 Glassillan Grove    | Greenisland   | V/2006/0295/F | Apt block r            | 24        |
| 6 Island Park            | Greenisland   | V/2006/0319/O | Demol + 18 apts        | 18        |
| Lands At Bashfordlands   | Carrickfergus | V/2006/0310/F | Housing development    | 48        |
| 252 Larne road           | Carrickfergus | V/2007/0035/F | Demol + apts           | 40        |
| 7-9 North Road           | Carrickfergus | V/2007/0062/F | 23 Apartments          | 23        |
| 103-103A Shore Rd        | Greenisland   | V/2007/0094/F | Apartment blocks       | 43        |
| Lands 6 Tudor Link       | Carrickfergus | V/2007/0116/F | 47 Residential units   | 47        |
| 7-39 Ellis street        | Carrickfergus | V/2007/0075/F | 18 apts in two blocks  | 18        |
| Land Farm Lodge Park     | Greenisland   | V/2007/0118/F | 18 two Bed Apts        | 18        |
| Site 34 Trailcock road   | Carrickfergus | V/2007/0087/F | 25 detached dwellings  | 25        |
| Site 19 Trailcock road   | Carrickfergus | V/2007/0150/F | Dwelling and garage    | 25        |
| Land Trailcock Lane      | Carrickfergus | V/2007/0260/F | 30 Apts in 3 Blocks    | 30        |

The table above lists applications for housing of greater than 15 units received since 2005. As the almost new housing in Carrickfergus and Greenisland uses either natural gas or oil as their main heating source, they are not expected to add significantly to PM10 or SO2 emissions.





### Industrial/Commercial Applications

| ADDRESS              | TOWN          | APP_NOS        | PROPOSAL                       |
|----------------------|---------------|----------------|--------------------------------|
| Carrick Sewage Works |               |                |                                |
| Boneybefore          | Carrickfergus | V/2005/0012    | Upgrade sewage Works           |
| 75 Belfast Road      | Carrickfergus | V/2005/0141/RM | Retail Warehouse and Trade     |
| Sloefield Drive      | Carrickfergus | V/2005/0337/F  | Warehouse and Office           |
| 5 Sloefield Drive    | Carrickfergus | V/2006/0143/F  | Industrial workshop            |
| Sloefield park       | Carrickfergus | V/2006/0153/F  | Production & Storage Extension |
| 75A Belfast Road     | Carrickfergus | V/2006/0232    | Warehouse Unit                 |
| 97 Sloefield Drive   | Carrickfergus | V/2007/0049/F  | Factory Extension              |

None of the above industrial/commercial proposals are expected to add significantly to atmospheric emissions.

### Roads Applications

No major new roads have been constructed in the Borough in the last five years. The Belfast Metropolitan Transport Plan does include proposals to widen the two lane carriageway of the A2 Shore Road at Greenisland to a four lane highway by 2012. The Public Inquiry into the scheme is scheduled to commence in October 2007. When this widening scheme is completed, subject to the result of the Public Inquiry, it should remove the congestion experienced at this bottleneck and improve traffic flow.

### New Landfill Sites

No new landfill sites have been approved in the Borough in the last five years.

## 9. Next Steps

### a) Monitoring

Council will maintain its real time PM10 and Sulphur Dioxide Monitors together with its Nitrogen Dioxide diffusion tube network.

### b) Further Assessment of Minorca Place road Junction

Council will, when OSNI maps and Roads Service traffic data becomes available, assess the impact of any traffic increase on the recently created road junction at Minorca Place, Carrickfergus.

### c) Air Quality Strategy

Council will seek to produce an Air Quality Strategy over the forthcoming year.

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**21 September 2007**