MOYLE DISTRICT COUNCIL

Local Air Quality Management Progress Report

2007

CONTENTS

EXECUTIVE SUMMARY

Local air quality management was introduced by the first air quality strategy in 1997. Following review the UK National Air Quality Strategy was published in 2000, with the aim of improving air quality in the UK.

Local authorities have a major role in this process, which was formalised as a statutory duty in the Environment (Northern Ireland) Order 2002.

This Progress Report essentially brings air quality work up to date by determining whether air quality objectives continue to be met in Moyle and will identify if any further measures are required to improve air quality.

Since the last round of review and assessment there have been no new local developments that would have a significant, detrimental effect on air quality. Assessment of recent monitoring data indicates that the air quality standards set by Government for nitrogen dioxide do continue to be met and consequently, it will not be necessary for Moyle District Council to declare any Air Quality Management Areas.

The next round of air quality reviews and assessments will take the form of a further progress report to be completed in 2008 and an updating and screening assessment be carried out in 2009.

1. Introduction

The Environment (Northern Ireland) Order 2002 introduced a statutory obligation on councils to carry out a review and assessment of their local air quality known as local air quality management (LAQM). The process requires the current and likely future quality of air to be assessed and compared against nationally prescribed air quality objectives (see appendix 1).

An evaluation of the first round of review and assessments found the process to be too 'stop-start' and recommended that to provide continuity within the process, councils should be required to provide an annual report which would provide both a review and update on air quality issues, including information on developments that might affect air quality and the results of monitoring. These reports are known as progress reports. Guidance on the content of progress reports, and timescales for submission of these and other LAQM reports is contained in Department of the Environment guidance document LAQM.PRGNI(04).

It is considered that progress reports will, amongst other things, help retain the profile of LAQM within the council, provide a mechanism to communicate information on LAQM to the public and provide a source of information which may be used to inform policies on matters such as transport and land use planning.

The overall aim of a progress report is to document progress on implementing local air quality management and report progress in achieving or maintaining concentrations of pollutants below air quality objectives.

The report contains details of new monitoring results and new local developments that might affect local air quality.

2. Summary of Findings from Previous Review and Assessment Work

The stage 1 air quality review and assessment undertaken by Moyle District Council in 2001 suggested that:

(a) There was a need to progress to a second stage review of PM_{10} (particulate matter) emissions from road traffic and for SO_2 (sulphur dioxide) from emissions from one industrial combustion system.

Consultants were employed to investigate this matter further. The consultants also considered NO_2 (nitrogen dioxide) emissions from traffic. The consultants concluded that the air quality objectives for NO_2, PM_{10} and SO_2 are likely to be met and a third stage review was not required from vehicular and industrial sources.

(b) There was a need to carry out a third stage review of SO_2 and PM10 emissions from two areas of domestic coal burning.

The Council commissioned consultants to model PM_{10} and SO_2 for the two areas of domestic coal burning in Bushmills and Ballycastle. The modelling, which was corrected for bias, predicted that in both the areas of concern exceedences of the SO_2 and PM_{10} objectives are unlikely.

As a result of this Moyle District Council did not have to declare any air quality management areas. However the Council proposed to continue local monitoring to identify long term trends in air quality within the district and to ensure that the conclusions drawn in the first round review and assessment remain valid. The Council continued to monitor NO_2 and SO_2.

A Progress report was completed in 2005. Assessment of the available monitoring data for nitrogen dioxide and sulphur dioxide indicated that air quality in Moyle District met the air quality objectives and no significant development had occurred in the council area which was likely to have a significant affect on air quality.

The Updating and Screening Assessment completed in 2006 identified those matters which had changed since the first round of review and assessment and concluded that it was unlikely that any of the national air quality objectives would be breached within the Council area. There was therefore no need to proceed to a detailed assessment for any of the seven pollutants reconsidered. Moyle District Council however continued to monitor NO_2 and SO_2.

3. New Monitoring Results

3.1 Nitrogen Dioxide NO_2

Nitrogen oxide (NO) and Nitrogen dioxide (NO_2) are both oxides of nitrogen collectively referred to as NO_x. NO is oxidised to form NO_2. Combustion processes, including those in vehicle engines, give rise to this mixture of NOx gases. High concentrations of NO_2 can irritate the respiratory system and affect human health.

Diffusion tubes provide a low cost means of indicatively monitoring the level of NO_2 in the air. The passive diffusion tube is a clear plastic tube open at one end with the closed end containing an absorbent for the gas and absorbs the pollutant direct from the surrounding air. The tubes are exposed for either 4 or 5 weeks at a time. Results from analysis of the tubes can then be used to compare the level of NO_2 against the annual mean objective for NO_2.

NO_2 tubes are located in sites that appear to be representative of residential exposure and where possible close to the nearest receptor to a busy road. The location of the tubes is kept under review and they can be relocated, if necessary, when sufficient information is obtained about the level of the pollutant in a particular area.

The analysis of diffusion tubes in the Council is carried out by Lambeth Scientific Services, by 50%TEA in acetone. The tubes are exposed for 4 or 5 weeks at a time before being sent to the laboratory for analysis. The results from the laboratory for the diffusion tubes are then corrected for possible over or under reading. Known as a bias adjustment, this factor is obtained by comparing the results from diffusion tubes and the results from a real time analyser which are co-located. Moyle Council does not operate a real time analyser therefore the bias adjustment factor is obtained from other co-location studies in which Lambeth Scientific Services diffusion tubes have been co-located. Eight such studies were carried out in 2006 giving a bias of 1.34 compared to concentrations obtained from co-located automatic analysers. This was also the highest bias adjustment found since 2000 and therefore will give a worst-case scenario results. A bias factor of 1.34 has therefore been applied to the measured result to take account of the variance.

Monitoring of Nitrogen Dioxide was carried out at the sites in 2006 detailed in table 1.0 over page. The table also contains a brief description of the character of the location.

Table 2.0 summarises the measured NO_2 diffusion tube monitoring results for 2006 received to date and the corrected result taking into account the bias adjustment factor. At the time of writing results were available for the first 9 months of 2006 and therefore the results are an average of available data only.

Table 1.0 Location of Nitrogen Dioxide Diffusion Tubes

Location	Grid Reference	Description Of Location	Distance to Road In metres (approx)	Distance to nearest residential dwelling (metres)
Middle Park Rd Cushendall	D239272	Lamppost at roadside adjacent to housing	2.5	4
Dunluce Rd Bushmills	C937408	Lamppost at roadside location adjacent to housing	2.5	10
Lower Main St. Bushmills	C942409	Lamppost at roadside location adjacent to housing	3	5
Main St Bushmills	C947406	Church adjacent to roadside housing in close proximity	2.5	3
Mary Street Ballycastle	D122421	Lamppost in Council office car park	30	10
Mill St Car Park Cushendall	D243252	Lamppost in car park	15	15
Leyland Road Ballycastle	D101415	Lamppost at roadside in mixed commercial / residential area	5	5
Garron Road Glenariff	D243252	St Patricks Primary School	5	10

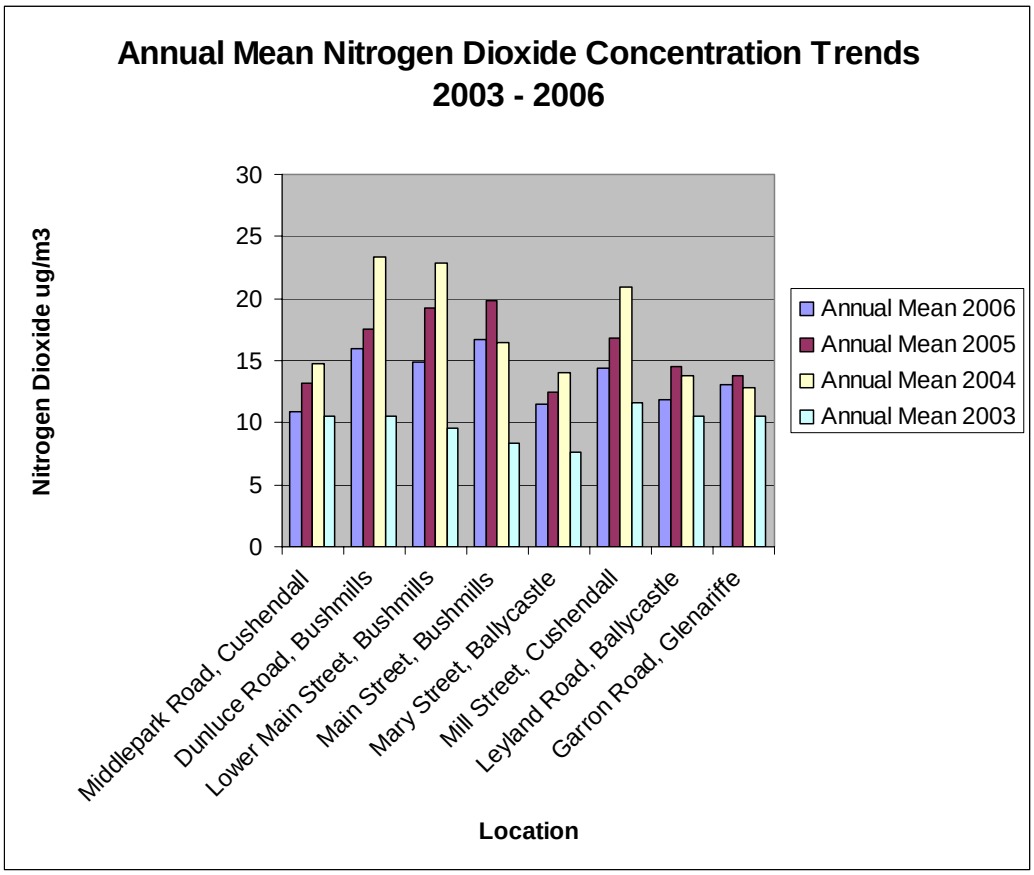
Table 2.0 Nitrogen Dioxide Diffusion Tube Monitoring Results for 2006

Location	Measured Annual Mean Concentration µg/m^3	Corrected Annual Mean Concentration µg/m^3
Middle Park Rd Cushendall	8.14	10.91
Dunluce Rd Bushmills	11.88	15.92
Lower Main St. Bushmills	11.14	14.93
Main St Bushmills	12.5	16.75
Mary Street Ballycastle	8.57	11.48
Mill St Car Park Cushendall	10.75	14.41
Leyland Road Ballycastle	8.88	11.89
Garron Road Glenariff	9.75	13.07
		Annual Mean Objective for NO_2 40 µg/m^3

3.1.1 Annual NO_2 Mean Concentration Trends

Almost four complete years of monitoring results for the nitrogen dioxide diffusion tubes have been obtained and they are shown on the graph on the next page for 2003 to 2006. Historical data is therefore very limited. Extreme care should be exercised in drawing any conclusions regarding trends in the level of NO_2 as changes in concentrations can occur from year to year due to weather conditions. It is normal practice to only consider a trend as being significant when five years worth of data are available. Inference should therefore not be drawn from the graph in figure 1 and it is for illustrative purposes only.

Figure 1



Conclusion

The levels measured by the diffusion tubes in 2006 did not exceed the objective for nitrogen dioxide of 40$\mu g/m^3$ and therefore the areas monitored are predicted to remain within the nitrogen dioxide objectives.

3.2 Sulphur Dioxide SO_2

Sulphur dioxide is formed during the combustion of fuels such as coal, oil and gas that contain sulphur. Sulphur dioxide is a respiratory irritant and at high concentrations can be toxic. Monitoring of SO_2 within the Moyle District Council area was carried out using diffusion tubes.

Air quality strategy objectives for SO_2 include a 15 minute mean, 1hour and 24 hour mean with a specified permitted number of exceedences relating to each.

The use of passive diffusion tube samplers developed for sulphur dioxide are not recommended for review and assessment according to LAQM TG(03). These diffusive samplers are only able to measure concentrations over a relatively long averaging period, which cannot easily be compared with short-term objectives.

Eight SO_2 diffusion tubes were located throughout Moyle District, however in view of technical guidance, this monitoring was discontinued at the end of 2006. All available monitoring results for 2006 is shown in Appendix 2.

3.3 Other Pollutants

National air quality objectives are also in place for the following pollutants

Carbon monoxide
Benzene
1,3 Butadiene
Lead

Both the stage 1 review and assessment and Updating and Screening Assessments concluded that it was unlikely that the air quality objectives for these pollutants would be exceeded and no monitoring has been carried out in respect of these. The Council will review the need to monitor these pollutants during the next update and screening assessment.

4.0 New Local Developments

4.1 New Industrial Processes

No industrial processes, prescribed for control under the Industrial Pollution Control (Prescribed Processes and Substances) Regulations (N.I.) 1998 or the Pollution Prevention and Control Regulations (N.I.) 2003 commenced operation or changed operation significantly during the reporting period.

4.2 New Developments with an impact on air quality, especially those that will significantly change traffic flow, that have been granted planning permission.

None identified.

4.3 New landfill sites, quarries that have been granted planning permission and which have nearby relevant exposure.

None identified.

4.4 Planning Applications that have the potential to affect local air quality.

Three major developments for which planning permission decision notices have not, to date, been issued which may give rise to an increase in traffic on some roads in the Ballycastle and Bushmills area are shown in table 3 below.

Table 3

Location	Description	Relevant Pollutant	Planning Reference
Bushmills, Whitepark Road/causeway Road	18 hole golf course, 5 * hotel, and 75 guest cottages	NO_2 PM_{10}	E/2001/0388
Clare Road Ballycastle	Hotel, 23 Apartments and 24 Chalets	NO_2 PM_{10}	E/2004/0433
Land opposite Clare Park, clare Road Ballycastle	100 + housing development	NO_2 PM_{10}	E/2003/0 536

The Council is a statutory consultee with respect to planning applications submitted to Planning Service. The Environmental Health Department is

therefore afforded the opportunity to consider the possible air pollution impact from proposed developments. Where it is considered that a development may result in a reduction of air quality then an air quality impact assessment, which may also identify mitigation measures, can be required. In this way the Council can positively contribute to the development control process and air quality.

4.5 Transportation Measures Implemented or Proposed in Accordance with the Regional Transportation Strategy for Northern Ireland

No specific measures identified for the Council area.

5.0 Additional Information

It has not been necessary for Moyle District Council to declare any Air Quality Management Areas in the district and therefore we cannot report progress on implementation of action plans.

To make a positive contribution to improving air quality Moyle District Council intends to draw up a local air quality strategy in 2007.

Moyle District Council does not monitor ozone, polycyclic aromatic hydrocarbons (PAHs). These pollutants are not currently covered by the regulations.

No complaints regarding odour and dust emission from regulated industrial sources have been received in recent years.

6.0 Conclusions

The first round of review and assessment suggested that it is unlikely that any of the national air quality objectives will be breached within the Council area and this continues to be the case.

The Council monitored nitrogen dioxide during 2006 and the results suggest that the annual mean objective for this pollutant was not exceeded during the monitoring period. Consideration is being given to relocating the diffusion tubes, in view of recent traffic data, to ensure they are situated in the most relevant areas

No significant development has occurred in the Council area in the reporting period which is likely to have a significant affect on air quality.

The Council will review the need to carry further monitoring when it completes the update and screening assessment, due to be completed in April 2009.

Appendix 1

(National Air Quality Objectives)

Table 4 Objectives included in the Air Quality Regulations (NI) 2003 for the purpose of Local Air Quality Management.

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 μgm^{-3} 3.25 μgm^{-3}	Running annual mean Running annual mean	31.12.2003 31.12.2010
1,3 Butadiene	2.25 μgm^{-3}	Running annual mean	31.12.2003
Carbon Monoxide	10.0 mgm^{3}	Maximum daily running 8-hour mean	31.12.2003
Lead	0.5 μgm^{-3} 0.25 mgm3	Annual mean Annual mean	31.12.2003 31.12.2008
Nitrogen Dioxide[1]	200 μgm^{-3} no to be exceeded more than 18 times a year 40 μgm^{-3}	1 hour mean annual mean	31.12.2005 31.12.2005
Particles (PM_{10})[2] **Gravimetric**[3]	50 μgm^{-3} not to be exceeded more than 35 times a year 40 μgm^{-3}	24 hour mean annual mean	31.12.2004 31.12.2004
Sulphur Dioxide	350 μgm^{-3} not to be exceeded more than 24 times per year 125 μgm^{-3} not to be exceeded more than 3 times per year 266 μgm^{-3} not to be exceeded more than 35 times per year	1 hour mean 24 hour mean 15 minute mean	31.12.2004 31.12.2004 31.12.2005

Notes

There are likely to be new particles objectives for 2010, not in regulation at present, expected after the review of the EU's first Air Quality Daughter Directive (2004).

Measured using the European gravimetric transfer standard or equivalent.

Appendix 2

(Nitrogen Dioxide Diffusion Tubes)

NO_2 Diffusion Tube Monitoring Results 2006

Table 5

	Annual Average NO_2 Concentration ($\mu g/m^3$) 2006							
	Location							
Month	**Garron Road, Glenariffe**	**Mill Street Car Park**	**Middlepark Road, Cushendall**	**Mary Street, Ballycastle**	**Leyland Road, Bllycastle**	**Main Street, Bushmills**	**Dunluce Road, Bushmills**	**Lower Main Street, Bushmills**
January	7	11	8	7	15	15	14	16
February	10	9	8	8	8	9	11	12
March	7	15	11	7	12	15	15	12
April	15	14	14	14	14	-	17	14
May	-	-	-	-	-	-	-	-
June	-	5	3	3	2	-	7	5
July	-	13	-	-	5	-	12	-
August	-	7	4	14	7	-	7	3
September	-	12	9	7	8	11	12	16
October	-	-	-	-	-	-	-	-
November	-	-	-	-	-	-	-	-
December	-	-	-	-	-	-	-	-

Appendix 3

(Sulphur Dioxide Diffusion Tubes)

SO_2 Diffusion Tube Monitoring Results 2006

Table 6

	Annual Average SO_2 Concentration ($\mu g/m^3$) 2006							
	Location							
Month	**Garron Road, Glenariffe**	**Mill Street Car Park**	**Middlepark Road, Cushendall**	**Market Street, Ballycastle**	**Mary Street, Ballycastle**	**Leyland Road, Bllycastle**	**Main Street, Bushmills**	**Lower Main Street, Bushmills**
January/February	5	2	2	3	2	3	3	2
March	11	2	-	7	8	10	7	13
April	14	13	12	10	14	15	19	12
May	-	-	-	-	-	-	-	-
June	9	11	8	15	6	16	8	10
July	13	7	12	4	11	11	7	-
August	7	12	5	12	16	8	11	9
September	14	19	9	18	14	14	14	9
October	-	-	-	-	-	-	-	-
November	4	3	4	4	5	6	5	4
December	-	-	-	-	-	-	-	-