



2011 Air Quality Progress Report for *Magherafelt District Council*

In fulfillment of the Environment (Northern Ireland) Order
2002 - Local Air Quality Management

Date: 22 April 2011

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Executive Summary

Funding continues to be received from the Department of the Environment to carry out monitoring of nitrogen dioxide on an on-going basis in order to monitor trends over time and validate the conclusions drawn from previous reviews.

The overarching objective of the monitoring activity is to maintain or improve human health.

Monitoring results show that an area in the vicinity of the Church Street / King Street, Magherafelt, junction exhibits exceedences of the objective limit of $40\mu\text{g}/\text{m}^3$ for NO_2 . A Detailed Assessment has been submitted in March 2011, the conclusion of which was that an AQMA should be declared for that area. The DA has not been accepted as yet and the final outcome has not been decided.

There are no other issues of concern which need to be highlighted in this report.

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1 Introduction

1.1 Description of Local Authority Area

The district of Magherafelt is located in the centre of Northern Ireland, stretching from Lough Neagh and the river Bann in the east, into the Sperrin mountains in the west and is divided by the Moyola river.

Magherafelt is a strategically located district within Northern Ireland. It lies on the axis of the main A29 north-south route and the east-west M2/A6 Euro-route and is within 45 minutes drive of major airports and main harbours.

Historically, agriculture has been the cornerstone of the area's economy and agribusiness remains a vital contributor today with an increasing number of food processing and manufacturing facilities. Over the past few decades the economic base has expanded and the area now boasts strong construction and manufacturing industries encompassing domestic, agricultural and industrial sectors together with related businesses in engineering and timber. Mineral extraction significantly exploits the natural resources of the area. The largest number of employees in the area are involved in the service sector.

Magherafelt District Council area covers approximately 217 square miles and has a population of almost 40,000. The population is spread approximately 65%- 35% between the rural and urban areas respectively.

1.2 Purpose of Progress Report

Progress Reports are required in the intervening years between the three-yearly Updating and Screening Assessment reports. Their purpose is to maintain continuity in the Local Air Quality Management process.

They are not intended to be as detailed as Updating and Screening Assessment Reports, or to require as much effort. However, if the Progress Report identifies the risk of exceedence of an Air Quality Objective, the Local Authority (LA) should undertake a Detailed Assessment immediately, and not wait until the next round of Review and Assessment.

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 microgrammes per cubic metre $\mu\text{g}/\text{m}^3$ (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	Concentration	Measured as	Date to be achieved by
Benzene	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	3.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Maximum daily running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
Particles (PM₁₀) (gravimetric)	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

Magherafelt District Council in February 2001 submitted a “1st Stage Review and Assessment of Air Quality”. Using DETR guidance documents, the Review and Assessment considered pollutants of concern to determine whether or not a Second Stage Review and Assessment was required. The results of the 1st Stage Review and Assessment are summarised below.

POLLUTANT	2 ND STAGE REVIEW AND ASSESSMENT NEEDED
Carbon Dioxide	No
Benzene	No
1,3 Butadiene	No
Lead	No
Nitrogen Dioxide	Yes
Sulphur Dioxide	Yes
PM10	Yes

A “2nd Stage Review and Assessment of Air Quality” was submitted in April 2004. The pollutants highlighted above were subject to further scrutiny and the conclusion of the report in part prepared by NETCEN was that there was no need to proceed to a Stage 3 Review and Assessment for SO₂, NO₂ or PM₁₀.

A “Progress Report on Air Quality Management” was submitted in April 2005. A previous NETCEN report predicted exceedence of the air quality objective for nitrogen dioxide in 2005 at site 6, however it was stated that the proposed A6 Toome by-pass would ease the weight of traffic on that road significantly and that an exceedence would not be likely. The 2005 report confirmed that the by-pass takes the bulk of traffic away from it’s original route thus reducing the impact of traffic on receptors close to the monitoring location. Results for site 6 showed a significant lowering of the annual average concentration in 2004 as opposed to the previous results. The new route runs through an area of open land in which there are no nearby receptors at present. Air quality objectives for SO₂ and PM₁₀ continued to be met.

An ‘Air Quality Update and Screening Assessment’ report was submitted in April 2006. This report concluded that there was no necessity to carry out a Detailed Assessment in respect of NO₂, SO₂ or PM₁₀.

A “Progress Report on Air Quality Management” was submitted in April 2007. A review and assessment of pollutants showed the air quality objectives for NO₂, SO₂ and PM₁₀ continued to be met throughout the district of Magherafelt.

A “Local Air Quality Management Grant Evaluation Form” was submitted in April 2008. Results for site 1 showed a clear exceedence for NO₂ and therefore this department were advised to undertake a Detailed Assessment.

A “Progress Report on Air Quality Management” was submitted in August 2008. Due to the exceedence to the NO₂ standard set for site 1, it was the intention of this

department to provide an additional tube in the vicinity of the nearest residential property for comparison purposes.

A "Local Air Quality Management Grant Evaluation Form" was submitted in April 2009. Results for previous years showed a clear exceedence at site 1 for NO₂ and so an additional tube (site 8) was provided in the vicinity of the nearest residential property for comparison purposes (from 4th September 2008). Results to date show that levels of this pollutant meet with standards set. Monitoring will therefore cease at site 1 as properties in the vicinity of this tube are now commercial or available for commercial use.

An "Updating and Screening Assessment" was submitted in May 2009 which showed exceedences at sites 1 and 2 for the year 2008. Additional sites were selected prior to the completion of a Detailed Assessment.

A "Progress Report on Air Quality Management" was submitted in July 2010. Site1 was de-commissioned as there was found to be no residential property at or near that location. Areas of concern were confirmed as sites 2, 9 and 10 which are in Church Street which is a main route into town and on which two roundabouts regulate the flow of traffic. Residential property is situated along that street directly of the pavement. The need for a Detailed Assessment was again highlighted.

A 'Detailed Assessment for NO₂ Levels on Church Street and King Street, Magherafelt' was submitted in March 2011. The conclusions of this report have not as yet been accepted.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

There are no automatic monitoring sites in the district.

2.1.2 Table 2 Non-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 ?
Site 1	Main route through town	X 8958 Y 9048	NO2	No	No	1m	No
Site 2	Main route through town	X 8977 Y 9073	NO2	No	Yes (1m)	1m	Yes
Site 3	Adjacent traffic lights at junction	X 8531 Y 0043	NO2	No	Yes (1m)	1m	Yes
Site 4	Off main road leading to cul-de-sac	X 8989 Y 9078	NO2	No	Yes (10m)	20m	No
Site 5	Roadside location in village	X 9251 Y 9318	NO2	No	Yes (0m)	1m	Yes
Site 6	Area formerly adjacent to main arterial route	X 9887 Y 9085	NO2	No	Yes (25m)	1m	Yes
Site 7	Moderately used route into town centre	X 8982 Y 9069	NO2	No	Yes (15m)	1.5m	Yes
Site 8	Nearest residential property to site 1	X 8960 Y 9046	NO2	No	Yes (0m)	10m	Yes
Site 9	Adjacent roundabout in town centre	X 8974 Y 9073	NO2	No	Yes (10m)	1.5m	No
Site 10	Adjacent mini-roundabout off town centre	X 8979 Y 9074	NO2	No	Yes (0m)	1.5m	Yes
Site 11	Moderately used route into town centre	X 8979 Y 9071	NO2	No	Yes(15m)	1.5m	No
Site 12	Main route through town	X 8989 Y 9075	NO2	No	Yes(15m)	1.5m	No

2.1.3 QA/QC

As set out in Technical Guidance LAQM.TG(09), it is important that data obtained be accurate, precise, consistent and comply with national and international standards. In order to ensure that the above criteria are maintained, the following matters are adopted by the laboratory carrying out work on behalf of Magherafelt District council.

The laboratory chosen was Gradko International which operates within the Workplace Analysis Scheme for Proficiency (WASP) which is an independent analytical performance testing scheme run by the Health and Safety Laboratory (HSL). A number of 'spiked' tubes are analysed and the results are reported to the HSL. A performance score is assigned to each laboratory's results based on any deviation from the known mass of nitrite in the material analysed.

The preparation method used is 20% TEA/Water. The results were obtained without the benefit of a co-location study. Bias adjustment factors are extracted on an annual basis from National Diffusion Tube Bias Adjustment Factor Spreadsheets.

The performance criteria are now based on the Rolling Performance Index (RPI) with laboratories awarded a performance designation of 'good', 'acceptable' or 'unacceptable'. The Gradko laboratory precision and WASP scheme performance assessed in accordance with 3.23 of LAQM TG(09) has been assessed as 'good' and therefore confidence can be placed on the reported results.

2.1.4

Figure 2.2 Map of Non-Automatic Monitoring Sites in Potential AQMA



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2.2 Comparison of Monitoring Results with Air Quality Objectives

Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Relevant public exposure? Y/N	Data Capture for monitoring period ^a %	Data Capture for full calendar year 2010 ^b %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
						2008 ^{c, d}	2009 ^{c, d}	2010 ^c
1	Adj 36 Queen St Magherafelt	N	N	0	0	43	46	-
2	Adj 22 Church St Magherafelt	N	Y	100	100	54	48	37
3	Adj 50 Main St Maghera	N	Y	100	100	33	35	38
4	Wesleyan Mew Magherafelt	N	Y	100	100	20	21	18
5	Adj 15 Boyne Row C'dawson	N	Y	100	100	24	24	20
6	Adj 2 Bannside Toomebridge	N	Y	100	100	21	21	20
7	Adj 27 King St Magherafelt	N	Y	100	100	25	24	22
8	Adj 42 Queen St Magherafelt	N	Y	100	100	21	24	34
9	Adj 12 Church St Magherafelt	N	Y	100	100	-	46	54
10	Adj 30 Church St Magherafelt	N	Y	100	100	-	55	59
11	Adj 11 King St Magherafelt	N	Y	100	100	-	39	40
12	Opp Wesleyan Mews	N	Y	100	100	-	35	39

Bias adjustment factors of 0.91, 0.9 and 0.9 were applied in years 2008, 2009 and 2010 respectively.

All results are obtained using single tube exposure.

All monitoring sites currently in use are representative of public exposure as set out in Table ?

Exceedences of the 40 $\mu\text{g}/\text{m}^3$ annual mean NO₂ objective are highlighted in bold in the table above.

An AQMA has not as yet been declared in the Magherafelt DC area (Detailed Assessment conclusion pending).

2.2.1 Other pollutants monitored

No other pollutants were monitored.

2.2.2 Summary of Compliance with AQS Objectives

Magherafelt District Council has measured concentrations of NO₂ above the annual mean objective at relevant locations outside of an AQMA, and **has proceeded to a Detailed Assessment** for the area at the Church Street and King Street junction in Magherafelt. Further information has been requested prior to the conclusions reached in the Detailed Assessment being accepted.

3 New Local Developments

Magherafelt District Council confirms that there are no new or newly identified local developments which may have an impact on air quality within the Local Authority area.

Magherafelt District Council confirms that all the following have been considered –

- **Road traffic sources**
- **Other transport sources**
- **Industrial sources**
- **Commercial and domestic sources**
- **New developments with fugitive or uncontrolled sources.**

4 Local / Regional Air Quality Strategy

Magherafelt District Council would expect to declare an AQMA in the near future for the area taking in part of Church Street and King Street assuming that the issues which are currently causing concern to the assessors of the Detailed Assessment can be satisfactorily resolved.

An AQMA would then dovetail with other strategies to improve air quality in so far as is possible throughout the district.

5 Planning Applications

There are no planning applications currently under consideration which are envisaged to adversely affect local air quality.

6 Air Quality Planning Policies

Planning Service in Northern Ireland does not operate to a standard laid down in a Planning Policy Statement as with a range of other subject matter. The approach of Magherafelt District Council would be to alert Planning Service to exceedences or near exceedences of objective limits in the event of a development proposal being made in a relevant area, and to object to development taking place, or recommend amendments to the proposal in order that development can satisfactorily take place, as appropriate.

The maintenance and if possible the improvement of air quality is a factor looked at in each planning application.

7 Local Transport Plans and Strategies

It is planned in the foreseeable future (timescale dependent on finance) to construct the A31 Magherafelt by-pass scheme which is expected to have a dramatic effect on reducing the amount of traffic entering the town centre. Magherafelt District Council has issued a draft document entitled 'Magherafelt Town Centre Masterplan', which covers such topics as 'Traffic and Transport Assessment of Long Term Measures', 'Safe Routes to School', 'Cycle Provision Programme' and 'Public Transport Measures'.

Figures produced by the Department for Regional Development Roads Service illustrate projected two way traffic flows along Church Street and King Street for 2012. These figures and the differences expected after the by-pass is in operation are given below.

Church Street	King Street	
24893	5860	Do minimum
18784	3736	By-pass
-6110	-2124	Difference
-24.5%	-36.2%	% Difference

Along with the predicted reductions in traffic flows through the town centre, vehicle exhaust emissions are confidently expected to decline in future years, both factors which should lead to a significant reduction in measured pollutant levels.

8 Implementation of Action Plans

Implementation of an action plan will be considered upon the acceptance of the conclusions of the Detailed Assessment and the declaration of the AQMA should that be the outcome of the assessment.

9 Conclusions and Proposed Actions

9.1 Conclusions from New Monitoring Data

The results in Table 2.4 shows that there is a breach of the objective limit of 40ug/m³ at sites 2, 9 and 10 which are in Church Street, Magherafelt. Other locations (sites 11 and 12) in this vicinity are close to the objective limit; these levels would be expected to fall further as a result of the actions following the declaration of an AQMA.

As stated before, the conclusions of the Detailed Assessment may be that an AQMA be declared.

9.2 Proposed Actions

A Detailed Assessment for NO₂ has been submitted but issues remain to be finalised. The final accepted conclusion of the DA may be to declare an AQMA on the strength of the data collected, or alternatively to embark on an additional extended round of monitoring to build upon the evidence gained to date.

The next course of action is to submit the Progress Report for 2011, and to implement the findings of the Detailed Assessment when conclusions are finally Reached.

10 References

- i. The Environment (Northern Ireland) Order 2002
- ii. Air Quality Regulations (Northern Ireland) 2003
- iii. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2000
- iv. DEFRA Local Air Quality Management Technical Guidance LAQM.TG(09)
- v. Magherafelt District Council 1st Stage Review and Assessment of Air Quality 2001
- vi. Magherafelt District Council 2nd Stage Review and Assessment of Air Quality 2002
- vii. Magherafelt District Council Progress Report on Air Quality Management 2005
- viii. Magherafelt District Council Air Quality Update and Screening Assessment 2006
- ix. Magherafelt District Council Progress Report on Air Quality Management 2007
- x. Magherafelt District Council Local Air Quality Management Grant Evaluation Form 2008
- xi. Magherafelt District Council Progress Report on Air Quality Management 2008
- xii. Magherafelt District Council Local Air Quality Management Grant Evaluation Form 2009
- xiii. Magherafelt District Council Progress Report on Air Quality Management 2010
- xiv. Magherafelt Town Centre Masterplan (Draft) 2011
- xv. Magherafelt District Council Detailed Assessment 2011