

Combined 2009 Air Quality Updating and Screening Assessment and 2010 Progress Report for Moyle District Council

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

2010

Moyle District Council – Northern Ireland

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Executive Summary

Local Air Quality Management was formalised as a statutory duty of district councils by the Environment (Northern Ireland) Order 2002. Air quality objectives were subsequently prescribed in the Air Quality Regulations (Northern Ireland) 2003. District Councils are therefore required to periodically review and assess air quality in their area.

The review and assessment process consists of Updating and Screening Assessments and Detailed Assessments. Updating and Screening Assessments identify those matters that have changed since earlier review and assessment work was completed and which may now require further assessment. Where an Updating and Screening Assessment identifies a risk that an air quality objective is likely to be exceeded a detailed assessment is undertaken to determine with reasonable certainty whether or not this will occur. Should a detailed assessment conclude that a relevant air quality objective will be exceeded then an Air Quality Management Area must be declared.

Progress Reports are intended to maintain continuity between the three-year cycle of Review and Assessment.

Since the last round of review and assessment Moyle District Council has identified two locations not previously assessed, where diesel or steam trains may regularly be stationary with potential for relevant exposure. It is therefore necessary to proceed to a detailed assessment for sulphur dioxide at these locations.

For the remaining six pollutants, no significant changes have since occurred that would prompt the need to proceed to a detailed assessment. Assessment of the available monitoring data for nitrogen dioxide indicated that air quality in Moyle District met the relevant air quality objectives.

The next round of air quality reviews and assessments will take the form of a Progress Report in April 2011.

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1 Introduction

1.1 Description of Local Authority Area

Moyle District is situated on the north east corner of Northern Ireland, the area incorporates 42 miles of the beautiful North Antrim Coastline. The area includes three of the best known features of Northern Ireland: the Giants Causeway, the Glens of Antrim and Rathlin Island. Rathlin Island is Northern Ireland's only inhabited island and lies 7 miles off the coast from Ballycastle, it has a population of 110 who are mostly employed in fishing, farming and tourism. Several parts of the Moyle area have been designated 'Areas of Outstanding Natural Beauty'.

Moyle District Council is the smallest local authority in Northern Ireland, with a low population density of 3.34 hectares per head of population compared to a Northern Ireland average of 0.9 hectares.

Moyle has a population of approximately 16,000 and covers almost 49,500 hectares. The district consists of three main settlements, Ballycastle, Bushmills, and Cushendall with approximately 46 percent of the district population living in these areas. Ballycastle is the largest settlement in the District, with 26% of the districts population living in it.

The main sources of income in the district are farming, tourism, and a small amount of light industry.

Traffic volumes in the area are low with the main route being the A2 Coast Road which runs the full length of the District following the coastline. Other A Class roads include the A43 leading from Glenariffe to Ballymena and the A44 which runs from Ballycastle to the A26 near Cloughmills.

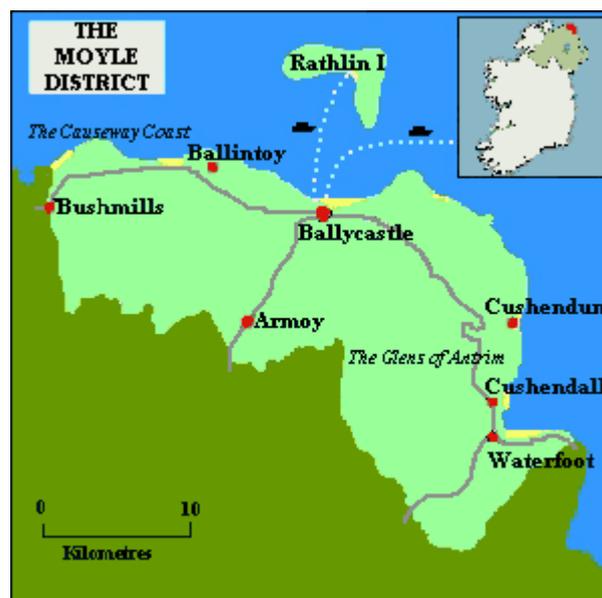


Figure 1: Map of Moyle District.

1.2 Purpose of Report

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

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.

Updating and Screening Assessment Reports are more detailed than Progress Reports. 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.

This report combines the Moyle District Council's 2009 Updating and Screening Assessment Report and 2010 Progress Report.

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	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
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	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

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 PM₁₀ (particulate matter) emissions from road traffic and for SO₂ (sulphur dioxide) from emissions from one industrial combustion system.

Consultants were employed to investigate this matter further. The consultants also considered NO₂ (nitrogen dioxide) emissions from traffic. The consultants concluded that the air quality objectives for NO₂, PM₁₀ and SO₂ 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 SO₂ and PM₁₀ emissions from two areas of domestic coal burning.

The Council commissioned consultants to model PM₁₀ and SO₂ 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 SO₂ and PM₁₀ 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 NO₂ and SO₂.

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 effect 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 NO₂ and SO₂.

A Progress report was completed in 2007. 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 effect on air quality. In view of technical guidance monitoring of SO₂ using diffusion tubes which were located at eight sites throughout Moyle District was discontinued at the end of 2006.

A further Progress Report was completed in 2008. The NO₂ diffusion tube monitoring sites were relocated during 2007 hence there were incomplete data sets for all the sites during this period. Assessment of the available data showed levels measured at Ann Street, Ballycastle over a four month period suggested the annual mean objective of 40µg/m³ had been reached. Due to the short monitoring period these results were treated with caution and no conclusion was to be drawn until further monitoring data was available. No significant development had occurred in the council area which was likely to have a significant effect on air quality and no further action was necessary.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Moyle District Council does not have any automatic monitoring sites

2.1.2 Non-Automatic Monitoring

Nitrogen oxide (NO) and Nitrogen dioxide (NO₂) are both oxides of nitrogen collectively referred to as NO_x. NO is oxidised to form NO₂. Combustion processes, including those in vehicle engines, give rise to this mixture of NO_x gases. High concentrations of NO₂ can irritate the respiratory system and affect human health.

Moyle District Council is currently monitoring nitrogen dioxide at 10 sites throughout the district using passive diffusion tubes. Diffusion tubes provide a low cost means of indicatively monitoring the level of NO₂ 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 NO₂ against the annual mean objective for NO₂.

The location of the monitoring sites was reviewed in 2007 in view of more recent traffic data, to ensure they were situated in the most relevant areas. Monitoring sites are chosen to provide data on locations that appear to be representative of likely residential exposure and where possible are closest to the nearest receptor to the busy road. As a result all monitoring sites were relocated in August 2007.

Council also reviewed the performance of the laboratory contracted for the supply and analysis of the diffusion tubes. As a result the supplier was changed from Lambeth Scientific Services to Gradko Environmental Ltd in December 2007.

Details of non-automatic monitoring sites are shown over page in table 2.2

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Table 2.2 Details of 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?
Quay Road, Ballycastle	Roadside	E311978 N441022	NO ₂	No	12	1.60	Y
Ann Street, Ballycastle	Roadside	E311505 N440828	NO ₂	No	10	5.25	Y
Castle Street, Ballycastle	Roadside	E311290 N440659	NO ₂	No	10	1.60	Y
Market Street/Leyland Road junction, Ballycastle	Roadside	E310912 N440761	NO ₂	No	1	2.50	Y
Mill Street, Cushendall	Roadside	E323685 N427677	NO ₂	No	15	1.40	Y
Coast Road, Cushendall	Roadside	E324177 N427237	NO ₂	No	12	4.10	Y
The Diamond, Bushmills	Roadside	E294076 N440884	NO ₂	No	20	1.30	Y
Main Street, Bushmills	Roadside	E294103 N440626	NO ₂	No	8	1.20	Y
Priestland Road, Bushmills	Roadside	E293777 N440755	NO ₂	No	14	2.80	Y
Main Street, Armoy	Roadside	E306815 N432830	NO ₂	No	30	2.00	Y

QA/QC data is included in Appendix 1

Maps of Non-Automatic Monitoring Sites are shown in Appendix 3.

2.2 Comparison of Monitoring Results with AQ Objectives

Moyle District Council has not declared any air quality management areas to date and currently monitors nitrogen dioxide only. NO₂ monitoring results are detailed below.

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

Moyle District Council does not operate automatic monitoring equipment.

Diffusion Tube Monitoring Data

Annual mean concentrations for 2008 and 2009 are shown in tables 2.4a and 2.4b. The annual mean air quality objective of 40 µg/m³ was not exceeded at any of the monitoring sites.

Table 2.4a Results of Nitrogen Dioxide Diffusion Tubes 2008

Site ID	Location	Within AQMA?	Data Capture 2008 %	Annual mean concentrations
				2008 (µg/m ³) Adjusted for bias
BC1	Quay Road, Ballycastle	No	100	18.00
BC2	Ann Street, Ballycastle	No	100	33.83
BC3	Castle Street, Ballycastle	No	92	27.75
BC4	Market Street/Leyland Road junction, Ballycastle	No	100	17.65
CD1	Mill Street, Cushendall	No	100	18.75
CD2	Coast Road, Cushendall	No	100	10.06
BM1	The Diamond, Bushmills	No	100	16.39
BM2	Main Street, Bushmills	No	100	26.41
BM3	Priestland Road, Bushmills	No	75	11.82
BM4	Main Street, Armoy	No	83	13.67

Table 2.4b Results of Nitrogen Dioxide Diffusion Tubes 2009

Site ID	Location	Within AQMA?	Data Capture 2009 %	Annual mean concentrations
				2009 (µg/m ³) Adjusted for bias
BC1	Quay Road, Ballycastle	No	100	15.89
BC2	Ann Street, Ballycastle	No	92	28.03
BC3	Castle Street, Ballycastle	No	100	31.25
BC4	Market Street/Leyland Road junction, Ballycastle	No	92	16.80
CD1	Mill Street, Cushendall	No	83	15.02
CD2	Coast Road, Cushendall	No	100	9.17
BM1	The Diamond, Bushmills	No	100	15.67
BM2	Main Street, Bushmills	No	92	23.37
BM3	Priestland Road, Bushmills	No	100	11.45
BM4	Main Street, Armoy	No	75	11.99

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Annual mean concentrations for the original monitoring sites for 2003 through to 2007 are shown in table 2.4c below. The annual mean air quality objective of 40 $\mu\text{g}/\text{m}^3$ was not exceeded at any of the monitoring sites.

Table 2.4c Results of Nitrogen Dioxide Diffusion Tubes 2003 – 2007 (Original monitoring sites)

Site ID	Location	Within AQMA?	Annual mean concentrations ($\mu\text{g}/\text{m}^3$) Adjusted for bias				
			2003	2004	2005	2006	2007*
1	Middle Park Road, Cushendall	No	10.5	14.8	13.2	10.91	11.10
2	Dunluce Road, Bushmills	No	10.5	23.3	17.6	15.92	12.16
3	Lower Main Street	No	9.5	22.9	19.2	14.93	12.38
4	Main Street, Bushmills	No	8.4	16.4	19.8	16.75	3.84
5	Mary Street, Ballycastle	No	7.6	14.0	12.5	11.48	9.60
6	Mill Street Car Park	No	11.6	20.9	16.8	14.41	16.64
7	Leyland Road, Ballycastle	No	10.5	13.8	14.5	11.89	9.51
8	Garron Road, Glebariffe	No	10.5	12.8	13.8	13.07	8.78

*Mean based on 7 months data

In August 2007 the NO_2 diffusion tube monitoring sites were relocated hence there are incomplete data sets for all the sites during this 2007.

Annual mean concentrations for the current monitoring sites for 2007 through to 2009 are shown in table 2.4d below.

Table 2.4d Results of Nitrogen Dioxide Diffusion Tubes 2007 – 2009 (Current monitoring sites)

Site ID	Location	Within AQMA?	Mean concentrations ($\mu\text{g}/\text{m}^3$) Adjusted for bias	Annual mean concentrations ($\mu\text{g}/\text{m}^3$) Adjusted for bias	Annual mean concentrations ($\mu\text{g}/\text{m}^3$) Adjusted for bias
			2007* (Lambeth SS)	2008 (Gradko)	2009 (Gradko)
BC1	Quay Road, Ballycastle	No	22.18	18.00	15.89
BC2	Ann Street, Ballycastle	No	40.32**	33.83	28.03
BC3	Castle Street, Ballycastle	No	26.56	27.75	31.25
BC4	Market Street/Leyland Road junction, Ballycastle	No	23.36	17.65	16.80
CD1	Mill Street, Cushendall	No	19.20	18.75	15.02
CD2	Coast Road, Cushendall	No	21.33	10.06	9.17
BM1	The Diamond, Bushmills	No	21.76	16.39	15.67
BM2	Main Street, Bushmills	No	29.44	26.41	23.37
BM3	Priestland Road, Bushmills	No	12.48	11.82	11.45
BM4	Main Street, Armoy	No	18.88	13.67	11.99

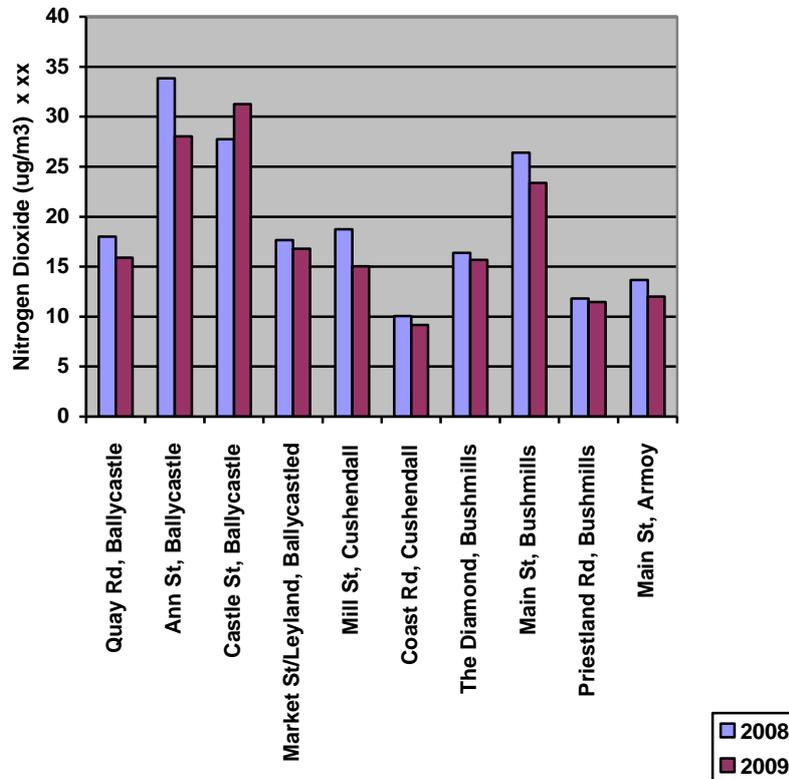
*Mean based on 4 months data

** Indicates exceedence identified

In August 2007 the NO₂ diffusion tube monitoring sites were relocated hence there are incomplete data sets for all the sites during this 2007. As a result the levels measured at Ann Street, Ballycastle which suggested that the annual mean objective of 40 $\mu\text{g}/\text{m}^3$ had been reached were treated with caution. No conclusion was to be drawn until further monitoring data was available. Subsequent monitoring data for 2008 and 2009 showed no exceedences of the air quality objective.

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Figure 1 Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites 2008 – 2009



Caution should be exercised in drawing any conclusions regarding trends in the level of NO₂ 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.

2.2.2 PM₁₀

Moyle District Council does not undertake PM₁₀ monitoring.

2.2.3 Sulphur Dioxide

Moyle District Council does not undertake sulphur dioxide monitoring.

2.2.4 Benzene

Moyle District Council does not undertake benzene monitoring.

2.2.5 Other pollutants monitored

Moyle District Council does not undertake monitoring of any other pollutants.

2.2.6 Summary of Compliance with AQS Objectives

Moyle District Council has examined the results from monitoring in the district. Concentrations are all below the objectives, therefore there is no need to proceed to a Detailed Assessment.

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

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

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

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

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

Moyle District Council confirms that there are no new/newly identified roads with high flows of buses/HGVs.

3.4 Junctions

Moyle District Council confirms that there are no new/newly identified busy junctions/busy roads.

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

Moyle District Council confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

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

3.7 Bus and Coach Stations

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

3.8 Summary

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

4 Other Transport Sources

4.1 Airports

Moyle District Council confirms that there are no airports in the District.

4.2 Railways (Diesel and Steam Trains)

A coal steam train operates in the Moyle area daily during July and August and at weekends from Easter to June and during September and October, making 7 round trips daily (14 journeys in total). The stations (2) in the Moyle Council area are located near the Giants Causeway and in Bushmills. On occasions the trains can idle for 15 minutes at the stations. There is potential for regular outdoor exposure of members of the public within 15 metres whilst it idles at either station.

4.2.1 Stationary Trains

Moyle District Council has identified locations not previously assessed where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m, and **will need to proceed to a detailed assessment for sulphur dioxide.**

The first stage of this detailed assessment will consist of a screening exercise to gather further information on the actual length of time and frequency that the train is stationary with its engine running at both stations. Due to the seasonal nature of the railway's timetable this could not be achieved before submission of this report. Once further information has been gathered the findings will be discussed with the Review & Assessment helpdesk to determine the most appropriate course of action to progress the detailed assessment.

4.2.2 Moving Trains

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

4.3 Ports (Shipping)

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

4.4 Summary

Moyle District Council has identified the following previously unidentified local development which may impact on air quality in the Local Authority area and will need to proceed to a detailed assessment.

- Bushmills and Giant's Causeway Railway Stations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

Moyle District Council confirms that there are no other new or newly identified transport sources which may have an impact on air quality within the Local Authority area.

5 Industrial Sources

5.1 Industrial Installations

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

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

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

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

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

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

5.2 Major Fuel (Petrol) Storage Depots

There are no major fuel (petrol) storage depots within Moyle District.

5.3 Petrol Stations

Moyle District Council confirms that there are no petrol stations meeting the specified criteria.

5.4 Poultry Farms

Moyle District Council confirms that there are no poultry farms meeting the specified criteria.

5.5 Summary

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

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

Moyle District Council confirms that there are no biomass combustion plant in the District.

6.2 Biomass Combustion – Combined Impacts

Moyle District Council confirms that there are no biomass combustion plant in the District.

6.3 Domestic Solid-Fuel Burning

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

6.4 Summary

Moyle District Council confirms that there are no new or newly identified commercial and domestic sources which may have an impact on air quality within the Local Authority area.

7 Fugitive or Uncontrolled Sources

Moyle District Council confirms that there are no new or newly identified potential sources of fugitive particulate matter emissions in the District which may have an impact on air quality within the Local Authority area. .

8 Local Air Quality Strategy

Moyle District Council has not had to designate any air quality management areas, does not expect to designate one in future and do not have areas close to exceedence levels. Moyle District Council therefore does not intend to draw up a local air quality strategy in 2010.

9 Conclusions and Proposed Actions

9.1 Conclusions from New Monitoring Data

To date no Air Quality Management Areas have been declared in Moyle District.

Monitoring sites for the nitrogen dioxide diffusion tubes were relocated during 2007 to ensure they were situated in the most relevant areas. Assessment of monitoring data at the new sites has in general measured higher levels of pollutants. The first full year of data has shown that the annual mean air quality objective of $40 \mu\text{g}/\text{m}^3$ was not exceeded at any of the monitoring sites.

9.2 Conclusions from Assessment of Sources

To date no Air Quality Management Areas have been declared in Moyle District.

Moyle District Council has identified locations not previously assessed where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m, and will need to proceed to a detailed assessment for sulphur dioxide.

Moyle District Council has not identified any other new road transport, other transport, industrial installations, commercial/domestic sources, fugitive emissions, residential or commercial developments not previously assessed.

9.3 Proposed Actions

The combined Updating and Screening Assessment/Progress Report has not identified the need for any additional monitoring and has confirmed NO₂ diffusion tube monitoring sites have been relocated to more relevant areas.

The Updating and Screening Assessment has identified a need to progress to a Detailed Assessment for sulphur dioxide in respect of diesel or steam trains at two locations, namely Bushmills and Giant's Causeway Railway Stations.

Moyle District Council will submit a further Progress Report in 2011.

10 References

Part IV of the Environment Act 1995

Environment (Northern Ireland) Order 2002 Part III

Local Air Quality Management Guidance Technical Guidance, (LAQM.TG(09)) defra 2009.

Air Quality Review and Assessment website – Spreadsheet of Bias Adjustment Factors
<http://www.uwe.ac.uk/aqm/review>

Local Authority Air Quality Support website <http://www.laqmsupport.org.uk/index.php>

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (2000)

Air Quality Regulations (Northern Ireland) 2003

Moyle District Council Review and Assessment of Air Quality Stage 1 Report 2001

Moyle District Council Review and Assessment of Air Quality Stage 2 & 3 Report 2004

Moyle District Council Progress Report 2005

Moyle District Council Update and Screening Report 2006

Moyle District Council Progress Report 2007

Moyle District Council Progress Report 2008

Appendices

Appendix 1 QA/QC Data

Diffusion Tube Bias Adjustment Factors

Nitrogen dioxide diffusion tubes are supplied and analysed by Gradko Environmental Ltd., St. Martins House, 77 Wales Street, Winchester, Hampshire, SO23 0RH during 2008. The preparation method is 20% TEA in water. Gradko Environmental Ltd is a UKAS accredited laboratory and follows Laboratory Quality Procedures. Analysis is carried out in accordance with documented in-house laboratory method GLM7.

Gradko Environmental Ltd has a bias adjustment factor of 0.91 for 2008. The corrected NO₂ concentration is obtained by multiplying the measured annual mean NO₂ concentration by the correction factor.

Factor from Local Co-location Studies (if available)

Not applicable for Moyle District Council.

Discussion of Choice of Factor to Use

The Council does not operate a continuous analyser and therefore a co-location study has not been undertaken to determine a specific local bias adjustment factor. The national bias adjustment factor was therefore used. This is available on the review and assessment website (spreadsheet version 09/09) and based on 19 studies during 2008 the overall correction factor was determined to be 0.91. During 2009, based on 15 studies, the overall correction factor was determined to be 0.86.

PM Monitoring Adjustment

Not applicable to Moyle District Council.

Short-term to Long-term Data adjustment

No short-term to long term data adjustments are required.

QA/QC of automatic monitoring

No automatic monitoring is carried out by Moyle District Council.

QA/QC of diffusion tube monitoring

Gradko Environmental analytical laboratory is assessed annually by UKAS to establish conformance of the Laboratory Quality Procedures to the requirements of ISO/IEC 17025 Standard and have demonstrated a good performance in the WASP scheme for analysis of NO₂ diffusion tubes, operated by the Health and Safety Laboratory, for January 2008 - January 2009 and October 2008 – October 2009. A summary of precision results for nitrogen dioxide for 2008/2009 by laboratory is shown in appendix 2.

Moyle District Council's QA/QC procedure is to ensure that diffusion tubes are handled and stored in accordance with Gradko's Diffusion Tube Instruction Manual for Exposure and location and LAQM Technical Guidance LAQM.TG (09).

Appendix 3

Maps of Non – Automatic (Diffusion Tube) Sites

Diffusion Tube Monitoring Sites - Ballycastle



Moyle District Council - Northern Ireland

Diffusion Tube Monitoring Site - Bushmills



Moyle District Council - Northern Ireland

Diffusion Tube Monitoring Sites - Cushendall



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Moyle District Council - Northern Ireland

Diffusion Tube Monitoring Site - Armoyle



Appendix 4

NO₂ diffusion tube monthly data for 2008

Table 3

Month	Average NO ₂ Concentration (µg/m ³)									
	Location									
	Quay Road Ballycastle	Ann Street Ballycastle	Castle Street Ballycastle	Market Street/Leyland Road junction Ballycastle	Mill Street Cushendall	Coast Road Cushendall	The Diamond Bushmills	Main Street Bushmills	Priestland Road Bushmills	Main Street, Armoyle
January	17.50	36.50	25.22	22.42	20.34	11.03	21.31	29.49	-	17.81
February	24.37	43.71	31.01	26.98	26.80	19.37	24.64	35.19	15.18	24.83
March	19.35	41.34	29.43	17.71	19.03	10.22	20.25	27.69	-	15.90
April	22.51	36.69	37.87	16.36	20.40	9.38	16.25	28.65	-	15.65
May	26.40	27.46	38.13	19.32	24.29	11.29	16.64	31.80	16.94	11.53
June	18.92	41.69	29.88	12.59	15.62	7.83	15.46	26.88	8.82	11.83
July	19.89	37.74	29.50	15.84	18.91	8.36	16.24	28.37	9.32	11.21
August	18.64	36.38	30.37	25.44	22.03	10.88	21.33	30.97	13.16	13.58
September	17.18	34.28	-	19.92	17.31	10.98	14.08	27.98	12.96	13.61
October	13.19	33.18	23.73	15.43	15.85	8.17	14.68	24.61	10.14	-
November	17.28	36.78	30.30	16.39	21.36	10.90	16.37	25.67	13.04	-
December	22.19	40.31	29.96	24.29	25.23	14.15	18.87	30.88	17.31	14.20
Annual Mean	19.79	37.17	30.49	19.39	20.60	11.05	18.01	29.02	12.99	15.02
% data capture	100%	100%	92%	100%	100%	100%	100%	100%	75%	83%

Appendix 5

Moyle District Council - Northern Ireland NO₂ diffusion tube monthly data for 2009

Table 4

Month	Average NO ₂ Concentration (µg/m ³)									
	Location									
	Quay Road Ballycastle	Ann Street Ballycastle	Castle Street Ballycastle	Market Street/Leyland Road junction Ballycastle	Mill Street Cushendall	Coast Road Cushendall	The Diamond Bushmills	Main Street Bushmills	Priestland Road Bushmills	Main Street, Armoy
January	18.50	34.83	22.17	24.70	24.94	17.21	22.50	34.80	20.51	18.40
February	17.81	25.63	16.86	15.86	-	9.41	21.83	21.10	16.25	12.83
March	17.48	38.39	26.52	-	-	12.54	19.91	-	11.21	15.70
April	23.79	34.50	30.75	23.78	22.89	10.49	17.86	30.70	12.70	12.69
May	17.85	30.66	26.07	18.48	17.17	9.02	19.40	27.68	10.28	12.75
June	20.26	43.48	35.60	17.73	18.67	7.90	14.50	28.63	12.74	11.15
July	17.39	-	27.36	15.70	6.41	9.78	14.88	17.56	11.43	11.24
August	15.31	24.32	17.02	16.37	18.79	8.45	14.94	25.11	10.64	-
September	18.02	35.52	23.00	15.78	3.18	9.04	17.24	28.90	10.79	-
October	13.45	20.95	22.01	17.59	14.38	10.15	14.81	25.51	11.45	-
November	18.47	31.85	23.58	21.76	20.09	10.15	19.27	27.45	14.09	12.36
December	23.46	38.31	27.06	27.10	28.12	13.78	21.54	31.57	17.60	18.30
Annual Mean	18.48	32.59	24.83	19.53	17.46	10.66	18.22	27.18	13.31	13.94
% data capture	100	92	100	92	83	100	100	92	100	75