2009 Air Quality Updating and Screening Assessment for *North Down Borough Council*

In fulfillment of Part IV of the
Environment Act 1995 and
Environment (Northern Ireland)
Order 2002 Part III:
Local Air Quality Management
Date 30/04/2009

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Glossary

QA/QC	**Quality Assessment Quality Control.**
AQMA	**Air Quality Management Area**
UWE	**University of the West of England**
WASP	**Workplace Analysis Scheme for Proficiency**

Executive Summary

The Environment (Northern Ireland) Order 2002, requires North Down Borough Council to undertake Air Quality Reviews and Assessments in their local areas and to meet the local air quality targets and objectives set out in the UK National Air Quality Strategy (2000). The production of an annual air quality report is now a statutory duty for all local authorities. The process is set out in the Department of Environment's Local Air Quality Management Policy Guidance LAQM PGNI (03).

This report is prepared by the North Down Borough Council to meet its statutory obligations under the above regime and has been prepared using the recommended template. The report has been prepared in accordance with the policy guidance mentioned above and with the relevant technical guidance Local Air Quality Management (LAQM.TG(09)

The Borough of North Down is geographically one of the smallest Council areas in Northern Ireland, but is regarded as economically one of the wealthiest. Population has increased steadily over recent years and is now in the region of 78,000. Air Quality in North Down is generally good as there is good ventilation from sea breezes. There are few industrial processes in the area that are significantly detrimental to air quality and heavy fuel oil is not widely used for heat generation.

However, there are a number of very busy trunk roads in the area the busiest being the A2 commuter route from Bangor to Belfast with average daily traffic flows of 44,000 vehicle movements per day at Holywood. Much of the monitoring work in the area is in relation to NO_2 and PM_{10} at relevant locations particularly in relation to the A2 Belfast Bangor road between Ballyrobert and Holywood where a number of properties are located very close to the roadside.

This monitoring indicates that the objectives in the air quality strategy are not currently being exceeded in the area and that detailed assessments or the declaration of Air Quality Management Areas are not required.

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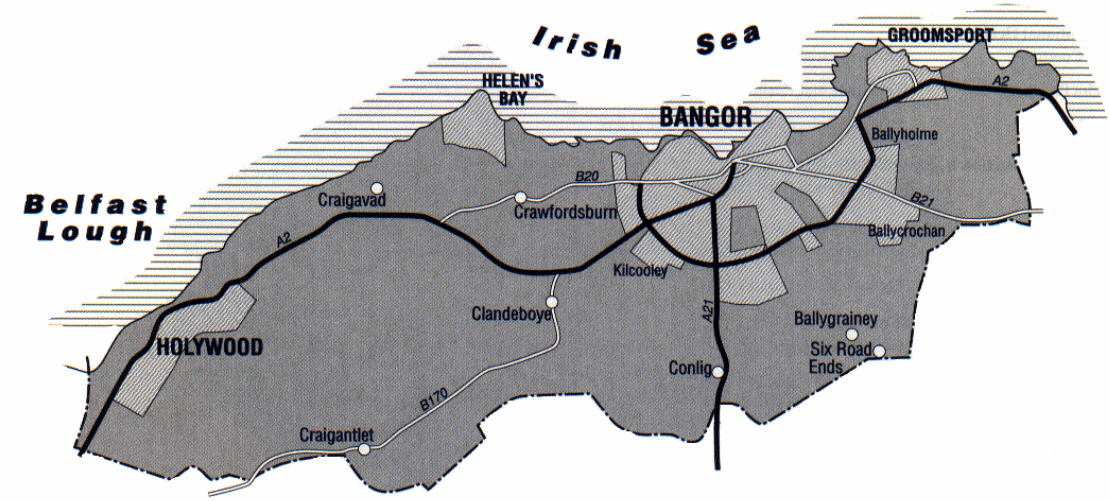
1 Introduction

1.1 Description of Local Authority Area

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



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

There is still significant use of solid fuel within the Borough for domestic heating. Solid Fuel use was subjected to evaluation in accordance with DETR guidance. In addition, there is over 25 years of data from smoke and SO_2 bubbler sites that have been located in Bangor and Holywood. Studies in relation to solid fuel use were carried out in 2002 to assess the risk of exceeding the air quality objectives in relation to SO_2 and PM_{10}.

There are a number of very busy trunk roads in the area as indicated on the above map. Much of the monitoring work in the area is in relation to NO_2 and PM_{10} at relevant locations particularly in relation to the A2 to Belfast between Ballyrobert and Holywood.

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.

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 micrograms per cubic metre $\mu g/m^3$ (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 $\mu g/m^3$	Running annual mean	31.12.2003
	3.25 $\mu g/m^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu g/m^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu g/m^3$	Annual mean	31.12.2004
	0.25 $\mu g/m^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu g/m^3$	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 $\mu g/m^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu g/m^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu g/m^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu g/m^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu g/m^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

Table 1.2 The Following is a table of previous Reviews and Assessments : -

Stages Completed	Exceedences Identified / Predicted	Areas Affected	AQMA's Declared
Stage 1 2001	PM10, SO2, NO2	A2 Bangor to Belfast Road, Clandeboye Road Area.	No
Stage 2&3 2004	PM10, SO2, NO2	A2 Bangor to Belfast Road, Clandeboye Road Area.	No
Progress Report 2005	None	A2 Bangor to Belfast Road, Clandeboye Road Area.	No
USA 2006	None	A2 Bangor to Belfast Road, Clandeboye Road Area	No
Progress Report 2007	None	A2 Bangor to Belfast Road, Clandeboye Road Area	No
Progress Report 2008	NO2	A2 Bangor to Belfast Road,	No

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 All Monitoring Site locations

The map below indicates the location of all the monitoring sites that have been in place over the past few years.

Fig 1 Map of North Down Borough Council Air Quality Monitoring Sites.

The following sites were all discontinued at the beginning of 2008. The reason that they were discontinued was that the results indicated that the NO2 levels were well below the objectives. In addition, some of the discontinued tubes were old kerbside network locations with no relevant exposure.

Table 1.3 Discontinued monitoring Sites

Site Name	Pollutants Monitored	OS Grid Ref (Irish 1964)
Ava Bar Bangor	NO2	350402 381521
Kosmos Bangor	NO2	350707 381905
Rathmore Road Bangor	NO2	348300 381526
17 Rathgael Road Bangor	NO2	347872 380052
163 Rathgael Road Bangor	NO2	349491 379505
Marine Parade Bangor	NO2	339600 379229

2.1.2 Automatic Monitoring Sites

North Down Borough Council has contracted AEA technology to carry out the QA/QC for the automatic monitoring sites. This includes data handling, ratification of data and 6monthly site visits.

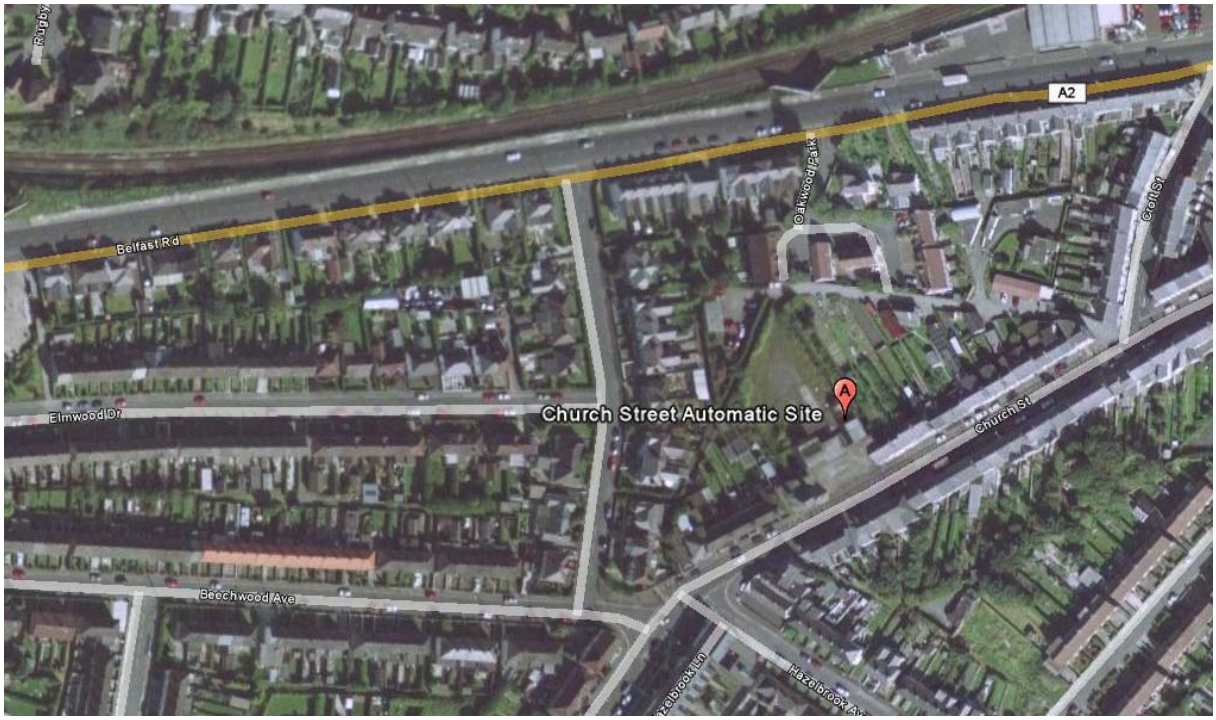
The Eastern Group Air Quality technical officer visits the sites on a on a weekly basis and calibrates the equipment on a fortnightly programme.

Fig 2 Marine Parade A2 Automatic AQM Site.

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref (Irish 1964)	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 ?
Marine Parade Holywood A2	Roadside	X339481 Y379328	Automatic No2, PM10 roadside	N	Y 30m	4.60m	Y
Church Street Bangor	Urban	X349855 Y381044	Automatic So2, PM10 urban	N	Y 13m	N/A	Y

Fig 3 Church Street Automatic Monitoring Site.



2.1.3 Non-Automatic Monitoring

From April 2008 all the active NO2 tube sites were moved to the façade of the closest relevant exposure and triplicate tubes were put in place to improve the accuracy of results.

Table 2.2 Details of Non- Automatic Monitoring Sites

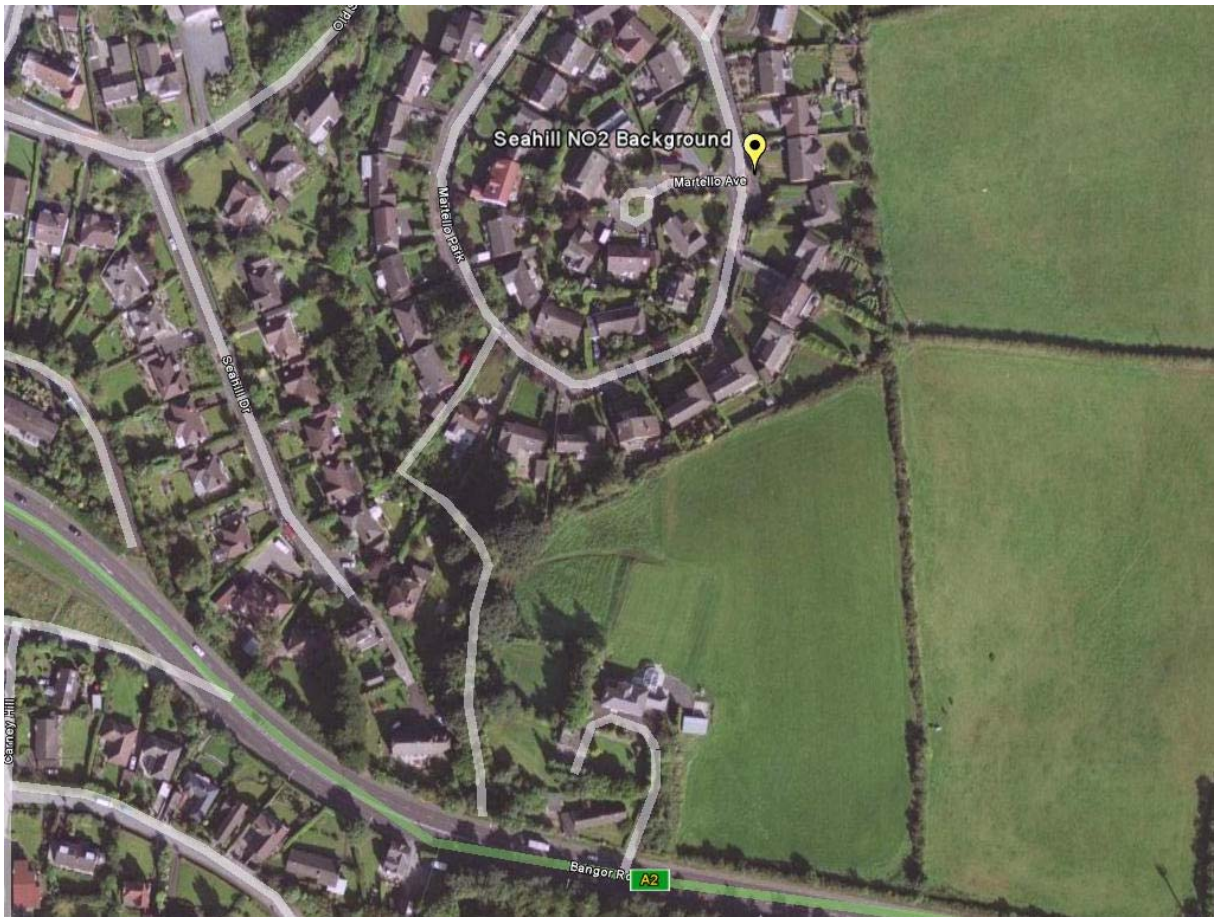
Site Name	Site Type	OS Grid Ref (Irish 1964)	Pollutants Monitored	In AQMA ?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Worst-case Location ?
Ballyrobert A2	Roadside	X345002 Y380823	NO_2 Tubes	N	Y (<1m)	3m	Y
Seahill Background	Urban B'Ground	X344128 Y381294	NO_2 Tubes	N	N\A	250m	N\A
Seahill A2	Roadside	X343545 Y381102	NO_2 Tubes	N	Y (<1m)	10m	Y
Cultra A2	Roadside	X342475 Y380672	NO_2 Tubes	N	Y (<1m)	6.3m	Y

Fig 4 Ballyrobert Passive NO_2 diffusion tubes.

Fig 5 Seahill A2 Passive NO_2 diffusion tubes.

Fig 6 Cultra A2 Passive NO_2 diffusion tubes.

Fig 7 Seahill Background Passive NO_2 diffusion tubes.



QA/QC of the diffusion tubes

Up to November 2004, the NO_2 diffusion tubes were supplied and analysed by Ruddock and Sheratt. Since then, Casella has supplied and analysed the tubes. The tubes are currently prepared using 10% TEA (Triethanolamine) in water. Both labs participated in the WASP scheme.

We have a Co-located study at the automatic site Marine Parade Holywood. The results from this site are submitted to the UWE national bias adjustment survey for inclusion in the spreadsheet. The applied bias adjustment factor is taken from this tool and is 0.83.

http://www.uwe.ac.uk/aqm/review/R&Asupport/diffusiontube050509.xls

2.2 Comparison of Monitoring Results with AQ Objectives

The following are the results of automatic PM10, NO2 and sulphur dioxide measurements. In addition there is data from the triplicate passive NO2 sites. These have been compared with the relevant air quality objective as listed in table 1.1.

2.2.1 Nitrogen Dioxide

The automatic site results for NO2 are as follows. The lost data was from the second week of March to the beginning of May as a result of a pump failure. The annual mean for NO2 was in line with results previously reported under the review and assessment regime.

Table 2.3 Results from the Holywood Automatic Site.

POLLUTANT	NO	NO_2	NO_X
Maximum 15-minute mean	573 μgm^{-3}	218 μgm^{-3}	1093 μgm^{-3}
Maximum hourly mean	453 μgm^{-3}	189 μgm^{-3}	863 μgm^{-3}
Maximum running 8-hour mean	279 μgm^{-3}	141 μgm^{-3}	566 μgm^{-3}
Maximum running 24-hour mean	182 μgm^{-3}	104 μgm^{-3}	382 μgm^{-3}
Maximum daily mean	158 μgm^{-3}	102 μgm^{-3}	344 μgm^{-3}
Average	25 μgm^{-3}	32 μgm^{-3}	69 μgm^{-3}
Data capture	86.60%	86.60%	86.60%

NO2 is the Pollutant for which an objective has been set.

Automatic Monitoring Data

Table 2.3a Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with Annual Mean Objective of 40μg/m^3

Site ID	Location	Within AQMA?	Proportion of year with valid data 2008 %	Annual mean concentrations (μg/m^3)		
				2006 * 94.7% Data Capture	2007 * 90.9 Data Capture	2008
Marine Parade Holywood	X339481 Y379328	N	86.6	31	31	32

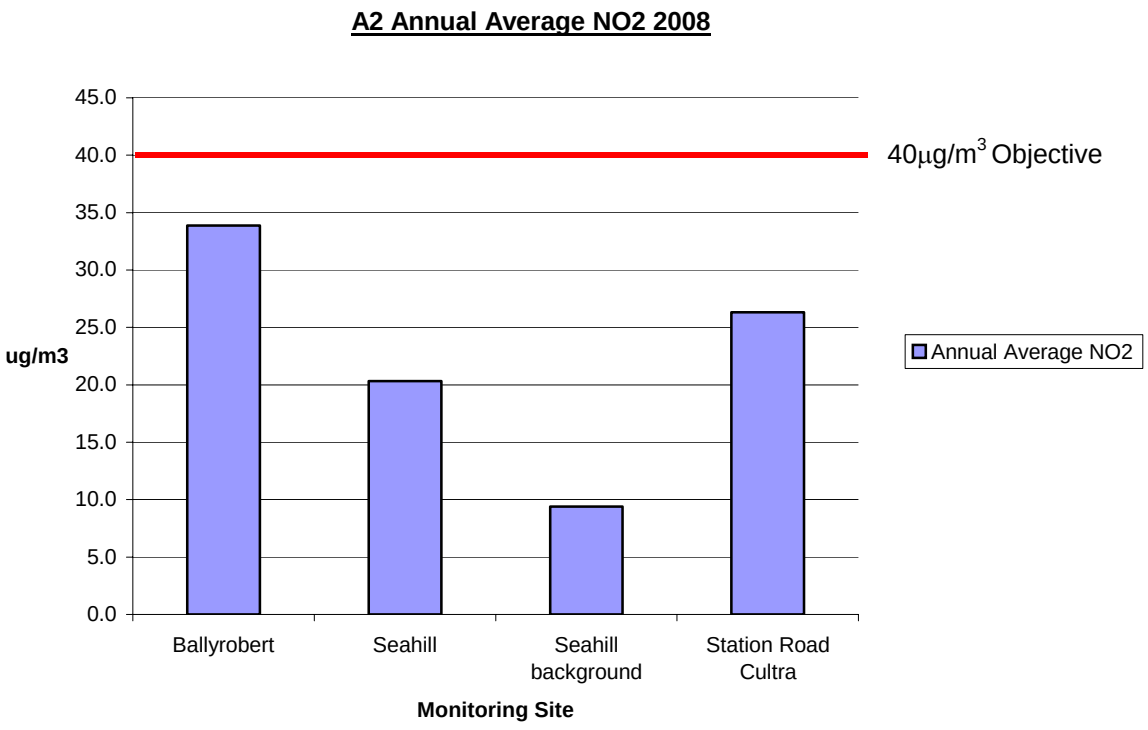
Table 2.3b Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2008 %	Number of Exceedences of hourly mean (200 μg/m^3) *If the period of valid data is less than 90% of a full year, include the 99.8th %ile of hourly means in brackets.*		
				2006 * 94.7% Data Capture	2007 * 90.9 Data Capture	2008
Marine Parade Holywood	X339481 Y379328	N	86.6	0	0	0

Diffusion Tube Monitoring Data

Table 2.4a Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Data Capture 2008 %	Annual mean concentrations 2008 (μg/m^3) Adjusted for bias 0.83
Ballyrobert A2	X345002 Y380823	N	92%	33.9
Seahill Background	X344128 Y381294	N	75%	9.4
Seahill A2	X343545 Y381102	N	100%	20.3
Cultra A2	X342475 Y380672	N	100%	26.3



2.2.2 PM_{10}

There were no exceedences of PM10 for the North Down Borough Council Area

Table 2.5a Results of PM_{10} Automatic Monitoring: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2008 %	Annual mean concentrations (Objective 40µg/m^3)		
				2006 *	2007 *	2008
Marine Parade Holywood	X339481 Y379328	N	99	21	26	24
Church Street Bangor	X349855 Y381044	N	98.6	18	22	22

* PM_{10} Indicative Gravimetric Equivalent µgm^{-3}
+ PM_{10} as measured by a TEOM using a factor of 1.3 for Indicative Gravimetric Equivalence
All mass units are at 20'C and 1013mb

Table 2.5b Results of PM_{10} Automatic Monitoring: Comparison with 24-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2008 %	Number of Exceedences of hourly mean (50 µg/m^3) up to 35 exceedences meet the standard. *If data capture < 90%, include the 90th %ile of hourly means in brackets.*		
				2006*	2007*	2008
Marine Par Holywood	X339481 Y379328	N	99	18	13	9
Church Str Bangor	X349855 Y381044	N	98.6	16	8	9

2.2.3 Sulphur Dioxide

There were no exceedences of SO2 for the North Down Borough Council Area

NORTH DOWN BANGOR
01 January to 31 December 2008

These data have been fully ratified by AEA

POLLUTANT	PM_{10}*+	SO_2
Maximum 15-minute mean	463 µgm^{-3}	93 µgm^{-3}
Maximum hourly mean	241 µgm^{-3}	64 µgm^{-3}
Maximum running 8-hour mean	142 µgm^{-3}	45 µgm^{-3}
Maximum running 24-hour mean	74 µgm^{-3}	29 µgm^{-3}
Maximum daily mean	69 µgm^{-3}	26 µgm^{-3}
Average	22 µgm^{-3}	4 µgm^{-3}
Data capture	98.6 %	99.4 %

2.2.4 Benzene

There were no measurements of benzene within North Down Borough Council area in 2008

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

North Down Borough 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

North Down Borough 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.

North Down Borough Council confirms that there are no new/newly-identified roads with high flows of buses/HDVs.

3.4 Junctions

North Down Borough 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

North Down Borough Council confirms that there are no new/proposed roads.

3.6 Roads with Significantly Changed Traffic Flows

North Down Borough Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

North Down Borough Council confirms that there are no relevant bus stations in the District.

4 Other Transport Sources

4.1 Airports

North Down Borough Council confirms that there are no significant changes in relation to airports near the District.

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

North Down Borough Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

4.2.2 Moving Trains

North Down Borough 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)

North Down Borough Council confirms that there are no ports or shipping that meet the specified criteria 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

North Down Borough 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

North Down Borough 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

North Down Borough 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 the Local Authority area.

5.3 Petrol Stations

North Down Borough Council confirms that there are no petrol stations meeting the specified criteria**.**

5.4 Poultry Farms

North Down Borough Council confirms that there are no poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

North Down Borough Council confirms that there are no biomass combustion plant in the District.

6.2 Biomass Combustion – Combined Impacts

North Down Borough Council confirms that there are no biomass combustion plant in the District.

6.3 Domestic Solid-Fuel Burning

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

7 Fugitive or Uncontrolled Sources

North Down Borough Council confirms that there are no potential sources of fugitive particulate matter emissions in the District.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

There are no exceedences of the air quality objectives in relation to the North Down Borough Council at this time.

8.2 Conclusions from Assessment of Sources

There are no current or proposed sources of emissions that are likely to give rise to exceedences of the current objectives.

8.3 Proposed Actions

There are no proposed actions in relation to the air quality objectives.

9 References

DRDNI (2008) **Traffic and travel information 2007 incorporating annual traffic census and vehicle kilometres of travel**. Report prepared by the Roads Service, Northern Ireland Department for Regional Development.

EG (2007) **Eastern Group Air Quality Progress Report**. Annual report on air quality in the Eastern group of local authorities in Northern Ireland, April 2008.

EG (2008) **Eastern Group Air Quality Progress Report**. Annual report on air quality in the Eastern group of local authorities in Northern Ireland, April 2008.

TG (2003) **Part IV of the Environment Act 1995. Local Air Quality Management: Technical Guidance LAQM.TG(03)**. Guidance prepared by the Department for Environment, Food and Rural Affairs and the Devolved Administrations, January 2003.

TG (2009) **Part IV of the Environment Act 1995. Local Air Quality Management: Technical Guidance LAQM.TG(09)**. Guidance prepared by the Department for Environment, Food and Rural Affairs and the Devolved Administrations, February 2009.

Appendices

Appendix A: QA/QC Data Automatic Sites

North Down Borough Council uses AEA Technology to provide the QA/QC for the automatic measurement of NO_2-NO_x , SO2 and PM_{10} from the sites at Clandeboye Road Bangor and Marine Parade Holywood . AEA Technology carries out six monthly audits of the site and downloads the site data daily. They e-mail the Eastern Group Air Quality technical officer and North Down Borough Council if faults are indicated. In addition, the Eastern Group Air Quality technical officer visits the sites on a weekly basis and carries out calibrations every fortnight.

Data capture for NO2 at the Marine Parade site fell to 86.6 % as a result of sampling pump failure.

Sumarised Scaled Ratified Data sets for both the automatic sites for 2008 are given below.

Produced by AEA on behalf of North Down Borough Council

NORTH DOWN BANGOR
01 January to 31 December 2008

These data have been fully ratified by AEA

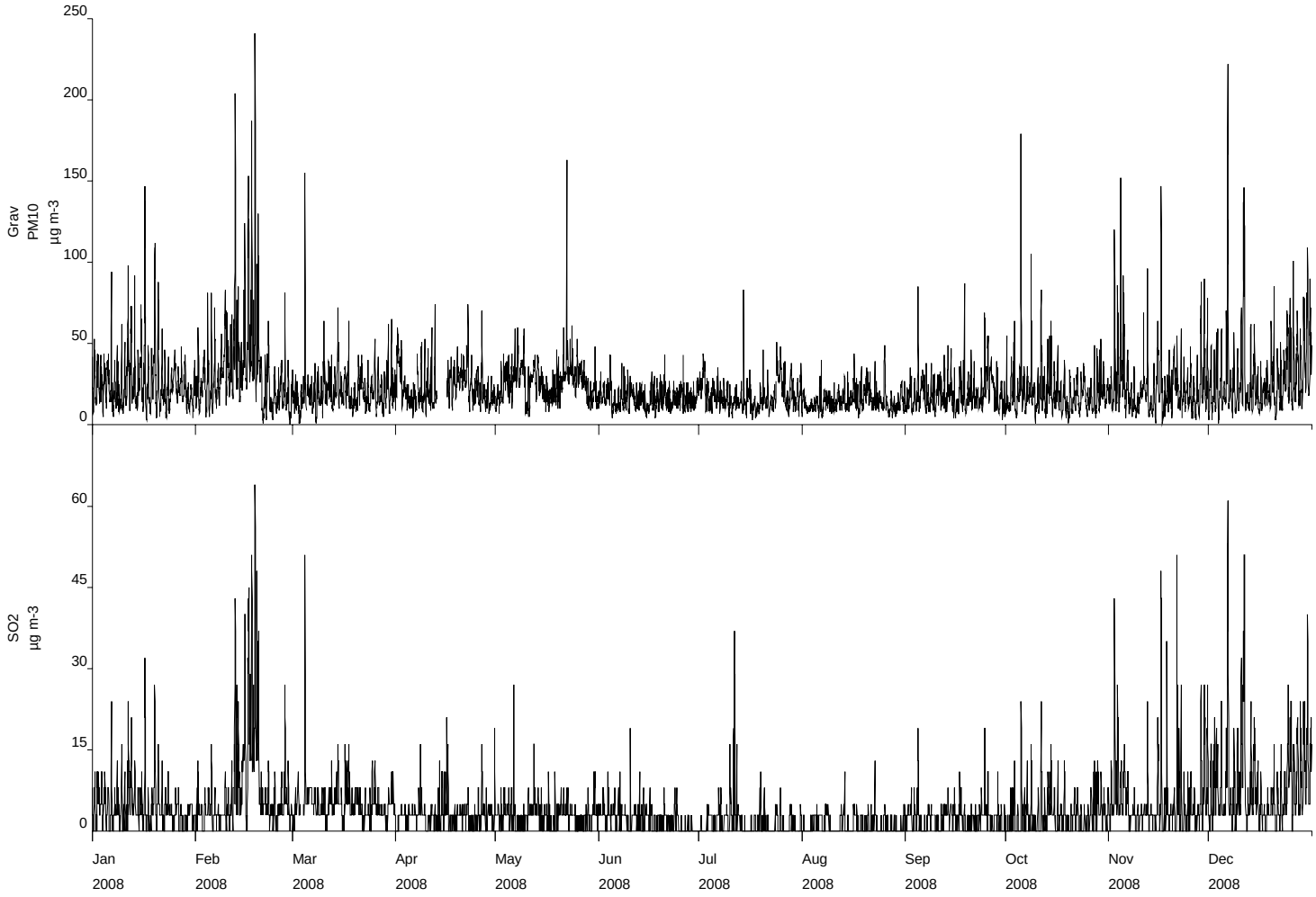
POLLUTANT	PM_{10}*+	SO_2
Number Very High	0	0
Number High	0	0
Number Moderate	94	0
Number Low	8607	34176
Maximum 15-minute mean	463 μgm^{-3}	93 μgm^{-3}
Maximum hourly mean	241 μgm^{-3}	64 μgm^{-3}
Maximum running 8-hour mean	142 μgm^{-3}	45 μgm^{-3}
Maximum running 24-hour mean	74 μgm^{-3}	29 μgm^{-3}
Maximum daily mean	69 μgm^{-3}	26 μgm^{-3}
Average	22 μgm^{-3}	4 μgm^{-3}
Data capture	98.6 %	99.4 %

* PM_{10} Indicative Gravimetric Equivalent μgm^{-3}
\+ PM_{10} as measured by a TEOM using a factor of 1.3 for Indicative Gravimetric Equivalence
All mass units are at 20'C and 1013mb

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
PM_{10} Particulate Matter (Gravimetric)	Daily mean > 50 μgm^{-3}	9	9
PM_{10} Particulate Matter (Gravimetric)	Annual mean > 40 μgm^{-3}	0	-
Sulphur Dioxide	15-minute mean > 266 μgm^{-3}	0	0
Sulphur Dioxide	Hourly mean > 350 μgm^{-3}	0	0
Sulphur Dioxide	Daily mean > 125 μgm^{-3}	0	0

Produced by AEA on behalf of North Down Borough Council

North Down Bangor
Hourly Mean Data for 01 January to 31 December 2008
Automatic Site Church Street



Produced by AEA on behalf of North Down Borough Council

NORTH DOWN HOLYWOOD A2
01 January to 31 December 2008

These data have been fully ratified by AEA

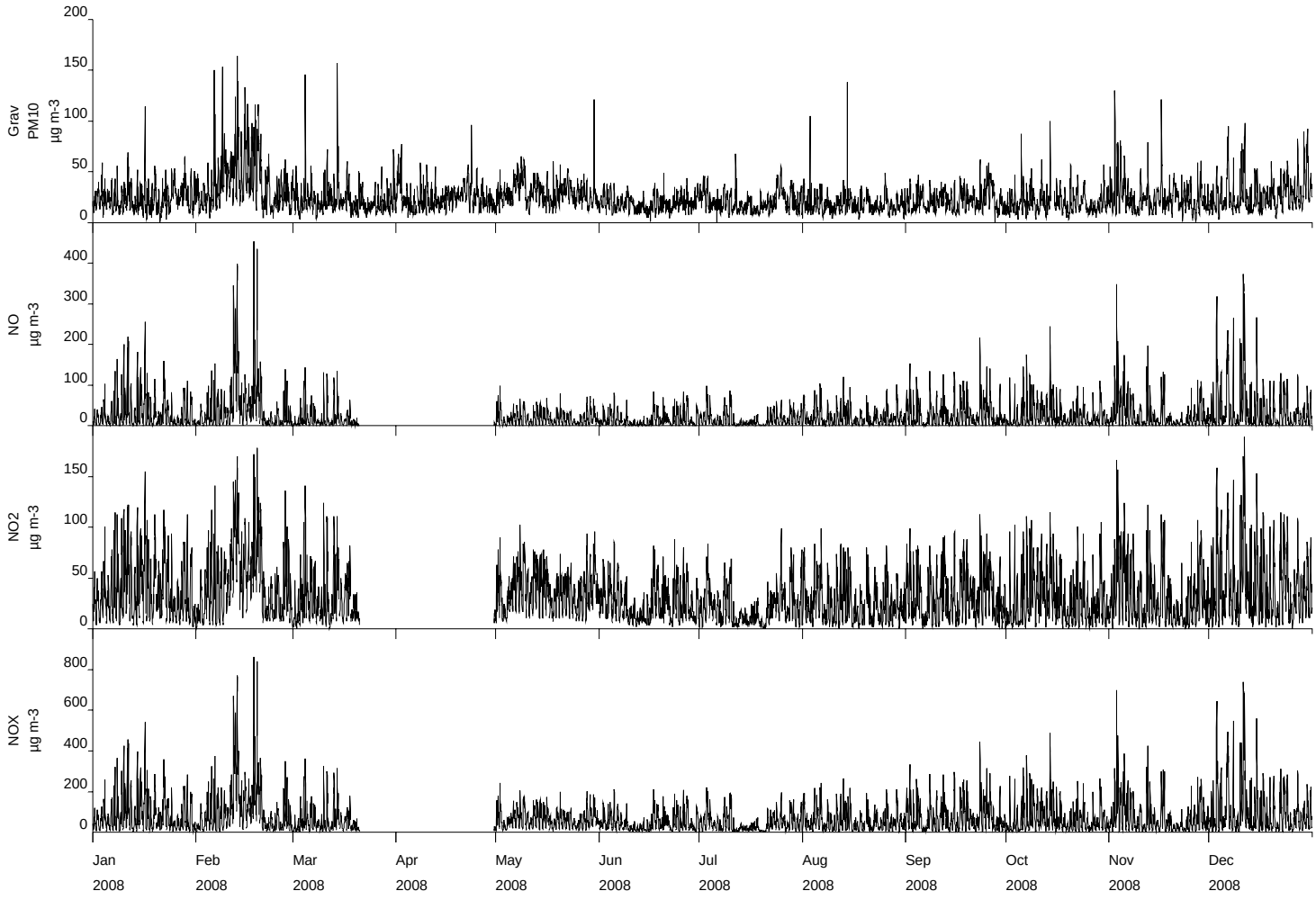
POLLUTANT	PM_{10}*+	NO	NO_2	NO_X
Number Very High	0	-	0	-
Number High	0	-	0	-
Number Moderate	55	-	0	-
Number Low	8669	-	7609	-
Maximum 15-minute mean	490 μgm^{-3}	573 μgm^{-3}	218 μgm^{-3}	1093 μgm^{-3}
Maximum hourly mean	164 μgm^{-3}	453 μgm^{-3}	189 μgm^{-3}	863 μgm^{-3}
Maximum running 8-hour mean	101 μgm^{-3}	279 μgm^{-3}	141 μgm^{-3}	566 μgm^{-3}
Maximum running 24-hour mean	75 μgm^{-3}	182 μgm^{-3}	104 μgm^{-3}	382 μgm^{-3}
Maximum daily mean	67 μgm^{-3}	158 μgm^{-3}	102 μgm^{-3}	344 μgm^{-3}
Average	24 μgm^{-3}	25 μgm^{-3}	32 μgm^{-3}	69 μgm^{-3}
Data capture	99.0 %	86.6 %	86.6 %	86.6 %

* PM_{10} Indicative Gravimetric Equivalent μgm^{-3}
\+ PM_{10} as measured by a TEOM using a factor of 1.3 for Indicative Gravimetric Equivalence
All mass units are at 20'C and 1013mb
NO_X mass units are NO_X as NO_2 μgm^{-3}

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
PM_{10} Particulate Matter (Gravimetric)	Daily mean > 50 μgm^{-3}	9	9
PM_{10} Particulate Matter (Gravimetric)	Annual mean > 40 μgm^{-3}	0	-
Nitrogen Dioxide	Annual mean > 40 μgm^{-3}	0	-
Nitrogen Dioxide	Hourly mean > 200 μgm^{-3}	0	0

Produced by AEA on behalf of North Down Borough Council

North Down Holywood A2
Hourly Mean Data for 01 January to 31 December 2008



Gap in the NO2 data is due to pump failure on the apparatus

Appendix B: QA:QC Data Diffusion Tubes

Diffusion Tube Bias Adjustment Factors

Up to November 2004, the NO_2 diffusion tubes were supplied and analysed by Ruddock and Sheratt. Since then, Casella has supplied and analysed the tubes. The tubes are currently prepared using 10% TEA in water. Both labs participated in the WASP scheme.

North Down Borough Council - Northern Ireland

We have a Co-located study at the automatic site Marine Parade Holywood. The results from this site are submitted to the UWE national bias adjustment survey for inclusion in the spreadsheet. The applied bias adjustment factor is taken from this tool and is 0.83.

http://www.uwe.ac.uk/aqm/review/R&Asupport/diffusiontube050509.xls