



2011 Air Quality Progress Report for Castlereagh Borough Council

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

Date May 2011

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Report Reference number	
Date	19 th May 2011

Executive Summary

The Air Quality Strategy has established the framework for air quality management in the UK. Local Authorities have a duty under the Environment Act 1995, and subsequent regulations to review and assess air quality in their areas on a periodic basis, so as to identify all areas where the air quality objectives are being or are likely to be exceeded. A phased approach has been adopted for the review and assessment process so that the level of assessment undertaken is commensurate with the risk of an exceedence of an air quality objective.

An updating and screening assessment (USA) is required to be prepared every three years by all local authorities in the UK. The last updating and screening assessment of air quality was undertaken in 2009 and the next is due by the end of April 2012, with two interim progress reports.

This report is the 2011 progress report, the assessment is fully compliant with the applicable policy and technical guidance.

Castlereagh Borough lies to the southeast of Belfast in Northern Ireland. The Borough is of mixed urban and rural character. It is mainly residential with no significant industrial activity. Many residents work in Belfast and this, combined with the major arterial routes passing through the Borough, makes road transport the major air pollution concern. There is currently an Air Quality Management Area within the Borough.

Following the 2009 Update and screening assessment a detailed assessment was carried out. This concluded the NO₂ air quality objective was exceeded on A20 Upper Newtownards Road and relevant exposure was identified, ie Normandy Court.

Following this detailed assessment the triplicate NO₂ diffusion tubes positioned kerb side were moved to the façade of Normandy Court in November 2009. Although the levels of NO₂ have decreased by approximately 40%, they remain slightly above the objective so Castlereagh Borough Council declared the six apartments to the front of Normandy Court, an Air Quality Management area on the 30th January 2011

There are no other air quality exceedences within the Borough

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1 Introduction

1.1 Description of Local Authority Area

Castlereagh Borough Council covers an administrative area of 84Km² to the Southeast of Belfast and in 2006 was home to a population of 66,633. The Borough is of mixed and urban rural character and the predominant wind direction is from the Southwest.

The Borough is surrounded by five neighbouring councils. Its position in relation to Belfast, has made it a very popular area to live. Commuting time to the city centre from the Borough is relatively short and this combined with major arterial routes passing through the Borough into Belfast, has made road transport the major air pollution concern.

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.

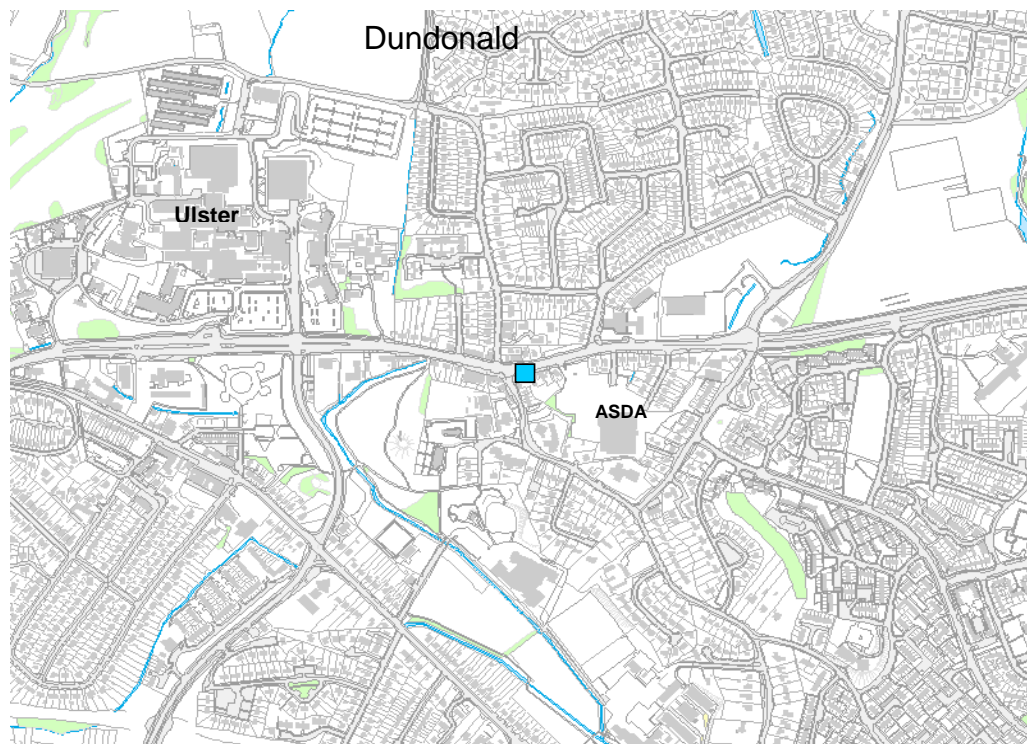
Pollutant	Concentration	Measured as	Date to be achieved by
Benzene	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	3.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Maximum 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

Castlereagh Borough Council has completed the following reviews and assessments of air quality in earlier rounds of the assessment process:

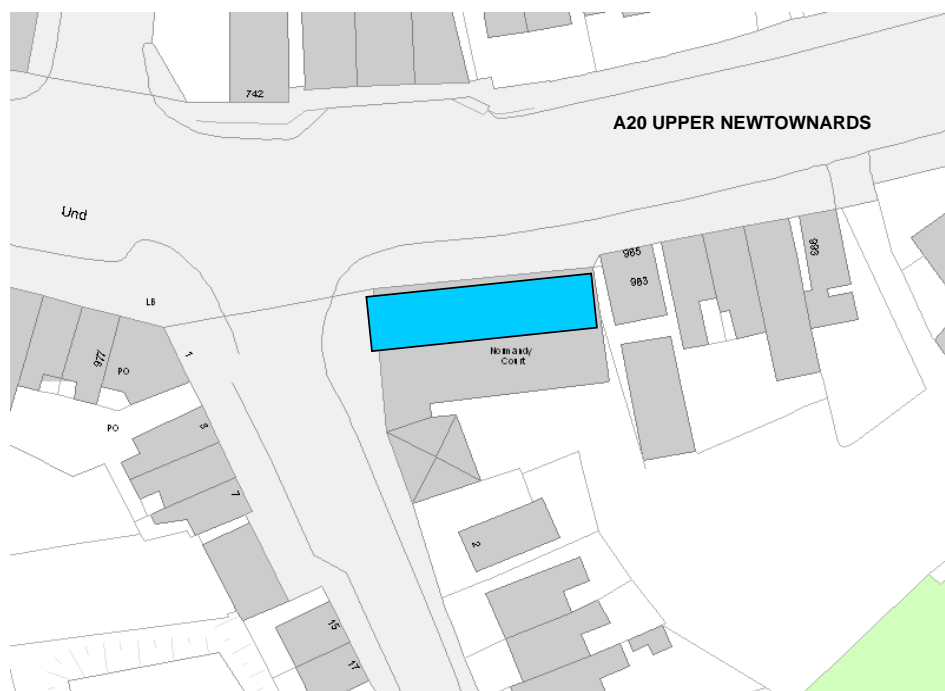
Stage 1 Report (CBC, 2000)	The first stage review and assessment found that the air quality objectives for 4 of the 7 specified parameters namely carbon monoxide, nitrogen dioxide, PM ₁₀ and sulphur dioxide were all unlikely to be achieved by 2003-2005.
Stage 2/3 Air Quality Review (CBC, 2003, 2004)	The stage 2/3 review for road emissions and domestic fuel combustion concluded that an Air Quality Management Area (AMQA) should not be declared for NO ₂ , PM ₁₀ and SO ₂ , as there were not predicted to be exceedences of the air quality objectives
Progress report (CBC2005)	The progress reported for 2004 concluding that PM ₁₀ , NO ₂ and SO ₂ were not predicted to cause exceedences of the air quality objectives at relevant receptors.
Updating and Screening Assessment (USA, 2006)	This reported data for 2005. This indicated that current objectives in relation to SO ₂ , NO ₂ and PM ₁₀ would be achieved at the location of the automatic monitoring stations. The diffusion tube measurements at the A20 Upper Newtownards road in Dundonald indicated the possibility of exceedences in relation to NO ₂
Progress report (EG, 2007)	This reported the 2006 measurements and the decommissioning of the SO ₂ automatic site in Espie way and the analyser to be replaced with an NO ₂ . The station was relocated to Dundonald, where the NO ₂ diffusion results were close to the objective .
Progress report (EG, 2008)	This reported the 2007 measurements. Although based on 76% data capture, the annual mean NO ₂ concentration at the Dundonald automatic monitoring site was below the objective.
Updating and Screening Assessment (USA, 2009)	This reported 2008 measurements. The A20 Dundonald NO ₂ diffusion tube site exceeded the the objective, and a detailed assessment was initiated.
Detailed assessment	A detailed assessment was carried out for NO ₂ for the A20 in the Dundonald area
Progress report (CBC 2010)	This reported the 2009 measurements and the relocation of the NO ₂ diffusion tubes on the A20 to the façade of the relevant exposure ie: Normandy Court

Figure 1.1 Map of AQMA Boundaries



 Normandy Court A20 Upper Newtownards Road, Dundonald,

 Air Quality Management Area 1,5,9,2,6&10 Normandy Court Dundonald



2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Castlereagh Borough Council presently has two automatic sites both measuring NO_x and PM₁₀ using chemiluminescence analysers and the TEOM technique respectively. The TEOM data was corrected and reported using Volatile Correction Model.

Castlereagh Lough View Drive (A1)
Castlereagh Dundonald (A2)

Figure 2.1 Map(s) of Automatic Monitoring Sites (if applicable)

Overview map of Castlereagh Borough Council showing location of air pollution monitoring sites (circles and triangles)

The automatic NO_x and PM₁₀ sites are denoted by triangles

[A1 = Lough View Drive, A2 = Dundonald]

The NO₂ diffusion tube sites are also indicated on this map denoted by circles

[DT1 = Cregagh Road, DT2 = Everton Drive, DT4 = Upper Newtownards Road, DT5 = Newtownbreda Road, DT6=Saintfield Road,DT7= Normandy Court.(3M from DT4).]

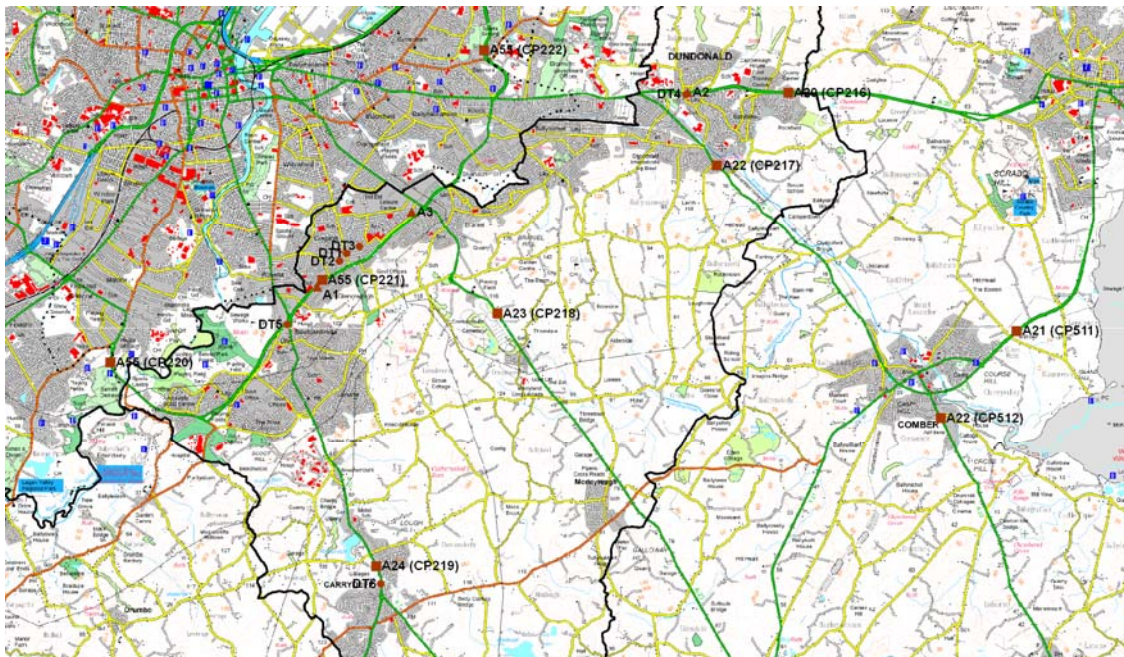


Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	Monitoring Technique	In AQMA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
Example 1	Urban backgrd.	X111222	Y222111	PM ₁₀	FDMS	Y	Y (1m)	3m	Y
Castlereagh Loughview Drive	Roadside	E 335749	N370711	PM ₁₀ NO _x	TEOM Chemiluminescent analyser	N	Y 22M	3m	Y
Castlereagh Dundonald	Roadside	E 342016	N374041	PM ₁₀ NO _x	TEOM Chemiluminescent analyser	N	Y 22M	3m	N

2.1.2 Non-Automatic Monitoring Sites

Castlereagh borough Council presently has five NO₂ diffusion tube sites positioned along the main arterial routes into Belfast, the Upper Newtownards Road site having triplicate tubes. This site was re-located to the relevant exposure, the façade of Normandy Court Dundonald, 3M back from the original kerbside site, in November 2009. The NO₂ diffusion tubes are supplied by Bureau Veritas. Preparation method is 20% TEA in water. A co-location study is carried out at both automatic sites in the Borough, and these results are included in the LAQM data base..

Figure 2.2 Map(s) of Non-Automatic Monitoring Sites (if applicable)

Included in figure 2.1

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?
Example 1	Urban backgrd.	X111222	Y222111	NO ₂	Y	Y (1m)	3m	Y
Cregagh Road	Roadside	E336257	N371278	NO ₂	N	Y (28m)	3m	
Everton Drive	Background	E336132	N371141	NO ₂	N	Y (98m)	1m	
Upper Newtownards Road	Roadside	E341991	N374013	NO ₂	N	Y (0m)	3.5m	Y
Newtownbreda Road	Roadside	E335246	N370061	NO ₂	N	Y (12m)	2m	
Saintfield Road	Roadside	E336832	N365625	NO ₂	N	Y (70m)	3m	
Normandy Court	Roadside	E341991	N374013	NO ₂	Y	Y (0m)	3.5m	Y
Castlereagh Loughview Drive	Co-location	E335749	N370711	NO ₂	N	Y (22m)	3m	
Castlereagh Dundonald	Co-location	E342016	N274041	NO ₂	N	Y (22m)	3m	

2.2 Comparison of Monitoring Results with Air Quality Objectives

In the following section results are presented for NO₂ at the automatic and diffusion tube sites and compared with the objective. All sites except the diffusion tube site on the A20 Upper Newtownards Road on the façade of Normandy Court meet the objective

2.2.1 Nitrogen Dioxide

Tables 2.3a presents the annual mean concentrations of NO₂ determined at the two automatic sites in 2010 from the hourly measurements. The results for 2008 and 2009 are also included in the table, the Dundonald automatic site was installed in March 2007 and Loughview in 2003

Automatic Monitoring Data

Table 2.3a Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with Annual Mean Objective

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 (µg/m ³)		
						2008 ^c	2009 ^{c,d}	2010 ^c
A1	1 Example Site	N	Y	95	95	30.1	25.1	26.2
A1	Castlereagh Loughview Drive	N	Y	99.2	99.2	21.8	21	25
A2	Castlereagh Dundonald	N	Y	99.0	99.0	32.3	36	41

Figure 2.3 Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Automatic Monitoring Sites.

Results have been consistent at both sites since monitoring commenced.

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

Site ID	Location	Within AQMA?	Relevant public exposure? Y/N	Data Capture for monitoring period ^a %	Data Capture for full calendar year 2010 ^b %	Number of Exceedences of hourly mean (200 µg/m ³)		
						2008 ^c	2009 ^c	2010
A1	1 Example Site	N	Y	95	95	0	3	15
A1	Castlereagh Loughview Dr	N	Y	99.2	99.2	0	0	0
A2	Castlereagh Dundonald	N	Y	99.0	99.0	3	0	2

Diffusion Tube Monitoring Data

A trend for the five diffusion tube sites within the borough is shown in figure 2.4. There has been no significant change. The kerbside site at the Upper Newtownards Road continued in 2009 to exceed the objective, although the Chemiluminescent analyser 30M further along the road had no exceedences. A detailed assessment was carried out for this site in 2009. The triplicate tubes were moved to the façade of the nearest relevant exposure (Normandy Court) in November 2009. In 2010 this new site showed a reduction of 40% in NO₂ levels. Levels remained slightly above the objective and an AQMA was declared on 31st January 2011 for no's 1,5,9,2,6&10 Normandy Court, Dundonald.

A bias adjustment factor of 0.84 was applied to the results. This was taken from the LAQM data base.

Castlereagh Borough Council carried a co-located study at both automatic sites, a bias adjustment factor was calculated using the R&A support precision and accuracy spreadsheet. (Loughview 0.79 & Dundonald 0.84)

There are 4 co-location studies carried out within the local Eastern Group area and the average of these is 0.84, and therefore a decision was made to use the LAQM data base bias adjustment for Eurofins of 0.84.

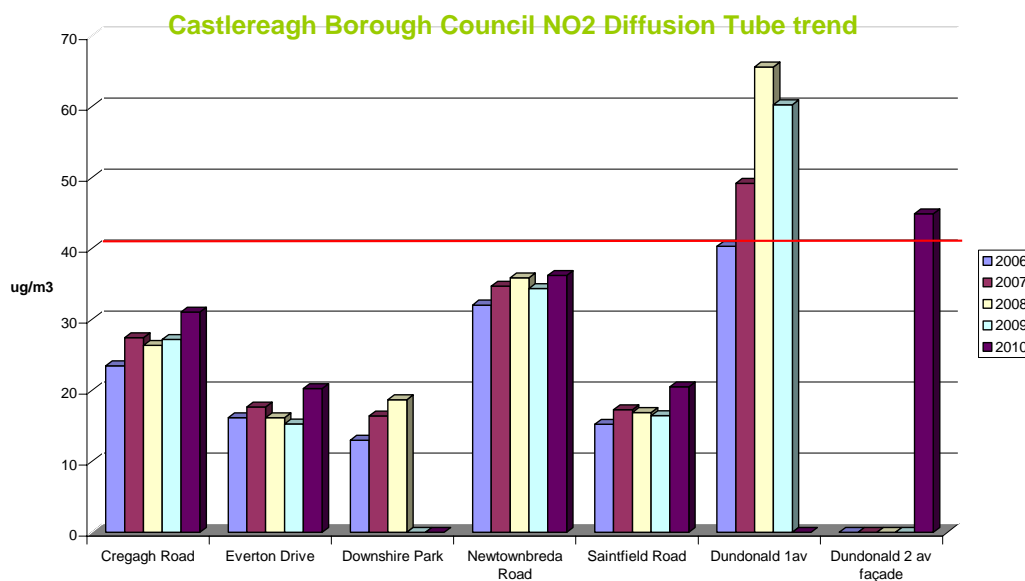
http://laqm.defra.gov.uk/documents/Diffusion_Tube_Bias_Factors_v04_11_v6.xls

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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 (µg/m ³)		
						2008 ^{c, d}	2009 ^{c, d}	2010 ^c
A1	1 Example Site	N	Y	95	95	30.1	25.1	26.2
DT1	Cregagh Road	N	Y	100	100	25.8	26.9	31
DT2	Everton Drive	N	Y	91	91	15.1	15.1	20
DT4	Upper Newtownards	N	Y	100	100	65.6	57.4	N/A
DT5	Newtownbreda Road	N	Y	100	100	35.9	33.9	36
DT6	Saintfield Road	N	N	100	100	16.9	16.3	21
DT7	Normandy Court	Y	Y	100	100			45

Figure 2.4 Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites.



The triplicate diffusion tubes at the original Dundonald1 kerbside site exceeded the objective 2007-2009. In 2007 an NO₂ real time analyser was installed 30M from this site results from this were much lower so in 2009 a detailed assessment was carried out, which resulted in the Dundonald tubes being moved to the façade of Normandy Court (Dundonald2) at the end of 2009.

2.2.2 PM₁₀

There are presently two PM₁₀, TEOM automatic monitoring sites positioned along side the NO₂ automatic analysers. The results have been consistently low and both sites remained below the objective of 40 ug/ m³ in 2010.

Table 2.5a Results of PM₁₀ Automatic Monitoring: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Data Capture for monitoring period ^a %	Data Capture for full calendar year 2010 ^b %	Annual mean concentrations (µg/m ³)		
					2008 ^{c, d}	2009 ^{c, d}	2010 ^c
A1	1 Example Site	N	98	98	45	41	44
A1	Castlereagh Lough View Drive	N		97.6	17	15	24
A2	Castlereagh Dundonald	N		99.6	18	17	24

Table 2.5b Results of PM₁₀ Automatic Monitoring: Comparison with 24-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture for monitoring period ^a %	Data Capture 2010 ^b %	Number of Exceedences of daily mean objective (50 µg/m ³)		
					2008 ^c	2009 ^c	2010 ^c
A	1 Example Site	N	98	95	0	3	2
A1	Castlereagh Loughview Drive	N		97.6	0	0	4
A2	Castlereagh Dundonald	N		99.6	4	0	11

Figure 2.5 Trends in Annual Mean PM₁₀.

There has been no significant trend, levels remain consistently low.

2.2.3 Sulphur Dioxide

The SO₂ automatic site in Espie Way Castlereagh was decommissioned in 2007 as there had been no exceedences of the air quality objectives for SO₂ since monitoring commenced in 2003. No new sites have been identified since 2007.

2.2.4 Benzene

There were no measurements of Benzene carried out in 2009

2.2.5 Other pollutants monitored

NO₂ and PM₁₀ were the only two pollutants monitored in 2010

2.2.6 Summary of Compliance with AQS Objectives

Castlereagh Borough Council has examined the results from monitoring in the borough. Concentrations outside of the AQMA are all below the objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment.

3 New Local Developments

3.1 Road Traffic Sources

There have been no newly identified road traffic sources.

3.2 Other Transport Sources

There have been no newly identified non-road traffic sources.

3.3 Industrial Sources

There have been no newly identified industrial sources.

3.4 Commercial and Domestic Sources

There have been no newly identified commercial/Domestic sources

3.5 New Developments with Fugitive or Uncontrolled Sources

Castlereagh Borough 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.

Castlereagh Borough 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 Planning Applications

A planning application has been submitted for a Sainsburys supermarket on the Upper Newtownards Road Dundonald. This may cause an increase in traffic, through the AQMA. An Air Quality assessment will be required. Implementation of Action Plans

Castlereagh Borough Council is presently compiling an action plan and is in consultation with other Departments. Castlereagh Borough Council are investigating the possibility of re-locating the chemiluminescence analyser to the façade of Normandy court in 2011, as part of the action plan. Conclusions and Proposed Actions

4.1 Conclusions from New Monitoring Data

Following the 2009 USA Castlereagh Borough Council carried out a detailed assessment identifying NO₂ levels above the objective at the A20 Upper Newtownards Road monitoring site in Dundonald. It showed relevant exposure at the apartments to the front of Normandy Court. The triplicate tubes at this site were re-located 3M further back to the façade of the apartments in November 2009. This new site, in 2010 showed a significant decrease of approximately 40%. However the NO₂ levels did remain above the objective and Castlereagh Borough Council declared apartment no's 1,5,9,2,6&10 an AQMA. Castlereagh is presently drawing up an action plan and proposing to site a real time analyser within the AQMA. No other monitoring sites within the borough showed exceedences of the air quality objectives.

4.2 Proposed Actions

A further assessment and action plan are to be submitted by the end of 2011 and a real time analyser installed within the AQMA.

5 References

CBC (2000) **Air quality report**. Report prepared by the Environmental Health Department,

Castlereagh Borough Council (June 2000).

CBC (2003) **Second/third stage review and assessment of local air quality**. Interim Report prepared by the Environmental Health Department, Castlereagh Borough Council (December 2003).

CBC (2004) **Third stage air quality review and assessment**. Report prepared by the Environmental Health Department, Castlereagh Borough Council (July 2004).

Defra (2007) **Evaluation of support provided by Defra and the Devolved Administrations to Local Authorities for air quality reviews and assessments (2004-2007)**. Report prepared for Defra and the Devolved Administrations by the Air Quality Management Resource Centre (University of the West of England) and Air Quality Consultants Ltd, May 2007.

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 2009.

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.

USA (2006) **Air Quality Update and Screening and Assessment**. A report (ED 42019001 Issue 1) prepared for Castlereagh Borough Council by AEA Technology, May 2006.

USA (2009) **Air Quality Update and Screening and Assessment**. A report (ED 42019001 Issue 1) prepared for Castlereagh Borough Council by NPL

CBC (2010) **Air quality progress report**. Report prepared by the Environmental Health Department,

Appendices

Appendix A: QA/QC Data

Diffusion Tube Bias Adjustment Factors

The tubes are supplied by Bureau Veritas labs and the preparation method is 20% TEA in water. The bias adjustment factor from the R&A helpdesk database is 0.84

http://lagm.defra.gov.uk/documents/Diffusion_Tube_Bias_Factors_v04_11_v6.xls
Factor from Local Co-location Studies (if available)

The bias adjustment factors from the two local co-located studies are

Loughview Drive 0.79
 Dundonald 0.84

These were calculated using the R&A support precision and accuracy spreadsheet.

Results of NO₂ Diffusion tubes bias adjustment 0.84 applied

2010		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Castlereagh 5	Cregagh Road	48	27	42	31	28	21	17	18	24	35	33	49
Castlereagh 4	Everton Drive	30	29	25	17	13	0	7.1	10	12	23	23	34
Castlereagh	Downshire Park	0	0	0	0	0	0	0	0	0	0	0	0
Castlereagh 10	Newtownbreda Road	43	51	46	41	43	37	22	27	29	16	37	42
Castlereagh 9	Saintfield Road	25	29	24	21	13	17	9.3	11	16	35	20	26
Castlereagh	Dundonald 1av	0	0	0	0	0	0	0	0	0	0	0	0
Castlereagh	Dundonald 2 av	55	57	57	41	38	39	32	31	39	45	48	59

Discussion of Choice of Factor to Use

A bias adjustment factor of 0.84 was applied to the results. This was taken from the LAQM data base.

Castlereagh Borough Council carried a co-located study at both automatic sites, a bias adjustment factor was calculated using the R&A support precision and accuracy spreadsheet. (Loughview 0.79 & Dundonald 0.84)

There are 4 co-location studies carried out within the local Eastern Group area and the average of these is 0.84, and therefore a decision was made to use the LAQM data base bias adjustment for Eurofins of 0.84.

http://laqm.defra.gov.uk/documents/Diffusion_Tube_Bias_Factors_v04_11_v6.xls

PM Monitoring Adjustment

The PM₁₀ TEOM data has been corrected using the Volatile Correction Model (www.volatile-correction-model.info) as detailed on Page 3-10 of LAQM.TG (09).

Produced by AEA

**CASTLEREAGH LOUGH VIEW DRIVE
01 January to 31 December 2010**

These data have been fully ratified by AEA

POLLUTANT	NO	NO ₂
Number Very High	-	0
Number High	-	0
Number Moderate	-	0
Number Low	-	8691
Maximum 15-minute mean	470 µg m ⁻³	204 µg m ⁻³
Maximum hourly mean	341 µg m ⁻³	141 µg m ⁻³
Maximum running 8-hour mean	254 µg m ⁻³	118 µg m ⁻³
Maximum running 24-hour mean	175 µg m ⁻³	91 µg m ⁻³
Maximum daily mean	148 µg m ⁻³	88 µg m ⁻³
Average	14 µg m ⁻³	25 µg m ⁻³
Data capture	99.2 %	99.2 %

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Nitrogen Dioxide	Annual mean > 40 µgm ⁻³	0	-
Nitrogen Dioxide	Hourly mean > 200 µgm ⁻³	0	0

POLLUTANT	PM ₁₀ ⁺	PM ₁₀ VCM*	PM ₁₀ GR10
Number Very High	-	-	0
Number High	-	-	0
Number Moderate	-	-	11
Number Low	-	-	8611
Maximum 15-minute mean	336 µg m ⁻³	-	437 µg m ⁻³
Maximum hourly mean	115 µg m ⁻³	-	150 µg m ⁻³
Maximum running 8-hour mean	82 µg m ⁻³	-	106 µg m ⁻³
Maximum running 24-hour mean	54 µg m ⁻³	-	70 µg m ⁻³
Maximum daily mean	44 µg m ⁻³	64 µg m ⁻³	57 µg m ⁻³
90th percentile of daily means	28 µg m ⁻³	38 µg m ⁻³	36 µg m ⁻³
Average	18 µg m ⁻³	24 µg m ⁻³	23 µg m ⁻³
Data capture	97.6 %	88.5%	97.6 %

+ PM₁₀ as measured by a TEOM

*PM₁₀ VCM – TEOM data corrected using Volatile Correction Model

PM₁₀ GR10 - indicative gravimetric corrected, i.e. 'raw' TEOM PM₁₀ data with a 1.3 factor applied
Particulate matter concentrations are reported at ambient temperature and pressure

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
PM ₁₀ Particulate Matter (VCM Corrected)	Daily mean > 50 µgm ⁻³	4	4
PM ₁₀ Particulate Matter (VCM Corrected)	Annual mean > 40 µgm ⁻³	-	-

Produced by AEA

CASTLEREAGH DUNDONALD
01 January to 31 December 2010

These data have been fully ratified by AEA

POLLUTANT	NO	NO ₂
Number Very High	-	0
Number High	-	0
Number Moderate	-	0
Number Low	-	8675
Maximum 15-minute mean	825 µgm ⁻³	271 µgm ⁻³
Maximum hourly mean	659 µgm ⁻³	241 µgm ⁻³
Maximum running 8-hour mean	387 µgm ⁻³	149 µgm ⁻³
Maximum running 24-hour mean	248 µgm ⁻³	116 µgm ⁻³
Maximum daily mean	243 µgm ⁻³	111 µgm ⁻³
Average	43 µgm ⁻³	41 µg m ⁻³
Data capture	99.0 %	99.0 %

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Nitrogen Dioxide	Annual mean > 40 µgm ⁻³	1	-
Nitrogen Dioxide	Hourly mean > 200 µgm ⁻³	2	2

POLLUTANT	PM ₁₀₊	PM ₁₀ VCM*	PM ₁₀ GR10
Number Very High	-	-	0
Number High	-	-	0
Number Moderate	-	-	58
Number Low	-	-	8702
Maximum 15-minute mean	693 µg m ⁻³	-	901 µg m ⁻³
Maximum hourly mean	194 µg m ⁻³	-	252 µg m ⁻³
Maximum running 8-hour mean	88 µg m ⁻³	-	114 µg m ⁻³
Maximum running 24-hour mean	59 µg m ⁻³	-	77 µg m ⁻³
Maximum daily mean	59 µg m ⁻³	79 µg m ⁻³	76 µg m ⁻³
90th percentile of daily means	26 µg m ⁻³	38 µg m ⁻³	34 µg m ⁻³
Average	18 µg m ⁻³	24 µg m ⁻³	24 µg m ⁻³
Data capture	99.6 %	89.9 %	99.6 %

PM₁₀ as measured by a TEOM

*PM₁₀ VCM – TEOM data corrected using Volatile Correction Model

PM₁₀ GR10 - indicative gravimetric corrected, i.e. 'raw' TEOM PM₁₀ data with a 1.3 factor applied
 Particulate matter concentrations are reported at ambient temperature and pressure.

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
PM ₁₀ Particulate Matter (VCM Corrected)	Daily mean > 50 µgm ⁻³	11	11
PM ₁₀ Particulate Matter (VCM Corrected)	Annual mean > 40 µgm ⁻³	-	-