



2011 Air Quality Progress Report for Derry City Council

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

Date (May, 2011)

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Executive Summary

Environment (Northern Ireland) Order 2002 places a statutory duty on local authorities to review and assess the air quality within their area and take account of Government Guidance when undertaking such work. This Progress Report is a requirement of the Review and Assessment and is a requirement for all local authorities. The Report has been undertaken in accordance with the Technical Guidance LAQM.TG (09) and associated tools (as updated in 2011).

This Progress Report considers all new monitoring data and assesses the data against the Air Quality Objectives. It also considers any development changes that may have an impact on air quality as well as updating on any relevant strategy and policy changes.

Having considered the latest monitoring data and development updates, it is concluded that the air quality objectives for benzene, 1,3-butadiene, carbon monoxide, lead, PM_{10} and sulphur dioxide will be met. There is no requirement to undertake a detailed assessment for these pollutants.

Derry City Council has declared one Air Quality Management Area (AQMA) at the junction between Creggan Road/Infirmary Road. Derry CC is in the process of sealing Orders for AQMAs for Dale's Corner and Buncrana Road/Racecourse Junction which are projected to occur within one month of the time of writing.

Fourteen sites where monitoring was undertaken in 2010 exceeded the annual mean NO_2 objective of $40\mu g/m^3$, including eight within the designated or soon to be designated AQMAs on Creggan Road/Infirmary Road, Dale's Corner and Buncrana Road/Racecourse Junction. In 2010 monitoring data also identified four new areas where exceedences were recorded including Spencer Road, John Street, Strand Road and Abercorn Road. A Detailed Assessment will be undertaken for these areas to determine if additional AQMAs are required.

The Air Quality Action Plan for the Creggan Road / Infirmary Road AQMA was completed in 2008, and actions are being progressed. The Action Plan is currently being revised to incorporate a new set of measures to tackle air pollution at Dale's Corner and Buncrana Road/Racecourse Junction.

The Action Plan Progress Report will be completed separately later during 2011 when the Further Assessment reports for the additional AQMAs have been completed.

Table of contents

1	Intr	oduction	7
	1.1	Description of Local Authority Area	7
	1.2	Purpose of Progress Report	7
	1.3	Air Quality Objectives	7
	1.4	Summary of Previous Review and Assessments	9
2	Nev	v Monitoring Data	13
	2.1	Summary of Monitoring Undertaken	13
	2.2	Comparison of Monitoring Results with Air Quality Objectives	21
3	Nev	v Local Developments	34
	3.1	Road Traffic Sources	34
	3.2	Other Transport Sources	34
	3.3	Industrial Sources	34
	3.4	Commercial and Domestic Sources	34
	3.5	New Developments with Fugitive or Uncontrolled Sources	35
4	Loc	al / Regional Air Quality Strategy	36
	4.1	Derry Area Plan 2011	36
	4.2	The Regional Development Strategy	36
5	Pla	nning Applications	38
6	Air	Quality Planning Policies	39
7	Loc	al Transport Plans and Strategies	40
	7.1	Sub-Regional Transport Plan	40
	7.2	Derry Area Plan 2011	41
	7.3	Integrated Transport Strategy	42
8	Clir	nate Change Strategies	44
	8.1	Northern Ireland Climate Change Impacts Partnership	44
9	Cor	nclusions and Proposed Actions	46
	9.1	Conclusions from New Monitoring Data	46
	9.2	Conclusions relating to New Local Developments	46
	9.3	Other Conclusions	46

9.4 Proposed Actions

10 References

Appendices

Appendix 1 QA/QC Data

List of Tables

Table 1.1: Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in Northern Ireland.

Table 1.2: Summary of Local Air Quality Management Review & Assessment reports

Table 2.1: Details of Automatic Monitoring Sites

Table 2.2: Details of Non- Automatic Monitoring Sites

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

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

Table 2.4: Results of Nitrogen Dioxide Diffusion Tubes

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

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

Table 2.6: PM₁₀ Monitoring: Comparison with Annual Mean Objective

Table 2.7: Results of SO₂ Automatic Monitoring: Comparison with Objectives

Table 2.8: Results of Ozone Automatic Monitoring: Comparison with Objectives

Table 2.9: Results of PM_{2.5} Automatic Monitoring Comparison with Objectives

Table A.1: Local Bias Adjustment Factor

Table A.2: Seasonal Adjustment Factor for Dale's Corner

Table A.3: Seasonal Adjustment Factor for the Diffusion Tube Data

Table A.4: Raw Diffusion Tube Data, 2010

List of Figures

Figure 1.1 Creggan Road / Infirmary Road Junction AQMA

Figure 1.2 Dale's Corner proposed AQMA

Figure 1.3 Buncrana Road/Racecourse Road Junction proposed AQMA

Figure 2.1 Map of Automatic Monitoring Sites

Figure 2.2 Map of Non-Automatic Monitoring Sites

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

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

Figure 2.5 Trends in Annual Mean PM₁₀.

1 Introduction

1.1 Description of Local Authority Area

Derry City is located on the coast, in the west of Northern Ireland, spreading across the banks of the River Foyle, with two bridges connecting the parts of the City. The City is very near the border with County Donegal in the Republic of Ireland, and is the second largest city in Northern Ireland.

Within the local authority boundaries lie Londonderry Port and the City of Derry Airport. Road transport emissions have previously been found to be the dominant source of air pollution within the Derry City Council area.

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) 2010, 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 μ g/m³ (milligrammes per cubic metre, mg/m³ for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

Pollutant	Concentration	Measured as	Date to be achieved by
Benzene	16.25 μg/m ³	Running annual mean	31.12.2003
	3.25 μg/m ³	Running annual mean	31.12.2010
1,3-Butadiene	2.25 <i>µ</i> g/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 <i>µ</i> g/m ³	Annual mean	31.12.2004
	0.25 μg/m ³	Annual mean	31.12.2008
Nitrogen dioxide	200 μ g/m ³ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 <i>µ</i> g/m ³	Annual mean	31.12.2005
Particles (PM ₁₀) (gravimetric)	50 μ g/m ³ , not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 <i>µ</i> g/m ³	Annual mean	31.12.2004
Sulphur dioxide	350 μ g/m ³ , not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 μ g/m ³ , not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 μ g/m ³ , not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

Table 1.1Air Quality Objectives included in Regulations for the purpose of LocalAir Quality Management in Northern Ireland.

1.4 Summary of Previous Review and Assessments

Table 1.2 provides a summary of the previous reports completed by Derry City Council (DCC) as part of the Local Air Quality Management Review and Assessment process. DCC have declared one Air Quality Management Area (AQMA) for NO₂:

• Creggan Road/Infirmary Road Junction (Figure 1.1) was declared in February 2005, following exceedences of the annual mean objective for NO₂;

Figures 1.2 and 1.3 illustrate two further areas which are in the process of being declared as AQMAs:

- Dale's Corner (Figure 1.2), incorporating all of Ebrington Terrace and Columba Terrace on Limavady Road and No's 1 19 Glendermott Road.
- Buncrana Road/Racecourse Junction (Figure 1.3) including all of St Patrick's Terrace and numbers 1 -12 Collon Terrace to the south east.

Further Assessment reports for the two proposed AQMAs are currently being undertaken. An Action Plan Progress Report will be completed during 2011 when these Further Assessment reports have been completed.

Report	Summary
2004 Detailed Air Quality Modelling of Domestic Fuel Use and Road Traffic Emissions in Derry (Stage 3)	Exceedences of the annual mean NO ₂ concentrations were modelled at the Creggan Road / Infirmary Road junction, and DCC subsequently declared an AQMA in February 2005 (Figure 1.1), and a draft Air Quality Action Plan was released in November 2006. The 2004 Detailed Assessment concluded that PM ₁₀ exceedences were not expected; however it was not possible to rule out potential exceedences of the SO or PM objectives due to the recolution of the modelling undertaken
2005 Progress Report	The 2005 Progress Report provided a review of the most recent monitoring data within the Local Authority. Automatic monitoring of SO_2 and PM_{10} at Brandywell indicated a large drop in the number of 15-minute and daily mean exceedences, reflecting the decreased use of solid fuel in the area.
2006 Updating & Screening Assessment	The Updating & Screening Assessment identified 2 locations to consider for the Detailed Assessment of NO_2 : Dale's Corner and the Buncrana Road / Racecourse Road Junction. It was concluded that no further assessment was required for carbon monoxide, benzene, 1,3-butadiene, lead or sulphur dioxide, however assessment was required for PM_{10} at a rural area near Claudy, and in the Culmore Point area.
2007 Detailed Assessment and Further Assessment	A Detailed Assessment was undertaken for Dale's Corner and Buncrana Road / Racecourse Road Junction following measured exceedence of the NO ₂ annual mean objective. It was determined that a declaration of an AQMA at either location was not required as the air quality objectives were unlikely to be exceeded at locations of relevant exposure. A Further Assessment was undertaken for the existing AQMA at Creggan Road / Infirmary Road, and it was concluded that there was a continuing need for the AQMA, though no extension was considered necessary.
2008 Progress Report	Review of the most recent monitoring data recorded at the Creggan Road / Infirmary Road NO_2 AQMA confirmed the continuing need for the designation. Decreases were seen in concentrations of SO_2 . The Progress Report proposed that new detailed dispersion modelling be undertaken at the Dale's Corner junction due to exceedences of the NO_2 annual mean objective recorded at a new monitoring diffusion tube site at no.5 Glendermott Road
2008 Final Air Quality Action Plan	The Air Quality Action Plan included detailed dispersion modelling to quantify the potential impact of various scenarios which may be undertaken to reduce air pollution in the area of the Creggan Road / Infirmary Road Junction. Proposals include the removal of HGVs on specific road links within the AQMA.
2009 Updating & Screening Assessment	The Updating & Screening Assessment reviewed and assessed new monitoring data and potential new sources of pollutants within the area. There were no new or significantly changed sources identified which may cause potential exceedences of the Air Quality Strategy standards. The assessment highlighted that a Detailed Assessment was required with regard to NO ₂ derived from road transport for four narrow congested streets with residential properties close to the kerb and also at Buncrana Road / Racecourse Road junction. However it was decided to collate monitoring data (based on NO ₂ diffusion tubes) before proceeding to an assessment.
2010 Progress Report	The 2010 Progress Report reviewed the most recent monitoring data. The report recommended to proceed to a Further Assessment of air quality at the Buncrana Road/Racecourse Road junction and to provide further information and support potential measures to be included in the Derry Air Quality Action Plan.

Derry City Council - Northern Ireland



Figure 1.1 Creggan Road / Infirmary Road Junction AQMA

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Figure 1.2 Dale's Corner proposed AQMA



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2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

DCC operates three automatic monitoring sites, the locations of these are illustrated in Figure 2.1, with further details provided in Table 2.1.

AEA Energy and Environment undertake the Quality Assurance/Quality Control (QA/QC) procedures at these monitoring sites, ensuring that measurements from the analysers are as accurate as possible, and that measurements recorded at each site can be compared with other sites.

Manual calibration of automatic monitors is undertaken every two weeks by DCC officers. This allows the instrument drifts to be fully quantified and documented using traceable calibration gas standards and the results are used to scale data. All calibration records are sent to AEA who conduct the QA/QC checks.

The analysers are checked and serviced every six months by the appointed equipment support contractors. The reports are then sent to AEA.

The quality assurance and quality control procedures are set out in Appendix A.

At the Brandywell and Brooke Park monitoring sites, TEOMs have been used to monitor PM_{10} concentrations and so the data has been corrected using the 1.3 correction factor. The Brooke Park monitor was upgraded to FDMS in 2008 and therefore the data has required no correction since then.

Derry City Council - Northern Ireland



Table 2.1	Details of Automatic Monitoring Sites
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Site Name	Site Type	OS Grid Ref		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)	Does this location represent worst-case exposure?
Brooke Park (AURN)	Urban background	X 242962	Y 417217	O ₃ , NO ₂ , NO _X , SO ₂ , PM ₁₀ , PM _{2.5}	FDMS	N	N (approx 50m, background site)	N/A	N/A
Dale's Corner	Roadside	X 244178	Y 416760	NO ₂ , NO _X	-	N	Y	2m	Y
Brandywell	Urban background	X 242866	Y 416309	PM ₁₀ , SO ₂	TEOM	N	Y	N/A	N/A

2.1.2 Non-Automatic Monitoring Sites

Monitoring using passive NO₂ diffusion tubes was undertaken at 38 sites in 2010 across Derry City (Figure 2.2 and Table 2.2). The diffusion tube network has slightly altered since the 2010 Progress Report, with the reduction in the number of diffusion tubes at two colocated sites (3 Ebrington Terrace and 38 Glengallagh Park) and the addition of two new sites on Glendermott Road (THE1 and THE2). THE1 is located within an office space as part of a study to determine NO₂ concentrations inside an office which is in close proximity to an AQMA.

In addition the site at 10 Windsor Terrace was relocated to 1 Windsor Terrace in August 2008.

Details of the bias adjustment factors, seasonal adjustment and QA/QC procedures are provided in Appendix A.

Raw monthly data for 2010 are also provided in Appendix A.

Derry City Council – Northern Ireland Figure 2.2 Map of Non-Automatic Monitoring Sites

Date (May, 2011)



Date (May, 2011)

Derry City Council - Northern Ireland

Table 2.2 Details of Non- Automatic Monitoring Sites

Site Name		Site Type	OS Gi	rid 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?			
	Brooke Park AURN											
A1 A2 A3	Brooke Park AURN	Urban Background	242962	417217	NO ₂	N	Ν	55m	N/A			
					Cathe	edral						
C1 C2	3 Creggan Rd	Roadside	242913	417144	NO ₂	Y	Y	2m	Y			
C3	6 Marlborough Terrace	Roadside	242921	417101	NO ₂	Y	Y	4.5m	Y			
C4	22A Creggan Street	Suburban	242959	417102	NO ₂	Y	Y	5.5m	Y			
C5	1 Windsor Terrace	Roadside	243017	417191	NO ₂	N	Y	3m	Y			
C6	14 Creggan Road	Roadside	242928	417148	NO ₂	Y	Y	4m	Y			
					Dales (Corner						
D1 D2 D3	Dales Corner	Roadside	244178	416760	NO ₂	N	Y	3m	Υ			
D4	52 Clooney Terrace	Urban Centre	244210	416714	NO ₂	N	Y	6.5m	Y			
D5	5 Glendermott Road	Roadside	244238	416753	NO ₂	Ν	Y	2m	Υ			
E1 E2	4 Ebrington terrace	Roadside	244219	416794	NO ₂	N	Y	4m	Υ			
E4	17 Melrose Terrace	Roadside	244190	416754	NO ₂	N	Y	3m	Y			
Farren Park												
F1	3 Farren Park	Suburban	243884	418678	NO ₂	N	Y	15m	Y			
					Penny	/burn						
P1	53 Messines Park	Suburban	243449	419013	NO ₂	Ν	Y	14m	Y			
P2	57 Messines Park	Suburban	243418	419016	NO ₂	N	Y	11m	Y			
P3	19 St Patricks Terrace	Roadside	243480	418970	NO ₂	Ν	Y	5m	Y			
P4	5 Collon Terrace	Roadside	243519	418921	NO ₂	N	Y	5m	Y			

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?			
	Strand Road										
S1	99 Strand Road	Roadside	243522	417894	NO ₂	N	Y	3m	Y		
S2	Rockmills	Urban Centre	243607	418037	NO ₂	N	Y	10m	Y		
					Abercor	n Road					
AB1	63 Abercorn Road	Roadside	243166	416211	NO ₂	N	Y	2m	Y		
AB2	8 Abercorn Road	Roadside	243422	416230	NO ₂	N	Y	2.5m	Y		
CH1	10 Cheadle Park	Suburban	245701	416186	NO ₂	N	Y	33m	Y		
					Triar	ngle					
TR1	1 Clooney Terrace	Suburban	244202	416493	NO ₂	N	Y	10m	Y		
TR2	17 Duddy's Court	Suburban	244202	416479	NO ₂	N	Y	9m	Y		
				-	Francis	Street					
FS1 FS2	3 Francis St	Roadside	243084	417075	NO ₂	Ν	Y	2m	Y		
FS3 FS4	47 Francis St	Roadside	243110	417225	NO ₂	N	Y	1.5m	Υ		
				-	Glenga	lliagh	-				
GL1	38 Glengalliagh Park	Suburban	243122	419915	NO ₂	Ν	Y	21m	Y		
GL3	7 Capall Court	Suburban	243912	420720	NO ₂	N	Y	23m	Y		
GL4	49 Bradley Park	Suburban	243756	420392	NO ₂	N	Y	12m	Υ		
					John S	Street					
JS1 JS2	10 John St	Roadside	243627	416308	NO ₂	N	Y	2m	Y		
JS3 JS4	12 John St	Roadside	243602	416279	NO ₂	N	Y	2m	Y		

Date (May, 2011)

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?	
					Race	course			
RC1	76 Racecourse Road	Suburban	243889	420061	NO ₂	Ν	Y	8	Y
RC2	1 Castleview Park	Suburban	243886	419842	NO ₂	Ν	Y	9	Y
RC3	31 Balmoral Ave	Suburban	243658	419416	NO ₂	Ν	Y	10	Y
RC4	1 Maybrook Park	Suburban	243578	419311	NO ₂	Ν	Y	9	Y
					Spence	er Road			
SP1 SP2	70 Spencer Road	Roadside	244011	416068	NO ₂	Ν	Y	2	Y
SP3 SP4	92 Spencer Road	Roadside	244070	416419	NO ₂	Ν	Y	2	Y
	The Housing Executive								
THE1	Glendermott Road	Urban Centre	224247	416705	NO ₂	N	Y	22	Y
THE2	Glendermott Road	Urban Centre	224238	416708	NO ₂	Ν	Y	20	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

Automatic monitoring of NO_2 was undertaken at two locations; Brooke Park and Dale's Corner. According to Table 2.3a, data capture at Brooke Park was good at 99% in comparison to poor data capture at Dale's Corner at 77%. In accordance with LAQM TG(09) the annual mean concentration recorded at Dale's Corner was subsequently seasonally adjusted, with details of the procedure and factors applied provided in Appendix A. The data provided in Table 2.3a is fully ratified.

The annual mean concentration recorded at Brooke Park remains well below the UK annual mean objective of 40 μ g/m³ in 2010, which is consistent with the previous two years. At Dale's Corner, however, the 2010 Annual Mean Concentration is above the objective. According to Figure 2.3, concentrations recorded at this site since 2007 have remained close to or above the objective. This site is located at relevant public exposure, but just outside the soon to be declared Dale's Corner AQMA.

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	Aı concer	Annual mean concentrations (μg/m³)		
			1714	%	2010 [°] %	2008	2009	2010	
Brooke	X 242962	N	N	99	99	18 5	15 8 ^a	19.2	
Park	Y 417217			55	00	10.0	10.0	10.2	
Dale's	X 244178	N	V	77	77	40.2	20.0	12 2 ^b	
Corner	Y 416760	IN	Ι	11		40.2	39.0	43.2	
a Taken from 2010	0 Progress Report								

b Annualised (refer to Appendix A)



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

Table 2.3b shows that there were eight exceedences of the hourly mean standard recorded at the Dale's Corner monitoring site and none at the Brooke Park site. Given the low data capture more exceedences would be anticipated for the whole year, but as demonstrated by the 99.8th percentile being below 200, the objective of 18 exceedences was not threatened.

Table 2.3b Results of	Automatic Monitoring for Nitrogen Dioxide: Comparison wit	th 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 %	hourly mean (200 μg/m ³) (for data capture < 90 99.8 th percentile of hou means included in brack 2008 ^c 2009 ^c 20		ences of /m ³) < 90% f hourly prackets) 2010
Brooke Park	X 242962 Y 417217	Ν	Ν	99	99	0	0 (79.6)	0
Dale's Corner	X 244178 Y 416760	Ν	Y	77	77	11	0	8 (138)

Diffusion Tube Monitoring Data

Annual Mean Concentrations recorded from 2008 to 2010 are summarised in Table 2.4. The unadjusted (2010) data are provided in Appendix A.

Until April 2009 Bureau Veritas Laboratories prepared and analysed the diffusion tubes. Between April 2009 and April 2010 Derry City Council switched to use the Gradko labs for preparation and analysis of NO_2 diffusion tubes analysis but then switched back to

Environmental Scientifics Group (formerly Bureau Veritas) from April 2010 who used the 20% TEA in water preparation.

Bias adjustment factors for 2008 and 2009 were extracted from the 2010 Progress Report. Results from 2010 have been bias adjusted using both the national factor of 0.85 (Defra, 2011) and a local factor of 0.99 derived from two co-located studies. In addition, the results were seasonally adjusted as data capture was 75% or less at each site. Further details of the bias adjustment and seasonal adjustment factors and QA/QC procedures are provided in Appendix A. However, clearly use of the local factor results in considerably higher concentrations.

According to Table 2.4 exceedences of the Annual Mean Objective of 40 μ g/m³ were recorded at fourteen sites if the national bias adjustment factor is applied in comparison to six sites in 2009. Similarly to 2009, the diffusion tubes located within the designated AQMA at the Creggan Road/Infirmary Road Junction, C1/C2, C4 and C6, exceeded the objective, with the highest recorded concentration in Derry of 79 μ g/m³ located here. The monitoring site at 6 Marlborough Terrace, also located within this AQMA, recorded an exceedence, although for the previous two years concentrations were below the objective.

Exceedences recorded at Glendermott Road (D5) and 4 Ebrington Terrace (E1/E2) are located within the soon to be declared Dale's Corner AQMA. The triplicate diffusion tubes sited at the Dale's Corner AURN recorded an annual mean concentration just below the objective at 37 μ g/m³, whereas the Dale's Corner continuous monitor recorded a concentration of 43 μ g/m³. Other sites in close proximity to this proposed AQMA, such as D4 and E4 (refer to Figure 2.2), have continued to monitor concentrations below the objective; thus confirming the correct extent of the new Dale's Corner AQMA.

Monitoring sites within the soon to be declared Buncrana Road/Racecourse Junction AQMA have also recorded concentrations above the objective. Concentrations recorded at P4 are consistent with those in previous years; however, P3 at 19 St Patricks Terrace recorded its first exceedence in 2010. P1 and P2 are located near to this AQMA and have continued to monitor concentrations below the objective, thus confirming the correct extent of the AQMA.

In addition to these three areas, the 2010 monitoring data identified several new sites where concentrations breached 40 μ g/m³, although all recorded concentrations below 44 μ g/m³. These areas include:

- Strand Road (S1 and S2);
- Abercorn Road (AB1) near the junction with Bishop Street;
- John Street (JS1/JS2 and JS3/JS4); and
- Spencer Road (SP1/2) to the south of Fountain Hill.

The monitoring sites at Francis Street, Spencer Road and John Street were installed in 2009 with the view to undertake a detailed assessment if exceedences were recorded.

In accordance with LAQM TG(09) diffusion tube data has been adjusted using both a local bias adjustment and a national bias adjustment factors. For reporting purposes the national biased adjustment factor has been applied as data capture for the co-located diffusion tubes at Dale's Corner and Brooke Park are 75% with January, February and March data missing due to change of laboratory with different analysis methodology. In addition data capture for June, July and August at the Dale's Corner continuous monitor was less than 67% and therefore were not used to determine the adjustment factor.

Table 2.4 presents concentrations using both the local and national bias adjustment factors for comparison. If the local adjustment factor is applied, sites including 52 Clooney Terrace (D4), 17 Melrose Place (E4), 57 Messines Park (P2) and Francis Street (F1/2 and FS3/4) now

exceed the Annual Mean Objective. Due to the uncertainty of the local adjustment factor a Detailed Assessment will not be undertaken at these sites but monitoring will continue.

With respect to the hourly NO₂ objective, there could be a potential risk of exceedence of this short-term objective, where the annual mean NO₂ concentration is above $60\mu g/m^3$. The duplicate site at 3 Creggan Road is the only site which recorded a concentration above $60 \mu g/m^3$ and so could potentially exceed the short term objective.

Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes

			Relevant	Data Capture	Data Capture	Ann	ual mear	n concen	trations	(µ g/m³)
Site ID	Location	Within AQMA?	public exposure? Y/N	for monitoring period ^a %	for full calendar year 2010 %	2008ª	2009 ^b (National Biased Adjustment Factor)	2009 ^c (Local Biased Adjustment Factor)	2010 ^{d,f} (National Biased Adjustment Factor)	2010 ^{e,f} (Local Biased Adjustment Factor)
A1 A2 A3	Brooke Park AURN	Ν	Ν	75	75	15	15	16	17	20
C1 C2	3 Creggan Ro	Y	Y	71	71	63	62	64	79	94
C3	6 Marlboroug Terrace	Y	Y	75	75	37	35	37	40	48
C4	22A Creggan Street	Y	Y	75	75	41	40	42	45	54
C5	1 Windsor Terrace	Ν	Y	75	75	31	22	23	19	23
C6	14 Creggan Road	Y	Y	75	75	38	39	41	54	63
D1 D2 D3	Dales Corner	Ν	Y	75	75	33	33	35	37	44
D4	52 Clooney Terrace	Ν	Y	75	75	27	29	30	34	41
D5	5 Glendermott Road	Y	Y	67	67	53	46	48	60	71
E1 E2	4 Ebrington Terrace	Y	Y	67	67	47	52	54	57	68
E4	17 Melrose Terrace	Ν	Y	58	58		26	27	34	41
F1	3 Farren Park	Ν	Y	75	75	29	26	27	29	34
P1	53 Messines Park	Ν	Y	75	75	21	26	27	25	29
P2	57 Messines Park	Ν	Y	75	75	26	27	28	35	41
P3	19 St Patricks Terrace	Y	Y	50	50	42	35	28	43	51
P4	5 Collon Terrace	Y	Y	67	67	43	40	42	44	52
S1	99 Strand Road	Ν	Y	75	75	36	36	37	44	52
S2	Rockmills	N	Y	75	75	37	35	37	41	48
AB1	63 Abercorn Road	Ν	Y	67	67	38	35	36	40	47
AB2	8 Abercorn Road	Ν	Y	75	75	33	30	31	34	40
CH1	10 Cheadle Park	Ν	Y	75	75		17	18	18	21
TR1	1 Clooney Terrace	Ν	Y	75	75	32	22	22	22	27
TR2	17 Duddy's Court	N	Y	75	75		20	21	26	30
FS1 FS2	3 Francis St	Ν	Y	75	75		30	31	36	42

Date (May, 2011)

Derry City Council - Northern Ireland

			Relevant	Data Capture	Data Capture	Annual mean concentrations (μg/m³)					
Site ID	Location	Within AQMA?	public exposure? Y/N	for monitoring period ^a %	for full calendar year 2010 %	2008 ^a	2009 ^b (National Biased Adjustment Factor)	2009 ^c (Local Biased Adjustment Factor)	2010 ^{d,f} (National Biased Adjustment Factor)	2010 ^{e,f} (Local Biased Adjustment Factor)	
FS3 FS4	47 Francis St	Ν	Y	75	75		37	39	38	44	
GL1	38 Glengalliagh Park	Ν	Y	67	67		22	22	21	25	
GL3	7 Capall Court	Ν	Y	75	75		19	19	25	30	
GL4	49 Bradley Park	Ν	Y	75	75		19	19	24	28	
JS1 JS2	10 John St	Ν	Y	75	75		35	37	40	47	
JS3 JS4	12 John St	Ν	Y	63	63		36	37	41	48	
RC1	76 Racecourse Road	Ν	Y	75	75		24	25	21	25	
RC2	1 Castleview Park	Ν	Y	75	75		18	19	20	23	
RC3	31 Balmoral Ave	Ν	Y	75	75		20	21	21	25	
RC4	1 Maybrook Park	Ν	Y	75	75		26	27	28	34	
SP1 SP2	70 Spencer Road	Ν	Y	75	75		38	40	43	51	
SP3 SP4	92 Spencer Road	Ν	Y	71	71		34	35	35	41	
THE1	Glendermott Road	Ν	Y	75	75				6	7	
THE2	Glendermott Road	Ν	Y	67	67				21	25	

A 2008 biased adjustment factor 0.83 taken from 2010 Progress Report

B 2009 national biased adjustment factor 0.90 taken from 2010 Progress Report

C 2009 local biased adjustment factor 0.93 taken from 2010 Progress Report

D 2010 national biased adjustment factor 0.85 (see Appendix A)

E 2010 local biased adjustment factor 0.99 (see Appendix A)

F data annualised



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



2.2.2 PM₁₀

Derry City Council undertook monitoring of PM_{10} by automatic analysers at two locations in 2010; Brooke Park AURN and Brandywell.

The Annual Mean Concentrations at both sites in 2010 continued to record concentrations well below the objective (40 μ g/m³) (Table 2.5a). TEOMs were used to monitor PM₁₀ concentrations at Brandywell and Brooke Park AURN and so the data is corrected using the 1.3 correction factor. The Brooke Park monitor was upgraded to FDMS in 2008 and therefore required no correction. Data capture was low at Brooke Park at only 73%. According to LAQM TG(09) this data requires seasonal adjustment. In addition to Brooke Park there are two PM₁₀ background monitoring sites in Northern Ireland; Belfast Centre and Lough Navar. Both, however, have data capture less than 77% and so were unsuitable for use in the calculating a seasonal adjustment factor. Consequently Brooke Park AURN data was not seasonally adjusted.

Annual Mean Concentrations at both sites have remained relatively constant over the past 3 years.

Site ID		Within	Data Capture	Annual mean concentrations (μg/m³)			
	Location	AQMA?	for 2010 %	2008	2009	2010	
Brooke Park	X 242962 Y 417217	Ν	73	23.2 ^ª	22.3	22.5 ^b	
Brandywell	X 242866 Y 416309	Ν	92	22.1 ^a	20.1 ^a	21.8ª	

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

^aTEOM data multiplied by 1.3

^b not seasonally adjusted

The number of exceedences of the daily mean objective has increased in 2010 compared to 2009. Although both sites remain below the permitted 35 exceedences per year.

Table 2.5b Results of PM ₁₀ Automatic Monitoring: Comparison with 24-hour Mear	ı
Objective	

Site ID	Location	Within AQMA?	Data Capture 2010 ^b %	for data capture < 90%, the 90 percentile of daily means includ in brackets.		
				2008	2009	2010
Brooke Park	X 242962 Y 417217	N	73	13 (36.7)	10 (39.0)	21(39.7)
Brandywell	X 242866 Y 416309	N	92	9 ^c	7 (32.4) ^e	20



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2.2.3 Volatile and Non-volatile Components of PM₁₀

There is no statutory requirement to report the fraction distribution of particulates. However, the FDMS at Brooke Park AURN measures both fractions, shown in 2.6 below. The result for 2010 show PM_{10} is largely comprised of non-volatile particulates.

Table 2.0 - Fili ₁₀ Monitoring. Comparison with Annual Mean Objective	Table 2.6 - PM	10 Monitoring:	Comparison wi	ith Annual Mean	Objective
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Site ID	Location	Component of PM ₁₀	Data Capture 2010 %	2010 Annual Mean Concentration (µg/m³)
	X 242962 Y 417217	Volatile	73	3.3
Brooke Park		Non-volatile	73	19.2
		Total	73	22.5

2.2.4 Sulphur Dioxide

Sulphur dioxide is measured at Brooke Park and Brandywell monitoring locations. Results for 2009 are in Table 2.7 below.

Concentrations at neither sites exceeded the 15 minute, 1-hour or 24-our objectives. Data capture at the Brandywell monitoring site were less than 90% but have not been annualised.

			Data Capture for	Data	Number of Exceedences of: (µg/m³)			
Site ID	Location	Within AQMA?	Monitoring Period %	Capture 2010 %	15-minute Objective (266 μg/m³)	1-hour Objective (350 µg/m³)	24-hour Objective (125 µg/m ³)	
Brooke Park	X 242962 Y 417217	Ν	95	95	0	0	0	
Brandywell	X 242866 Y 416309	Ν	90	90	0	0	0	

Table 2.7 Results of SO₂ Automatic Monitoring: Comparison with Objectives

2.2.5 Benzene

No monitoring of benzene is undertaken within the Local Authority. The 2006 USA concluded that concentrations recorded in the Belfast area were well below the Air Quality Strategy Standards. It was thus concluded that the objectives in place for benzene were unlikely to be exceeded within Derry City (DCC, 2006), and this is still considered the case.

2.2.6 Other pollutants monitored

Ozone

Ozone is a transboundary pollutant measured as 8-hour running mean, and exceedences calculated on the maximum 8-hour running mean in a 24 hour period. Results for 2008 and 2009 were taken from the 2010 Progress Report. In 2010 no exceedences of the Maximum 8 hour Running mean were recorded. According to the Air Quality Standards regulations

2010 the target of 120 μ g/m³ should not be exceeded on more than 25 days per calendar year averaged over three years. The concentrations recorded at Brooke Park reveal that this target was not breached.

Site ID	Location	Within AQMA?	Data Capture 2009	Numk Maximu	er of Exceed m 8-hour Run (120 μg/m ³)	ences of ning Mean)
			%	2008	2009	2010
Brooke Park	X 242962 Y 417217	Ν	86	10	4	0

Table 2.8 Results of Ozone	Automatic Monitoring	n [.] Comparisor	with Objectives
	Automatic mornioring	j. oompansoi	

Carbon monoxide

Carbon monoxide ceased to be monitored at Brooke Park AURN after September 2008.

PM_{2.5}

The 2010 results show that data capture was too low to determine whether the target of $25 \ \mu g/m^3$ by 2020 would be achieved. Data were not annualised due to the lack of available background PM_{2.5} monitoring sites. However, the results can conclude that the non-volatile particulates make-up the greater proportion of the total PM_{2.5} monitored.

Table 2.9 Results of PM_{2.5} Automatic Monitoring: Comparison with Objectives

Site ID	Location	Component of PM _{2.5}	Data Capture 2010 %	2010 Annual Mean Concentration (μg/m³) (target 25 μg/m³)
		Volatile	60	3.7
Brooke Park	X 242962 Y 417217	Non-volatile	60	15.6
		Total	60	19.3

2.2.7 Summary of Compliance with AQS Objectives

Continuous monitoring of NO_2 is undertaken at Brooke Park AURN and Dale's Corner. At Dale's Corner the Annual Mean Concentration was above the objective and eight exceedences of the hourly standard were recorded in 2010; although this is still within the permitted allowance of 18 exceedences. At Brooke Park, data capture was good and monitored concentrations met both the annual mean and short term objectives.

Non-automatic monitoring of NO₂ using passive diffusion tube is conducted across Derry. Since 2009, two sites have been added to the network; with one part of a study to examine NO₂ concentrations inside an office building close to an AQMA. Concentrations within the Creggan Road / Infirmary Road AQMA and soon to be declared Dale's Corner and Buncrana Road / Racecourse Road junction AQMAs have continued to record exceedences of the annual mean objective. In 2009 diffusion tubes were located at Francis Street, Spencer Road and John Street with the view that if exceedences were recorded a detailed assessment would be required. Although concentrations below the objective were recorded in 2009; exceedences at Spencer Road and John Street were recorded in 2010. In addition concentrations above the objective were monitored at Francis Street if the less conservative (higher) local bias adjustment factor was applied. Other areas of where concentrations were above the objective include Strand Road and Abercorn Road.

Derry City Council monitors PM_{10} at Brooke Park and Brandywell. Concentrations measured at both sites were well below the annual mean objective. A significant increase in the number of exceedences of the daily mean were recorded at both sites in 2010 compared to 2009. Although neither site exceeds the permitted allowance of 35 exceedences.

At Brooke Park and Brandywell sulphur dioxide is additionally monitored. There were no exceedences of the 15min, 1hour or 24 hour objective at either site.

Ozone was monitored at the Brooke Park. Concentrations did not exceed the limit of $120 \ \mu g/m^3$ for the 8-hour running mean.

Monitoring of $PM_{2.5}$ was also undertaken at Brooke Park. Although data capture was low at 60%, the results were not seasonally adjusted due to a lack of available background $PM_{2.5}$ monitoring sites in Northern Ireland. The mean concentration, 19.3 µg/m³, was below the 2020 objective of 25 µg/m³.

Derry City Council has measured concentrations of Nitrogen Dioxide above the annual mean objective at relevant locations outside of the AQMA, and **will need to proceed to a Detailed Assessment**, for the following areas:

- John Street
- Spencer Road
- Abercorn Road
- Strand Road

The following areas exceed the annual mean objective but only if the less conservative local bias adjustment factor is applied:

- Francis Street
- Clooney Terrace

- Melrose Terrace
- Messines Park

A Detailed Assessment will not be undertaken due to the uncertainty in the local factor, however, monitoring will continue.

3 New Local Developments

3.1 Road Traffic Sources

There are no new road traffic sources since the last Updating and Screening Assessment which require further consideration.

3.2 Other Transport Sources

There are no new other transport sources since the last Updating and Screening Assessment which require further consideration.

3.3 Industrial Sources

There are no industrial sources which require further consideration..

3.4 Commercial and Domestic Sources

There are two new Part C (NI) processes that have been permitted; a dry cleaners and a small waste oil burner.

A proposed dry cleaner called Clean 'N' Press, located at 8b Main Street, Eglinton, has been issued a permit (PPC/11/C/0048) under Regulation 10 of the Pollution Prevention and Control (NI) Regulations 2003. The permit sets out guidelines for the operation of the installations, emission limits i.e. no more than 20g of solvent per kg of product cleaned and dried shall be emitted, guidelines on storage handling, specifically cleaning solvents containing VOCs, maintenance procedures.

D&M Farm Services Ltd, located at 36 Carmoney Road, Eglinton, is permitted to operate two waste oil burners, each with a 0.029MW rated thermal input, manufactured by Thermobile, and identified as model type AT307 subject to compliance with the conditions set out in the permit (PPC/10/C/0048). These conditions include:

- Only hydrocarbon based oils arising from the draining of engines, gearboxes and other lubrication systems at the premises shall be burned on the permitted appliances;
- At no time shall the following substances be burnt on the permitted appliances:
 - a) any halogenated materials
 - b) polycyclic or polyaromatic compounds arising other than by use as a lubricating oil
 - c) low temperature flash point fuels, oils or solvents (less than 40°C determined by the Pensky-Marten closed cup method)
 - d) surface coating materials, e.g. paint; and
- Where any modification(s) to the permitted combustion appliances is/are intended, with the exception of the fitting of standard replacement parts, details of the modification shall be notified to the Environmental Health Department of Derry City Council and approval obtained prior to the modification being undertaken.

Both these premises are located in Eglinton, over 6.5km from Derry City and therefore are unlikely to impact air quality in Derry City.

3.5 New Developments with Fugitive or Uncontrolled Sources

Sources of fugitive or uncontrolled particulate matter include three waste transfer stations, all of which are licensed with NIEA Waste Management Section:

- **Glassdon Wastes, Campsie Industrial Estate:** Non-Hazardous Transfer of municipal waste namely dry recyclable waste paper, cardboard, plastic bottles, metal cans and similar materials. Quantities are not specified in their Waste Licence.
- **City Industrial Waste Limited, 70 Mobuoy Road, Campsie:** Non-Hazardous Treatment and Transfer Materials Recycling Facility – sorting, shredding, baling, crushing, screening, rinsing and storage of waste. Maximum of 74,999 tonnes per year
- Brickkiln Waste Limited, Electra Road, Maydown: Non-Hazardous Treatment and Transfer Materials Recycling Facility sorting, shredding, baling, storage of waste. Maximum of 150,000 tonnes per year
- Brickkiln Waste Limited, Enviroparc, Electra Road, Maydown: Hazardous Treatment and Transfer Authorised Treatment Facility –depollution, dismantling and storage of end of life vehicles. Sorting, grading, baling, shredding, cutting, crushing, compacting and storage of scrap metal. Maximum of 70,000 tonnes per year but with a maximum of 11,700 tonnes to be stored at any one time.

All the sites have, or will have, enclosed buildings for the processes.

Derry City Council has identified the following new or previously unidentified local developments which may impact on air quality in the Local Authority area.

Dry Cleaners Small Waste oil burner Three Waste Transfer Stations

These will be taken into consideration in the next Updating and Screening Assessment, scheduled for 2012.

4 Local / Regional Air Quality Strategy

4.1 Derry Area Plan 2011

The Derry Area Plan 2011 is a Development Plan prepared by the Planning Service, an agency within the Department of the Environment under the provisions of Part III of the Planning (NI) Order 1991. The Plan promotes the concept of sustainable development based on the belief that conservation and development are not mutually exclusive alternatives. As part of the plan a City Development Limit has been established around all future development area beyond which there is a presumption of no further development. This separates Derry City from Culmore, Newbuildings and Strathfoyle and restricts future development to the periphery of the City although it is assumed that this will provide sufficient land for these developments to take place. Thirteen small settlements have been identified in the district which are smaller than villages and do not possess the same range of service provision; these have been selected for limited development such that the character will be reflected in the scale and style of each settlement. The total theoretical provision of future dwellings is 11,500 which is greater the 8,500 dwellings anticipated need.

The Plan outlined development zones within the City Development Limit in which future developments could take place provided that such developments met a number of conditions relating to design. These included the provision of open spaces in housing and commercial developments, satisfactory layouts for pedestrian and cycling linkages and roads layout and car parking and access provision. Proposals close to the City and preserving future access to adjacent parcels would be given greater importance. New Industrial developments in existing industrial areas would only be granted permission if they make full use of the existing infrastructure. Commercial development should consolidate the commercial centre of the City and would not lead to the detrimental impacts on the air quality and traffic movements.

4.2 The Regional Development Strategy

"Shaping Our Future" is a Regional Development Strategy (RDS) (updated in January 2011) which offers a strategic and long-term perspective on the future development of Northern Ireland up to the year 2035. The RDS strategy for Derry is the improvement and the enhancement of the natural environment, the economic and social opportunities and the encouragement of tourism to the area through improvements in the built environment and transport infrastructure and linkage to the natural gas network. The rural community has greater relevance to maintain the rural way of life whilst providing transport and economic opportunities in a sustainable way. Its overall aim is:

"to develop an attractive and prosperous rural area, based on a balanced and integrated approach to the development of town, village and countryside, in order to sustain a strong and vibrant rural community, contributing to the overall well-being of the Region as a wholeAs part of the review process an analysis of significant spatial trends was carried out to determine new challenges along with key policy drivers."

Specifically, changes to the policy, updated in January 2011, with regard to air quality are summarised below:

- Consideration needs to be given to ways to reduce energy consumption towards more sustainable methods of production;
- Reduce the need to use the car by designating neighbourhoods that have shops, offices, schools, churches, parks and other amenities near homes so that there are greater opportunities to use sustainable modes of transport;
- Adapt the existing transport network to facilitate the modal shift away from cars;

- Increase the use of renewable energies;
- Develop strong linkages between policies for managing air pollution and climate change; and
- Improve energy efficiency of buildings.

5 Planning Applications

The following planning applications have been approved since the 2010 Progress Report:

• A/2010/0524/RM: 180 general needs social housing development with vehicular access, West of St. Peter's Secondary School, Creggan, Derry.

6 Air Quality Planning Policies

Northern Ireland development plans are prepared by the Planning Service rather than local authorities. Derry Area Plan 2011 (refer to Section 5) sets out a number of policies in areas such as housing, industry and transport;

- **Policy TR1 Public Transport:** The Department will seek to ensure the development of a high quality public transport system accessible to all.
- **Policy TR 2 Traffic Management/Bus Measures**: The Department will seek to encourage public transport usage by according priority to bus movements where practicable.
- **Policy TR3 Cycling:** The Department will seek to increase cycle activity and provide safe facilities for cyclists.
- Policy TR 5 Car Parking Provision in New Developments: Car parking provision in new developments will be controlled on a zonal basis as follows:
 - Zone A the Commercial Core, in which only operational car parking (servicing and other essential operations) will normally be permitted.
 - Zone B the remainder of the Central Area and areas of mixed use elsewhere in the urban area, in which both operational and non-operational car parking will be required as determined by the Department.
 - Zone C all other areas in which full operational and non-operational car parking will normally be required.
- **Policy IND 1 Assessment of Industrial Proposals:** The Department will consider the scale of the development, any impact on amenity, heritage or nature conservation interest, the design and layout of the scheme, and whether the proposal is appropriate to the character of the area or settlement. The Department will require that all industrial development is carried out to the highest design standards including the provision of access and car parking arrangements.
- **Policy IND 4 Environmental Impact:** In considering planning applications for new industrial development, the potential impact on the environment will be assessed.

7 Local Transport Plans and Strategies

7.1 Sub-Regional Transport Plan

The Sub-Regional Transport Plan 2015 (SRTP) was developed following the guidance of the Regional Development Strategy and the Regional Transport Strategy. Its purpose is to provide more detailed plans for the urban and rural areas with the Sub-Region and highlights proposals specifically designed for Londonderry. The package of schemes needed to incorporate current and future transport needs and be flexible to accommodate future Government policy.

The SRTP identified separate packages of measures for walking and cycling, bus, rail and highways. These will be subject to availability of land and financial resources and relevant statutory procedures such as planning guidance.

- Walking proposals include: the provision of a continuous pedestrian network, designed and maintained to an appropriate standard and the in-fill of gaps in rural networks, footpaths which accommodate more easily buggies and mobility aids, additional crossing facilities with consideration to traffic flow and safety, upgrades to the existing pedestrian network from town centres to bus and rail stations. Traffic claming measures to facilitate crossing in rural areas. Provision of pedestrian links in new developments to the urban centres.
- **Cycling** proposals include: networks of cycling routes taking into consideration existing road widths and physical constraints of route sharing, cycling parking at rail and bus stations.
- Highway Measures town centres need to include traffic measures to lessen the forecast increase in traffic flows, reduction of bottlenecks at junctions, re-direction of traffic away from high-pedestrian flow areas. This may include new roads to new development areas which may be financed by the developer if the need is directly consequential to the new development, and /or new roads to reduce congestion in town centres or other sensitive areas.
- **Parking Measures** provision of short term car parking close to town centres with long stay parking sited further from urban centres, additional provision for blue badge holders, taxi ranks and loading bays, convenience to bus and rail stations.
- Public Transport Measures upgrade number of bus stops in town centres and well used routes from housing centres, improved accessibility for wheelchairs and buggies with low floor buses and better access to rail stations and platforms, bus priority for bus services especially at entry / exit of stations, the refurbishment or new bus and rail stations, if necessary, with disability parking to improve use. Additional taxi ranks with at least one on-street rank wherever practicable. In rural areas every settlement to have at least two modern stops with information on services, a canopy and close access to safe crossing if possible and may require the extension of routes into previously un-serviced settlements. The provision of Demand Responsive Services for mobility impaired residents in rural areas.

The improvement of the highways network through link road provisions is considered to lead to the improvement of air quality as adjacent roads would be relieved of traffic flow but may lead to dispersion over a wider area leading to diffuse worsening of air quality. Widening and junction improvements would reduce congestion and improve air quality on these roads and immediately adjacent roads.

Specifically for Derry-Londonderry there is limited provision of rail services to Belfast and there are no current plans to improve service provision. The co-ordinated bus service is inconvenient for the town centre so commuters have spilled into residential areas for free, unrestricted parking. A commuter coach service running between Derry and Belfast has proved very popular and taxi provision is good. The current problem for Derry is the increasing traffic flow, fuel tourism from the Republic of Ireland and long delays at junctions to the north of the City which have lead to worsening air quality. The Derry Local Transport Study looked at the limitations of the transport network in 2006 and proposed measures to improve transport and air quality. These were further outlined in the Derry Area Plan.

7.2 Derry Area Plan 2011

The Derry Area Plan 2011 outlined transportation needs in the immediate future in Derry City and the wider Derry-Londonderry district. The strategy of the Regional Transport Plan seeks to:

- encourage the use of alternative transport modes and reduce dependency on the private car,
- encourage accessible, reliable and popular public transport,
- maximise the efficiency of the existing transport network through review and implementation of low cost improvements;
- the development of appropriate road networks especially with regard to new industrial and housing developments;
- Implement road works focusing on improvement and upgrading of key strategic routes;
- Improve pedestrian links in the area.

Specific policies for the region are:

- **Policy TR 1: Public Transport** supporting developments in public transport by local operators to take advantage of improvements to the road network.
- **Policy TR 2: Traffic Measures and Bus Measures** bus priority measures will be considered in association with traffic management measures and may include bus priority signals and bus lanes along the Core Public Transport Route.
- **Policy TR 3: Improve cycling** facilities and encourage cycling by the development of a national Cycle Network, the implementation of a Riverside Strategy, new cycle routes, integration of cycling in new housing developments were possible, safe routes to school initiatives, and provision of cycle facilities.
- Policy TR 4: Access to Main Traffic Routes
- Policy TR 5: Car parking provision in new developments taking into consideration existing provision zone A (commercial) in which operational parking would be permitted, Zone B (central and mixed use developments) operational and no-operational parking would be permitted, Zone C (all other areas) in which full operational and non-operational parking would be permitted.
- **Proposal TR 1:** Strategic Highway Proposals include the recommendations of the Derry Transportation Study and include the following schemes:
 - Strand Road widening now substantially complete
 - Culmore Road widening
 - o Queens Quay widening
 - o Buncrana Road widening
 - o Glendermott Road and Dungiven Road widening
 - Skeoge Link Road
 - o Crescent Link dualling

- Maydown to Broadbridge dualling
- Newbuildings to Magheramason widening
- Culmore Road improvements

Local strategies for transportation are included in the Action Plan, specifically the following Measures:

- M1 to restrict the number of HGV vehicles on Creggan Road;
- M2 a targeted Travel Plan to promote alternatives to private car travel;
- M3, a car-sharing scheme in association with DRD Roads Service (NI), Travelwise Group and Donegal; and
- M25 and M16, to encourage cycling through the creation of a Cycling Forum.

7.3 Integrated Transport Strategy

The Urban Regeneration Company, ILEX-URC, was established to promote the physical, economic and social regeneration of the city with specific responsibility to manage and redevelop two former military bases of Ebrington (26 acres) and Fort George (14 acres).

ILEX-URC, as a lead partner in a steering group, commissioned the development of an Integrated Transport Strategy (ITS) for the Derry-Londonderry City region. The Steering Group was formed by an appointed transport planning consultancy with members including ILEX-URC, Derry City Council, Donegal CC, Londonderry Chamber of Commerce, Department of Social Development, North West Regeneration Office, DoE Planning Service, Department of Regional Development Roads Service, Translink and Sustrans. The remit of the group was to prepare the ITS, giving consideration to all modes of transport, integrated with land-use and regeneration for the city and city region including cross-border. The draft ITS was published in April 2009.

In February 2009 ILEX facilitated a Future Search visioning exercise with a representative cross section of our community with varied resources, expertise and formal authority to have a respectful and meaningful conversation about our past, our present and our future. 120 people from the City, the region and other parts of Northern Ireland worked together, to agree a single, shared vision and a set of clear regeneration objectives and priorities for the City. This led to the formation of 12 Sector Working Groups to look at common areas going forward with the development of a Regeneration Plan for the City and its region area. These included:

- Education& Skills
- Marketing the Derry Opportunity
- Development of City Region Assets
- Children and Young People
- Successful Neighbourhoods
- River Asset
- Enterprise and Employment
- Health and Well Being
- Environment & Conservation
- Citizenship and Civic Pride
- Transport and Infrastructure
- Tourism, Arts, Culture and Leisure

The sector working group on Transport and Infrastructure reviewed the ITS in the context of the proposed Regeneration Plan and identified the following priorities:

- Reduce congestion and reliance on the private car;
- Create an integrated public transport system;
- Promote safe and sustainable modes of transport; and
- Enhance access and connectivity to, from and within the region

The Regeneration Plan, launched on 24 June 2011, makes the following recommendations:

"As part of an overarching Integrated Transport Strategy a number of major projects have been proposed to create a fully integrated transport network. To ensure that there is an effective and efficient transport system operating it is essential that all of the elements of the strategy are implemented, one element will provide minor improvements but it is only through a co-ordinated approach that all elements will be implemented and real transformational changes to the network are achieved that will help target issues of accessibility"

The key projects are:

- Quality Bus Corridors (QBCs) and Feeder Taxi Services;
- Upgrade of the Rail Line and Rolling Stock;
- Upgrade of the A5 and A6 (to include the Atlantic Corridor);
- Orbital Link with the 3rd Road Bridge; and
- Implementation of Walking and Cycling Masterplan.

One of the key objectives of the strategy is to achieve a modal shift from the private car to other forms of transport. By offering a fully integrated network people have more attractive and efficient modes of travel to chose from and are less likely to rely on private transport and align with the City's commitment to sustainability."

The above proposals are a mixture of short, medium and long term objectives. Benefits to the AQMAs (existing and proposed) are difficult to assess but expected outcomes from their implementation will include:

- Improved Public Transport
- The proposed orbital route will remove HDV traffic from the city centre and congested areas associated with the AQMA
- Travel across the City will be more efficient and less congested
- Increased use of cycling and walking

The proposed steps are City wide proposals and will not negate the need to take other specific measures already mentioned in the Air Quality Action Plan.

8 Climate Change Strategies

8.1 Northern Ireland Climate Change Impacts Partnership

The Northern Ireland Climate Change Impacts Partnership (NICCIP) was established following the release of the 2007 DOE/Scotland and Northern Ireland Forum for Environmental Research (SNIFFER) report "Preparing for Climate Change in Northern Ireland". The NICCIP membership includes business, voluntary and government sectors to widen knowledge and impacts of climate change in Northern Ireland. It promotes adaptation of business and society to climate change and the development of discussion and ideas for the possibility and relevance of mitigation measures and cross-community strategies. The NICCIP produces a regular newsletter and is in the process of compiling a web-based list of contacts in Northern Ireland. It has also published "Climate Change: what will you do?" which is the findings of a survey of people, politicians and key decision makers.

The SNIFFER report on climate change addressed the two key challenges: to reduce emissions and to mitigate emissions. It outlined the likely future impacts on rain, soil moisture, weather patterns and wind speeds and sea level. It also outlined the impacts of climate change on:

- Biodiversity
- Agriculture
- Forestry
- Fisheries
- Water resources
- Coastal and flood risk
- Buildings, construction and planning
- Economic infrastructure business, insurance, transport, tourism and energy
- Social wellbeing health, sport and recreation,

The report recommended a multi-party approach to adapt to the climate change through the assessment of adaptive capacity and the delivery of adaptive actions:

Adaptive Capacity

- Increasing awareness, training and knowledge;
- Contribute to the development and use of climate change, and socio-economic scenarios;
- Review the regulatory and legislative frameworks with respect to climate change and the provision of incentives for adaptation;
- Contingency/ emergency planning;
- Incorporation of climate change into models, and impacts and adaptations into scheme specific assessments;
- Consideration of cross-sector implications of responses.

Delivery of Adaptive Actions

- Increasing resilience through diversification and buffer zones;
- Avoidance of losses (e.g. altering building materials) and the acceptance of unavoidable losses;
- Embracing changes through maximising opportunities, and exploiting new opportunities e.g. forestry management;

- Planning for risks and opportunities in new infrastructure projects (e.g. transport and construction);
- Changes to management practices to accommodate climate change;
- Managing heat gain, energy use and water and environmental deficiencies in building design and construction;
- Enhance health surveillance and responses to heat waves.

9 Conclusions and Proposed Actions

9.1 Conclusions from New Monitoring Data

Derry City Council has undertaken continuous monitoring at three sites in 2010; Brooke Park (NO₂, PM₁₀, SO₂, PM_{2.5} and Ozone), Dale's Corner (NO₂) and Brandywell (PM₁₀ and SO₂). Measured concentrations at all continuous monitoring sites were below the Air Quality Strategy objectives for each pollutant. The exception to this was the Roadside site at Dale's Corner where the annual mean NO₂ objective was exceeded.

Non-continuous monitoring of NO₂ using passive diffusion tubes is conducted at 38 sites across the city, of which, 14 exceeded the annual mean objectives. The majority of these sites were located within the existing or soon to be declared AQMAs; Creggan Road/Infirmary Road, Dale's Corner and Buncrana Road/Racecourse Junction. Following the conclusions of the 2009 USA, monitoring was subsequently undertaken on Francis Street, Spencer Road and John Street, with the view that if exceedences were recorded a Detailed Assessment would be required. Although no exceedences were recorded in 2009, diffusion tubes on Spencer Road and John Street breached 40 μ g/m³ in 2010. In addition exceedences were also recorded on Abercorn Road and Strand Road. Based on this a Detailed Assessment will be undertaken in these areas to determine if additional AQMAs are required.

Other pollutants monitored include PM_{2.5}, Ozone and Sulphur Dioxide. Recorded concentrations are all within the relevant air quality objectives.

9.2 Conclusions relating to New Local Developments

No new road, other transport or industrial sources have been identified in the district since the 2010 Progress Report.

There are two new developments which have been issued a permit under Regulation 10 of the Pollution Prevention and Control (NI) Regulations 2003; a small waste oil burner and a dry cleaners. In addition there are three waste transfer stations. All these will be further assessed in the 2012 Updating and Screening Assessment

9.3 Other Conclusions

Following the declaration of the AQMA at Dale's Corner and at Buncrana Road/Racecourse junction, the Air Quality Action Plan requires updating to incorporate a new set of measures to tackle air pollution at these two other locations.

9.4 **Proposed Actions**

Proposed actions arising from the Annual Progress Report are as follows:

- Proceed to a Detailed Assessment for John Street, Spencer Road, Strand Road Abercorn Road;
- Incorporate appropriate measures in the Action Plan to improve air quality in the soon to be designated AQMAs at Dale's Corner and Buncrana Road/Racecourse.
- Progress to the Updating and Screening Assessment by April 2012.

10 References

Air Quality Archive website, http://www.airquality.co.uk/archive/index.php (May 2011)

Defra (2011) National Diffusion Tube Bias Adjustment Factor Spreadsheet, version 04/11

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

Derry Area Plan 2011 (2006). Department for the Environment,

Derry City Council (2008) Detailed Assessment and Action Plan;

Derry City Council Updating and Screening Assessment 2009;

Derry City Council Progress Report 2010;

- Preparing for Climate Change in Northern Ireland. DoE/ Scotland and Northern Ireland Forum for Environmental Research, 2007;
- Shaping Our Future: Adjustments to the Regional Development Strategy (RDS) 2025; Department for Regional Development, June 2008;
- Sub-Regional Transport Plan 2015. Department for Regional Development, March 2007; and

The Northern Ireland Climate Change Partnership. <u>http://www.sniffer.org.uk/our-work/climate-change/niccip.aspx</u>

Appendices

Appendix A: QA/QC Data

Diffusion Tube Bias Adjustment Factors

The 2008 NO₂ diffusion tube were analysed by Environmental Services Group Ltd (formerly Bureau Veritas Laboratories); the method used was 10% TEA in water. The 2009 diffusion tubes were analysed by Gradko International Ltd using the newly published practical guidance of 20% TEA in water. The 2010 diffusion tubes were analysed by Environmental Services Group Ltd using 20%TEA in water. The national biased adjustment factor of 0.85 was determined from version 04/11 of the National Diffusion Tube Bias Adjustment Factor Spreadsheet.

Factor from Local Co-location Studies (if available)

Triplicate co-located studies are undertaken at the Dale's Corner and Brooke Park continuous analyser monitoring sites. Dale's Corner is a Roadside monitoring site while Brooke Park is classified as a background site.

Location	Diffusion Tube Data capture	Diffusion Tube Annual Mean * (µg/m ³)	Continuous Monitor Annual Mean ** (μg/m ³)	Ratio
Brooke Park AURN	75% (April- December)	17	16.8	0.91
Dale's Corner	75% (April- December)	38	41.3***	1.08
			Average	0.99

Table A.1: Local Bias Adjustment Factor

* Not seasonally adjusted

** April-December

*** Data capture less than 75% for June, July and August

Discussion of Choice of Factor to Use

In accordance with LAQM TG(09) diffusion tube data has been adjusted using both a local bias adjustment and a national bias adjustment factor. The local adjustment factor of 0.99 is an average of the two co-location studies at Dale's Corner and Brooke Park, while the national adjustment factor of 0.85 is more conservative. For reporting purposes the national biased adjustment factor has been applied as data capture for the diffusion tubes is 75% with January, February and March data missing. Nevertheless the implications of using the higher local factor is discussed in the text of the report.

PM Monitoring Adjustment

Derry City Council undertakes monitoring of PM_{10} at Brooke Park AURN and Brandywell. Although data capture was low at Brooke Park, the recorded concentrations have not been adjusted. The reason for this is that with the exception of Brandywell, data capture at PM_{10} background monitoring sites in Northern Ireland was below 77%. LAQM TG (09) requires data capture to be above 90% at a minimum of two sites in order to derive a seasonal adjustment factor.

Short-term to Long-term Data adjustment for NO₂

Derry City Council undertakes continuous monitoring of NO_2 at Brooke Park and Dale's Corner. Data capture at Brooke Park was 99% and at Dale's Corner was low at 77%. For each month where data capture was less than 75% at Dale's corner (February to March, June to August) the results were seasonally adjusted using the background sites at Belfast Centre and Brooke Park AURN. The seasonal adjustment procedure defined in LAQM.TG (09) Box 3.2 was followed.

Table A.2. Seasonal Adjustment Factor for Dale's Comer										
Site	Site Type	Annual Mean	Period Mean	Ratio						
Belfast Centre	Urban Centre	34.6	21.6	0.97						
Brooke Park	Background	19.3	35.6	0.89						
			Average	0.93						

Table A.2: Seasonal Adjustment Factor for Dale's Corner

Data capture for all diffusion tubes sites was < 75% due to a change of laboratory with different analysis methodology from April to December and therefore all sites were seasonally adjusted. The procedure outlined in LAQM.TG(09) Box 3.2 was followed using Brooke Park and Belfast Centre background sites to derive the factor.

Monitoring location	Monitoring duration	Uncorrected diffusion tube concentration*	Brooke Park annualisation factor	Belfast Centre annualisation factor	Average annualisation factor	
A1/A2/A3	April – Dec	15	1.17	1.12	1.15	
C1/C2	April – Dec	64	1.17	1.12	1.15	
C3	April – Dec	35	1.17	1.12	1.15	
C4	April – Dec	40	1.17	1.12	1.15	
C5	April – Dec	17	1.17	1.12	1.15	
C6	April – Dec	47	1.17	1.12	1.15	
D1/2/3	April – Dec	32	1.17	1.12	1.15	
D4	April – Dec	30	1.17	1.12	1.15	
D5	May -Dec	52	1.17	1.15	1.16	
E1/2	April – Nov	47	1.41	1.24	1.33	
E4	E4 April –Aug, Nov -Dec 32		1.06	1.06	1.06	
F1	April – Dec	25	1.17	1.12	1.15	
P1	April – Dec	22	1.17	1.12	1.15	
P2	April – Dec	30	1.17	1.12	1.15	
P3	April – Aug, Dec	36	1.25	1.11	1.18	
P4	May - Dec	38	1.17	1.15	1.16	
S1	April – Dec	38	1.17	1.12	1.15	
S2	April – Dec	36	1.17	1.12	1.15	
AB1	April – July, Sept - Dec	36	1.11	1.10	1.10	
AB2	April – Dec	30	1.17	1.12	1.15	
CH1	April-Dec	16	1.17	1.12	1.15	
TR1	April-Dec	20	1.17	1.12	1.15	
TR2	April-Dec	22	1.17	1.12	1.15	
FS1/2	April-Dec	31	1.17	1.12	1.15	
FS3/4	April-De	33	1.17	1.12	1.15	
GL1	April – May, July - Dec	19	1.11	1.10	1.10	

 Table A.3: Seasonal Adjustment Factor for the Diffusion Tube Data

Date (May, 2011)

Derry City Council - Northern Ireland

Monitoring location	Monitoring duration	Uncorrected diffusion tube concentration*	Brooke Park annualisation factor	Belfast Centre annualisation factor	Average annualisation factor
A1/A2/A3	April – Dec	15	1.17	1.12	1.15
GL3	April - December	22	1.17	1.12	1.15
GL4	April – Dec	21	1.17	1.12	1.15
JS1/2	April – Dec	35	1.17	1.12	1.15
JS3/4	Jan - June– Aug - Dec	38	1.10	1.09	1.09
RC1	April – Dec	18	1.17	1.12	1.15
RC2	April – Dec	17	1.17	1.12	1.15
RC3	April – Dec	18	1.17	1.12	1.15
RC4	April – Dec	25	1.17	1.12	1.15
SP1/2	June– Dec	37	1.17	1.12	1.15
SP3/4	June- Dec	30	1.17	1.12	1.15
TH1	April – Dec	5	1.17	1.12	1.15
TH2	May - Dec	18	1.17	1.15	1.16

*Bias adjusted using the national factor (0.85)

QA/QC of automatic monitoring

AEA Energy and Environment undertook the Quality Assurance/Quality Control (QA/QC) procedures at these monitoring sites during January and February 2009, ensuring that measurements from the analysers are as accurate as possible, and that measurements recorded at each site may be compared with other sites. From March 2009 onwards the QA/QC procedures for Derry Dale's Corner and Brandywell were conducted by the National Physical Laboratory. Brooke Park, as an AURN site remained with AEA Energy and Environment for QA/QC checks.

Manual calibration of automatic monitors is undertaken every two weeks by Derry City Council officers. This allows the instrument drifts to be fully quantified and documented using traceable calibration gas standards and the results are used to scale data. All calibration records are sent to AEA Energy and Environment (Brooke Park) or NPL (Derry Dale's Corner and Brandywell) who conduct the QA/QC checks.

The analysers are checked and serviced every six months by the equipment support contractors. The reports are sent to AEA Energy and Environment or NPL as appropriate who conduct the QA/QC checks.

QA/QC of diffusion tube monitoring

The Environmental Services Group Ltd (formerly Bureau Veritas laboratories) participates in the field intercomparison scheme and the Workplace Analysis Scheme for Proficiency (WASP) programme, operated by the Health and Safety Laboratory (HSL). In 2008, 11 out of the 15 collocation studies undertaken by Bureau Veritas labs using 10% TEA in water methodology were considered to be good precision (based upon v05/09 spreadsheet). Gradko International Ltd became the analytical laboratory in 2009, the method of preparation remained 20% TEA in water. Gradko also participate in the WASP and AEA Intercomparison schemes and in 2009, 29 out of 33 collocation studies undertaken were considered to be good precision (based on v31/09 spreadsheet). In 2010 the diffusion tubes were analysed by Environmental Services Group Ltd using the methodology of 20% TEA in water. Of the 10 collocation studies undertaken 5 were considered to be of good precision.

Derry City Council – Northern Ireland

Date (May, 2011)

Table A.4: Raw Diffusion Tube Data, 2010

Site	Jan	Feb	Mar	Apr	Мау	June	July	Aug	Sept	Oct	Nov	Dec	Months	Raw Average Concentration
A1/2/3				21	11	11	10	9	15	22	25	31	9	17
C1/2				91	66	65	64	76	75	86	82	90	9	76
C3				45	38	35	34	40	41	44	51	49	9	42
C4				57	38	41	40	41	48	50	56	54	9	47
C5				9	19	19	19	19	31	29	30	4	9	20
C6				56	57	71	39	51	48	52	63	64	9	56
D1/2/3				46	33	36	28	30	34	41	47	52	9	38
D4				44	27	29	21	20	30	33	42	75	9	36
D5					64	69	43	51	62	58	75	71	8	62
E1/2				69	28	56	41	50	57	59	72	70	9	56
E4				37	54	28	25	26			49	51	7	39
F1				29	24	23	21	23	26	34	40	47	9	30
P1				41	15	18	20	17	21	25	30	44	9	26
P2				54	32	37	23	25	30	34	40	48	9	36
P3				58	32	42	32	34				62	6	43
P4					33	30	40	40	51	48	58	65	8	46
S1				50	45	44	35	38	46	45	51	57	9	46
S2				51	31	30	28	30	58	44	49	60	9	42
AB1				46	37	34	33		44	48	54	50	8	43
AB2				22	44	35	26	26	31	36	43	54	9	35
CH1				31	12	21	6	11	15	18	26	28	9	19
TR1				28	21	11	10	17	22	27	34	40	9	23
TR2				49	20	16	10	20	24	31	32	37	9	27
FS1/2				44	38	37	15	31	37	38	49	49	9	37
FS3/4				36	35	41	16	31	39	46	53	55	9	39
GL1				26	17		8	14	24	26	28	37	8	23
GL3				59	16	16	6	14	16	38	30	39	9	26
GL4				50	20	19	7	15	19	24	29	42	9	25
JS1/2				50	52	39	19	31	42	43	50	49	9	41
JS3/4				36	41	38		69	44	42	53	52	8	45
RC1				30	18	18	7	15	18	21	29	40	9	22
RC2				25	15	13	11	11	17	24	29	38	9	20
RC3				32	17	17	6	14	21	25	29	36	9	22
RC4				64	23	22	10	9	30	30	36	41	9	29
SP1/2				56	41	42	20	35	45	54	55	55	9	45
SP3/4				45	35	39	14	28	35	41	46	47	9	36
TH1				1	1	10	4	8	8	6	6	8	9	6
TH2					9	19	8	18	18	24	32	43	8	21