



2010 Air Quality Progress Report for Belfast City Council

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

April 2010



Local Authority Officer	Arlene Jamieson
--------------------------------	-----------------

Department	Health and Environmental Services
Address	The Cecil Ward Building 4-10 Linenhall Street Belfast BT2 8BP
Telephone	028 9027 0428 Ext 3315
e-mail	jamiesona@belfastcity.gov.uk

Report Reference number	
Date	April 2010

Executive Summary

The Environment Order (NI) 2002 places a responsibility on councils to periodically review and assess air quality within their boundaries. As part of this process, Belfast City Council presents the 2010 Air Quality Progress Report.

This report has been undertaken in compliance with LAQM-TG(09) and focuses on the progress of implementing local air quality management; progress with Belfast City Council Air Quality Action Plan is also included.

It is encouraging to note the downward trends in urban background concentrations of nitrogen dioxide evident over the past 17 years of monitoring and an 11% reduction in annual means since 2005. However, despite this background reduction, monitored nitrogen dioxide results continue to show breaches of the annual mean objective within three of the four Air Quality Management Areas. Exceedences of the hourly mean nitrogen dioxide objective are also evident in the M1-Westlink AQMA. Both automatic and passive nitrogen dioxide monitoring along the Ormeau Road have for the last few years recorded concentrations below the objective. Such trends suggest it may be possible to revoke this AQMA; a Detailed Assessment is currently ongoing to determine if this is possible.

Again, trends at the urban background site show a sustained decrease in particulate matter (PM₁₀) over the past 18 years. Monitoring in the M1-Westlink AQMA has also recorded concentrations below both the annual mean and 24-hour objective in 2009. This area is also being considered in the ongoing Detailed Assessment as a result of the extensive road works recently undertaken.

Monitored levels of benzene and sulphur dioxide remain well below the objectives and show no reason for concern.

Previous rounds of assessment have confirmed that relevant Air Quality Objectives for carbon monoxide, benzene, 1,3-butadiene, lead and ozone are being met throughout the city. No new sources have been identified which would have the potential to change this situation therefore these pollutants will not be considered in this report.

Several new developments have occurred throughout Belfast since the 2009 Updating and Screening Assessment. These developments were identified during the planning application process and where necessary an air quality assessment was requested. The impact of these developments was then assessed and any necessary development specific mitigation measures were identified.

Since the Air Quality Action Plan was implemented in 2006, BCC and all partners have been pro-active in implementing the actions assigned to them. To date the total actions considered complete is 58%, with 38% still considered ongoing which is very encouraging. Of the 4% where there has been no progress to date it is unlikely some of these actions will be implemented in the foreseeable future.

Table of contents

1	Introduction	6
1.1	Description of Local Authority Area	6
1.2	Purpose of Progress Report	6
1.3	Air Quality Objectives	6
1.4	Summary of Previous Review and Assessments	8
2	New Monitoring Data	10
2.1	Summary of Monitoring Undertaken	10
2.2	Comparison of Monitoring Results with Air Quality Objectives	16
3	New Local Developments	26
3.1	Road Traffic Sources	26
3.2	Other Transport Sources	26
3.3	Industrial Sources	26
3.4	Commercial and Domestic Sources	27
3.5	New Developments with Fugitive or Uncontrolled Sources	27
4	Planning Applications	28
5	Air Quality Planning Policies	30
6	Implementation of Action Plans	31
7	Conclusions and Proposed Actions	55
7.1	Conclusions from New Monitoring Data	55
7.2	Conclusions relating to New Local Developments	55
7.3	Proposed Actions	55
8	References	56

Appendices

Appendix A: QA/QC Data	58
Appendix B: Belfast City Council Air Quality Management Area Location Map	62
Appendix C: Belfast City Council Air Quality Monitoring Station Details	63

List of Tables

Table 1.1	Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in Northern Ireland.	7
Table 2.1	Details of Automatic Monitoring Sites	12
Table 2.2	Details of Non- Automatic Monitoring Sites	14
Table 2.3a	Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with Annual Mean Objective	16
Table 2.3b	Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective	18
Table 2.4	Results of Nitrogen Dioxide Diffusion Tubes	19
Table 2.5a	Results of PM ₁₀ Automatic Monitoring: Comparison with Annual Mean Objective	21
Table 2.5b	Results of PM ₁₀ Automatic Monitoring: Comparison with 24-hour Mean Objective	22
Table 2.6	Results of SO ₂ Automatic Monitoring: Comparison with Objectives	23
Table 2.7	Results of Benzene Monitoring: Comparison with Running Annual Mean Objectives	24
Table 4.1	New Developments that had a potential to have a negative impact on air quality in the 2009-10 period	28
Table 6.1	Belfast City Action Plan Progress	32

List of Figures

Figure 1.1	Map of AQMA Boundaries	8
Figure 2.1	Map of Automatic and Non-Automatic Monitoring Sites	11
Figure 2.3	Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Automatic Monitoring Sites.	17
Figure 2.4	Trends in Annual Mean Particulate Matter PM ₁₀ Concentration Measured at Automatic Monitoring Sites.	21

1 Introduction

1.1 Description of Local Authority Area

Air quality in Belfast today is generally considered to be of good quality although in some areas certain pollutants remain a concern. Belfast experienced significant improvements with the introduction of the Clean Air Act and Smoke Control programme in the late 1960s which targeted domestic particulate and sulphur dioxide emissions. The impact of this programme was further augmented by widespread availability of natural gas within both the commercial and domestic sectors, which has had a beneficial effect on particulate and sulphur dioxide emissions. Industrial emissions are principally controlled via Industrial Pollution Control permitting legislation. Currently the predominant sources of air pollution in Belfast are from vehicle exhausts. Our heavy reliance on road transport produces fine particulate matter (PM₁₀ and PM_{2.5}) and nitrogen dioxide which contribute to the formation of low level ozone.

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).

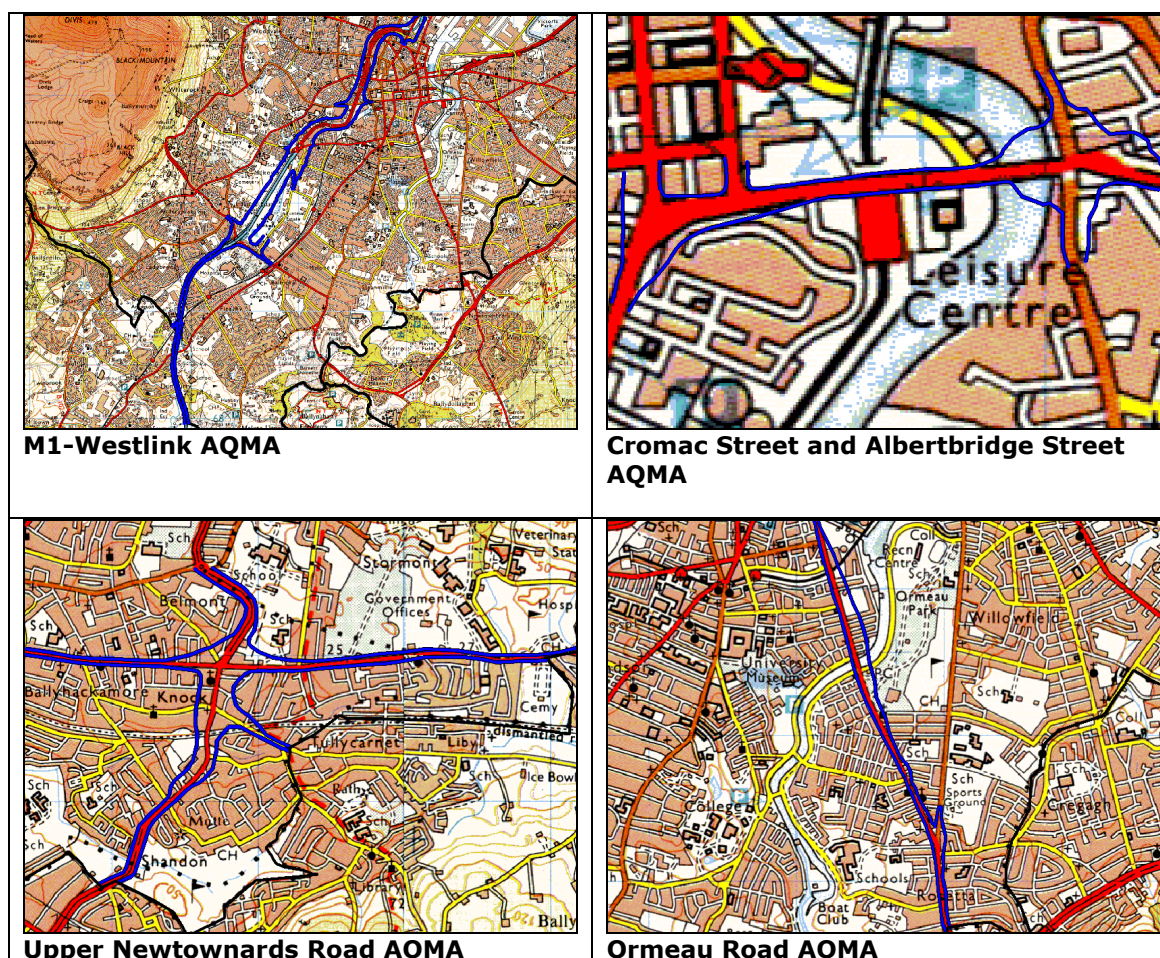
Table 1.1 Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in Northern Ireland.

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	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

As part of the review and assessment process Belfast City Council conducted a Second and Third Stage Review and Assessment of air quality throughout its area in 2004. This concluded that modelled exceedences of the nitrogen dioxide and particulate matter were occurring in the city and would continue to do so after 2010. Consequently, in August 2004 four Air Quality Management Areas (AQMAs) were declared, comprising the M1 Motorway and Westlink corridor, Cromac Street to the junction of Short Strand, Woodstock Link and the Albertbridge Road, the Upper Newtownards Road and the Ormeau Road. The M1-Westlink AQMA was declared on the basis that the annual mean and hourly mean nitrogen dioxide concentrations would exceed the 2005 Objective. Particulate matter (annual and 24-hour means) was also predicted to exceed the relevant objectives for this area. The three other areas were declared on the grounds that they would exceed the annual mean nitrogen dioxide objective. These areas are defined in Figures 1.1, a larger scale map showing AQMAs location is provided in Appendix B.

Figure 1.1 Map of AQMA Boundaries



In May 2006, Belfast City Council and 11 other parties published an Air Quality Action Plan setting out how air quality in these areas and across the city as a whole was to be tackled. In April 2006, Belfast City Council published their first Updating and Screening Assessment concluding that five further areas within the city required consideration. These areas underwent a detailed dispersion modelling exercise in 2007 however modelled results did not indicate it was necessary to declare any new AQMAs or extend or revoke existing AQMAs. The second Update and Screening Assessment was completed in April 2009 and concluded it was necessary to conduct a Detailed Assessment in a number of city centre locations, the Ormeau Road AQMA and the M1/Westlink Corridor AQMA, this Detailed Assessment is currently ongoing. The Review and Assessment process continually highlights the city centre as being particularly sensitive to potential exceedences of the nitrogen dioxide annual mean objective and consequently Belfast City Council increased their monitoring infrastructure in this area and continually review the situation.

The current stage in the Review and Assessment process is to conduct a Progress Report. This report follows Guidance LAQM.TG(09) issued by DEFRA and intends to identify any significant changes that have occurred since the previous stage of R&A which may have the potential to affect the localised air quality.

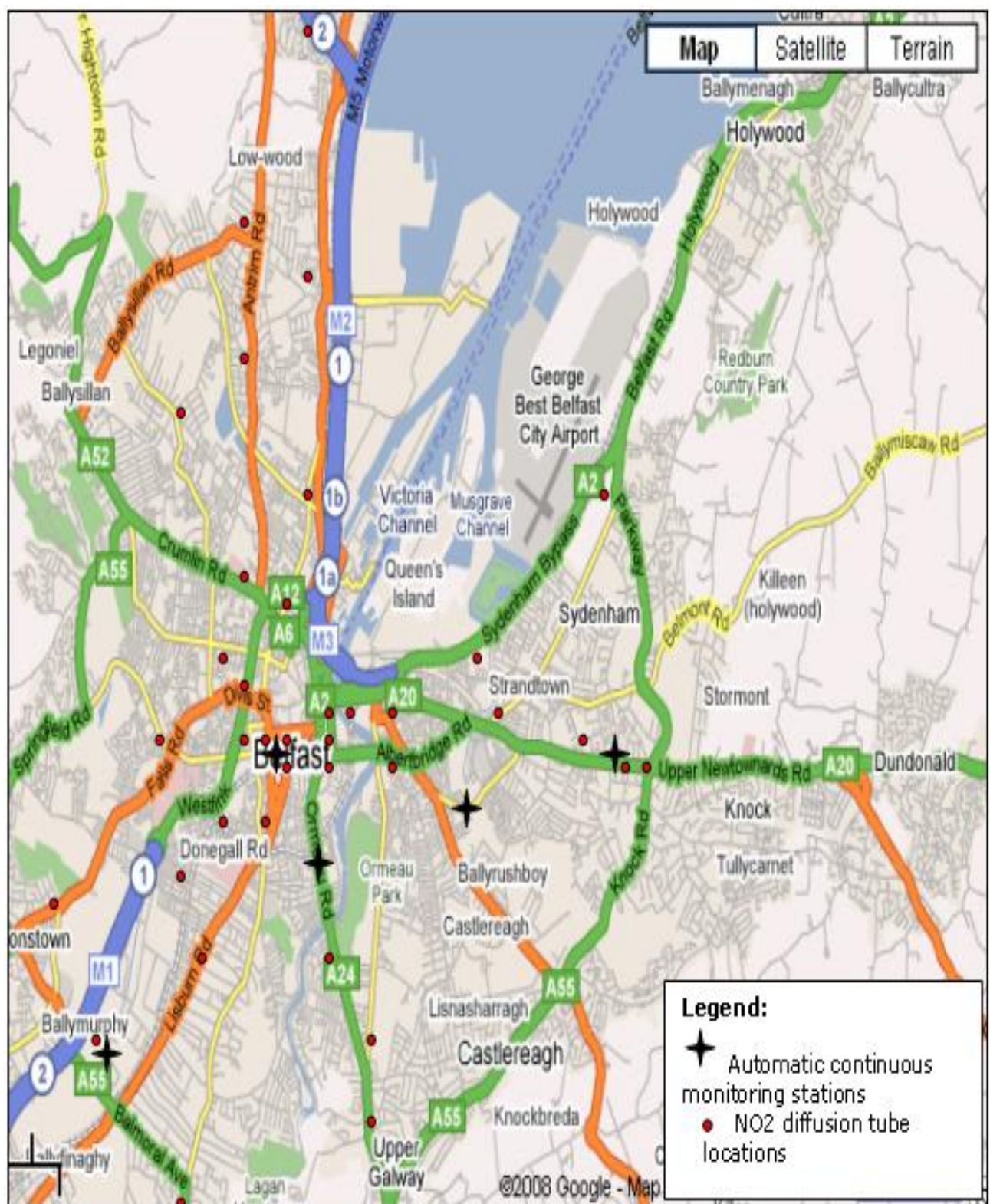
2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Continuous nitrogen dioxide concentrations have been monitored at the Belfast Centre site since 1992. This continuous real time nitrogen dioxide monitoring equipment is part of Defra's Automatic Urban and Rural Network (AURN). In April 2002, Belfast City Council established roadside continuous monitoring locations on the Upper Newtownards Road (Belfast Roadside site) and along the Westlink Corridor. In 2006, due to the major road rebuilding scheme along the M1-Westlink corridor the Westlink site was closed and relocated to the Stockman's Lane Site. In May 2006, a roadside continuous nitrogen dioxide monitoring station was established on the Ormeau Rd. A location map for monitoring sites relative to the Greater Belfast area can be found below in Figure 2.1; smaller scale location maps are provided in Appendix C and further site details are provided in table 2.1.

These council operated sites are calibrated and operated under the same principles as Defra's Automatic Urban and Rural Network, they undergo regular independent audits and the data is independently collated, scaled and verified before disseminating, further details on the QA/QC procedures can be found in appendix A.

Figure 2.1 Map of Automatic and Non-Automatic Monitoring Sites

Note: All locations are approximate and for reference purposes only.

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	Monitoring Technique	In AQMA?	Relevant Exposure?	Distance to kerb of nearest road	Does this location represent worst-case exposure?
Belfast Centre	Urban Centre	X 333898	Y374358	NO ₂	Chemiluminescence	N	Y (6.8m)	30m	Y
Belfast Ormeau Road	Roadside	X 334272	Y 373012	NO ₂	Chemiluminescence	Y	Y(10m)	3m	Y
Belfast Ballyhackamore	Roadside	X 337911	Y 373972	NO ₂	Chemiluminescence	Y	Y(10m)	3m	Y
Belfast Stockman's Lane	Roadside	X 331004	Y371230	NO ₂ PM ₁₀	Chemiluminescence FDMS	Y	Y(20m)	2m	Y

2.1.2 Non-Automatic Monitoring

In addition to the continuous monitoring stations, Belfast City Council utilise nitrogen dioxide diffusion tubes to monitoring throughout the city. These locations provide indicative annual mean concentrations of nitrogen dioxide throughout the city and are bias adjusted against co-located tubes at the Belfast Centre site in accordance with LAQM.TG(09). Diffusion tube QA/QC details which include the bias adjustment factor and adjusted tube data for 2009 is reported in appendix A. In 2007, Belfast City Council maintained 27 tube locations. Following a review of these locations and based on information from the Detailed Assessment (Belfast City Council, 2007), in April of 2008 the number of locations was increased to 40. These new locations focus on monitoring receptors near busy roads. They are used to evaluate any potential exceedences outside of the declared AQMAs and to highlight potential areas of concern for future investigation. This is particularly relevant in the City Centre where the potential for exceedences was highlighted in the 2009 Update and Screening Assessment. A location map for the monitoring sites can be found above in Figure 2.1 and further site details are provided in table 2.2.

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?
Royal Victoria Hospital	Urban Background	X332521	Y374488	NO ₂	N	1.93	N/A	Y
Black's Road	Roadside	X329782	Y374408	NO ₂	Y	>60	2.42	Y
61 Cromac Street	Roadside	X334220	Y371253	NO ₂	Y	13	2.7	Y
Ravenhill Road	Roadside	X335014	Y373972	NO ₂	Y	4.7	5.5	Y
Queen's Bridge	Urban Background	X334547	Y380450	NO ₂	N	13	N/A	Y
North Road	Urban Background	X337550	Y373122	NO ₂	N	On School Wall	>300	Y
Donegall Square South	Roadside	X333837	Y373877	NO ₂	N	25	5.15	Y
Milner Street	Roadside	X332476	Y372519	NO ₂	Y	>100	2.8	Y
Short Strand	Roadside	X334980	Y376602	NO ₂	N	30	1.14	Y
301 Ormeau Road	Roadside	X334503	Y375493	NO ₂	Y	0	8.63	Y
400 Ormeau Road	Roadside	X335006	Y369850	NO ₂	Y	0	10	Y
Knock Road	Roadside	X338718	Y373772	NO ₂	Y	30	1.48	Y
Great George's Street	Kerbside	X333981	Y374240	NO ₂	Y	25	0.5	Y
Lisburn Road	Kerbside	X332441	Y374123	NO ₂	N	1	0.9	Y
Shaftesbury Square	Roadside	X333594	Y373529	NO ₂	N	20	4.4	Y
Lombard Street	Urban Centre	X333898	Y373100	NO ₂	N	3.6	2.4	Y
Albert Clock	Roadside	X334212	Y373988	NO ₂	N	3.6	2.4	Y
Victoria Street	Roadside	X334200	Y371342	NO ₂	N	2.44	3.87	Y

Belfast City Council – Northern Ireland

April 2010

Stockman's Lane	Roadside	X331006	Y374232	NO ₂	Y	20	1.75	Y
Ballyhackamore	Roadside	X337911	Y375279	NO ₂	Y	9.4	2.91	Y
Whitewell Road	Roadside	X333562	Y376121	NO ₂	N	35	13	Y
Donegall Road	Kerbside	X333021	Y378045	NO ₂	N	1.96	0.82	Y
Grosvener Road and Falls Road	Roadside	X332251	Y376383	NO ₂	N	0.03	3.06	Y
Falls Road and Andersonstown	Roadside	X330715	Y378199	NO ₂	N	15	2.8	Y
Knocknagoney Road (Sydenham Bypass)	Suburban	X338298	Y374488	NO ₂	N	10	40.43	Y
Station Road	Roadside	X337181	Y374408	NO ₂	N	20.1	2.41	Y
House of Sport	Roadside	X332373	Y371253	NO ₂	N	2	7.7	Y
Great Victoria Street	Roadside	X333547	Y373972	NO ₂	N	1	3	Y
College Square East	Roadside	X333498	Y380450	NO ₂	N	1.5	2	Y
Chichester Street	Roadside	X334147	Y373122	NO ₂	N	1	2	Y
Cromac & Ormeau Avenue	Kerbside	X334114	Y373877	NO ₂	Y	2.5	0.75	Y
M1 end of Donegall Road	Roadside	X332190	Y372519	NO ₂	Y	2	2	Y
Creche on M1/Westlink	Suburban	X333049	Y376602	NO ₂	Y	7	20	Y
Ormeau Road (junction with Ravenhill Road)	Roadside	X334942	Y375493	NO ₂	Y	3	2	Y
Upper Newtownards Road & Hollywood Road	Roadside	X336518	Y369850	NO ₂	N	2	3	Y
Crumlin Road	Roadside	X333195	Y373772	NO ₂	N	2	2	Y
228 Antrim Road	Roadside	X333280	Y374240	NO ₂	N	1.5	2	Y
Shore Road (M2 Junction 1 end)	Kerbside	X334163	Y374123	NO ₂	N	30	0.7	Y
Shore Road (Ivan Street end)	Roadside	X334173	Y373529	NO ₂	N	2	4	Y
North Circular Road	Kerbside	X333166	Y373100	NO ₂	N	17	0.7	Y

2.2 Comparison of Monitoring Results with Air Quality Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

Tables 2.3a and 2.3b provide all nitrogen dioxide continuous monitoring data collected since 2007. Data capture was below 90% at the Ormeau Road and Stockman's Lane monitoring sites, therefore the 99.8th percentile was included in Table 2.3b.

Exceedences of the 40 µg/m³ annual mean NO₂ objective and cases where there are more than the permitted 18 exceedences of the 200 µg/m³ 1-hour mean NO₂ objective are highlighted in bold. Concentrations at Belfast Centre site have remained stable over the last three year and are not close to the objectives, therefore based on the criteria for reviewing a site outside of an AQMA it is not necessary to proceed to a Detailed Assessment in this area. Monitoring data from 2009 at Belfast

Ballyhackamore site indicates there has been a slight increase since the previous round of R&A. Concentrations continue to exceed the annual mean objective which supports the AQMA designation. This is being tackled through our action plan. Low annual mean concentrations continue to be recorded at the Ormeau Road site, this was flagged up in the 2009 Update and Screening Assessment and a Detailed Assessment is currently ongoing with a view to revoking this AQMA. This decision is further justified on the basis of relevant exposure diffusion tube monitoring along the Ormeau Road, which also report annual mean's below the objective. Stockman's Lane site is within an AQMA declared on exceedences of both the annual and hourly NO₂ objective; based on the LAQM-TG(09) criteria it would not be considered necessary to proceed to a Detailed Assessment as the Action Plan is already in place to improve AQ in this area. However, extensive road work which was included in our Action Plan has been undertaken in this area and for these reasons it was concluded in the 2009 Update and Screening Assessment that a Detailed Assessment would be required which would enable effectiveness of these road works to be determined over a period of time, as mentioned above this assessment is underway.

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

Site ID	Location	Within AQMA?	Data Capture for full calendar year 2009 %	Annual mean concentrations (µg/m ³)		
				2007	2008	2009
	Belfast Centre	N	91	32	32	32
	Belfast Ormeau Road	Y	85	34	34	34
	Belfast Ballyhackamore	Y	97	45	44	47
	Belfast Stockman's Lane	Y	79	64	62	67

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

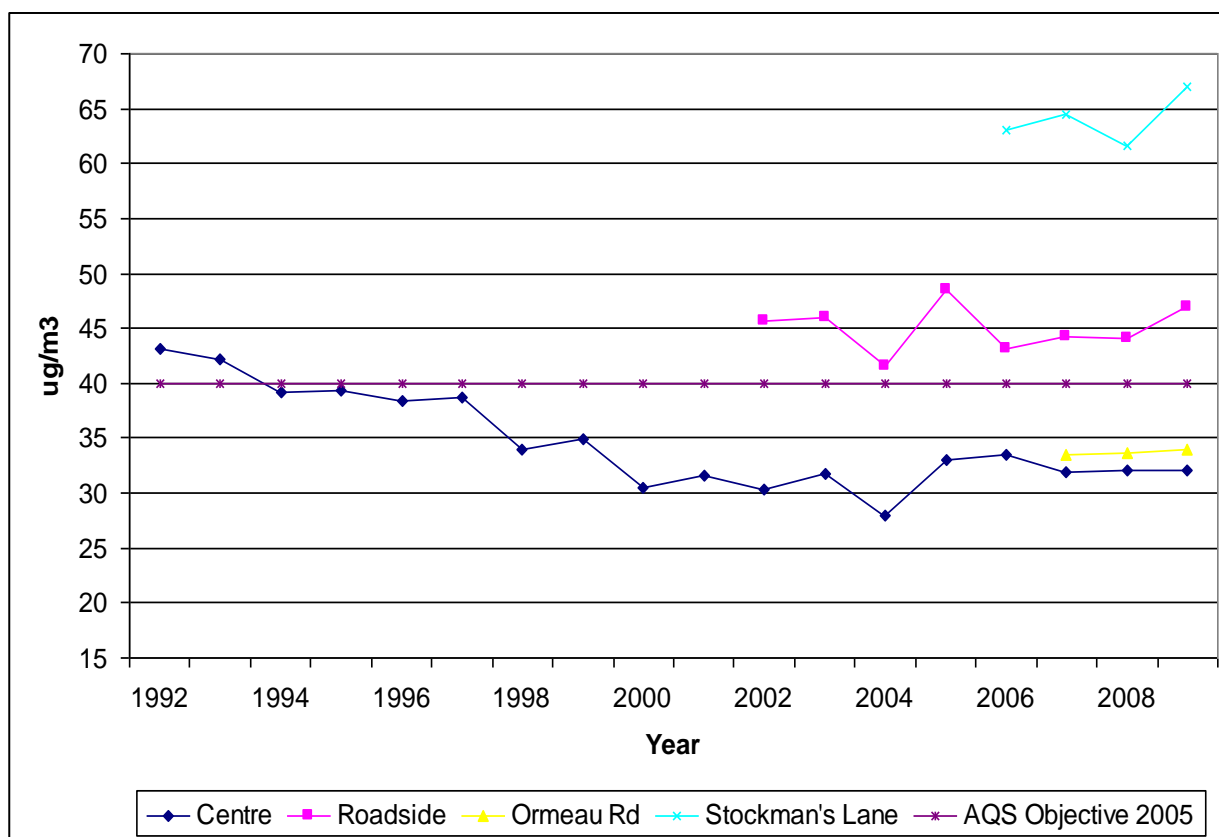


Table 2.3b Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture for full calendar year 2009 %	Number of Exceedences of hourly mean ($200 \mu\text{g}/\text{m}^3$)		
				2007	2008	2009
	Belfast Centre	N	91	0	3	0
	Belfast Ormeau Road	Y	85	1	0	0(138)
	Belfast Ballyhackamore	Y	97	0	0	0
	Belfast Stockman's Lane	Y	79	15	21	27(218)

Diffusion Tube Monitoring Data

All diffusion tube monitoring has been bias-adjusted using the co-location study and the continuous monitoring station at Belfast Centre, further details on calculations used to generate adjusted results and information on QA/QC procedures in place are provided in appendix A. A location map for the monitoring sites can be found above in Figure 2.1. As previously mentioned the diffusion tube network was increased in April 2008 to provide monitoring data in areas of concern as identified in previous rounds of R&A. These locations are numbered as 33 to 45 in Table 2.4. A recent review of the tube network has highlighted that the chosen location at some sites, both old and new may not be appropriate in that some tubes are frequently removed, therefore a number of tubes are to be placed in more suitable locations in compliance with the guidance. Exceedences of the $40 \mu\text{g}/\text{m}^3$ annual mean NO_2 objective are highlighted in bold. The monitoring sites at Donegall Square South, Short Strand, Albert Clock, Great Victoria Street and Chichester Street have all experienced means in excess of the $40 \mu\text{g}/\text{m}^3$ annual mean objective. These areas were also flagged up in the 2009 Update and Screening Assessment and a Detailed Assessment is currently ongoing to further investigate concentrations in these areas in relation to relevant exposure as they are outside of designated AQMAs. The monitoring sites at Black's Road, Cromac Street, Knock Road, Great George Street, Stockman's Lane, and Ballyhackamore also continue to indicate a breach of the objectives. As these locations are within existing AQMAs it is not deemed appropriate to proceed to a Detailed Assessment as an Air Quality Action Plan is in place to address these exceedences.

Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Data Capture for full calendar year 2009 %	Annual mean concentrations ($\mu\text{g}/\text{m}^3$)		
				2007	2008	2009
1	Royal Victoria Hospital	N	100	21	21	23
2	Black's Road	Y	100	40	36	44
3	61 Cromac Street	Y	100	42	45	42
4	Ravenhill Road	Y	100	31	33	31
5	Queen's Bridge	N	42	-	31	27
6	North Road	N	100	15	18	15
7	Donegall Square South	N	83	42	42	43
8	Milner Street	Y	42	39	35	31
9	Short Strand	N	100	22	42	48
10	301 Ormeau Road	Y	100	33	35	33
11	400 Ormeau Road	Y	100	25	27	29
12	Knock Road	Y	100	-	47	44
13	Great George's Street	Y	100	40	51	48
14	Lisburn Road	N	75	33	34	31
15	Shaftesbury Square	N	92	38	38	36
16,19,20	Lombard Street	N	100	33	41	34
17	Albert Clock	N	100	-	43	43
18	Victoria Street	N	92	38	42	39
21,22,56	Stockman's Lane	Y	100	44	60	67
23,24,32	Ballyhackamore	Y	100	33	47	46
25	Whitewell Road	N	67	23	21	21
26	Donegall Road	N	92	31	34	30
27	Grosvenor Road and Falls	N	75	29	36	39
28	Falls and Andersonstown	N	83	29	30	31
29	Knocknagoney Road (Sydenham Bypass)	N	100	29	29	29
30	Station Road	N	92	23	24	24
31	House of Sport	N	92	27	21	23
33	Great Victoria Street	N	100	-	41	45
34	College Square East	N	92	-	37	37
35	Chichester Street	N	92	-	40	40

36	Cromac & Ormeau Avenue	Y	92	-	39	34
37	M1 end of Donegall Road	Y	50	-	37	38
38	Creche on M1/Westlink	Y	42	-	25	20
39	Ormeau Road (junction with Ravenhill Road)	Y	100	-	25	26
40	Upper Newtownards Road & Hollywood Road	N	92	-	27	30
41	Crumlin Road	N	100	-	31	33
42	228 Antrim Road	N	50	-	34	34
43	Shore Road (M2 Junction 1 end)	N	58	-	26	29
44	Shore Road (Ivan Street end)	N	100	-	35	36
45	North Circular	N	50	-	22	21

2.2.2 PM₁₀

Particulate matter (size fraction 10µm) concentrations have been monitored at the Belfast Centre site since 1992 and at Belfast Clara Street since 1998. These urban background monitoring sites were affiliated to Defra's Automatic Urban and Rural Network (AURN). In October 2007 the Clara Street site was dropped from this network. In April 2002, Belfast City Council established a kerbside monitoring location on the Westlink Corridor. In 2006, due to the major road rebuilding scheme along the M1-Westlink corridor the Westlink site was closed and relocated to the Stockman's Lane Site. The PM₁₀ analyser at the Stockman's Lane site was upgraded in February 2009 from a TEOM to an FDMS. These council operated sites are calibrated and operated under the same principles as Defra's Automatic Urban and Rural Network, they undergo regular independent audits and the data is independently collated, scaled and verified before disseminating

Tables 2.5a and 2.5b provide particulate matter (PM₁₀) continuous monitoring data collected since 2007. As data capture in 2009 was below 90% at both the Belfast Centre and Stockman's Lane monitoring site, the 90th percentile is included in brackets after the number of exceedences in Table 2.5b.

Figure 2.4 clearly demonstrates a downward trend for urban background concentrations of PM₁₀ to date with a decrease of 43% since monitoring commenced in 1992. An exceedence of the annual mean objective last occurred at the Belfast Centre site in 1993.

Monitoring at Stockman's Lane site for 2009 continues to demonstrate a decline in concentrations and compliance with both the annual mean and the 24-hour Objectives is achieved. This is very encouraging and could possibly be a result of

measures implemented through the Air Quality Action Plan. This area is currently being looked at in greater detail through the ongoing Detailed Assessment.

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

Site ID	Location	Within AQMA?	Data Capture for full calendar year 2009 %	Annual mean concentrations (µg/m ³)		
				2007	2008	2009
	Belfast Centre	N	84	19	18	20
	Belfast Stockman's Lane	Y	77	43	36	22

Figure 2.4 Trends in Annual Mean Particular Matter PM10 Concentration Measured at Automatic Monitoring Sites.

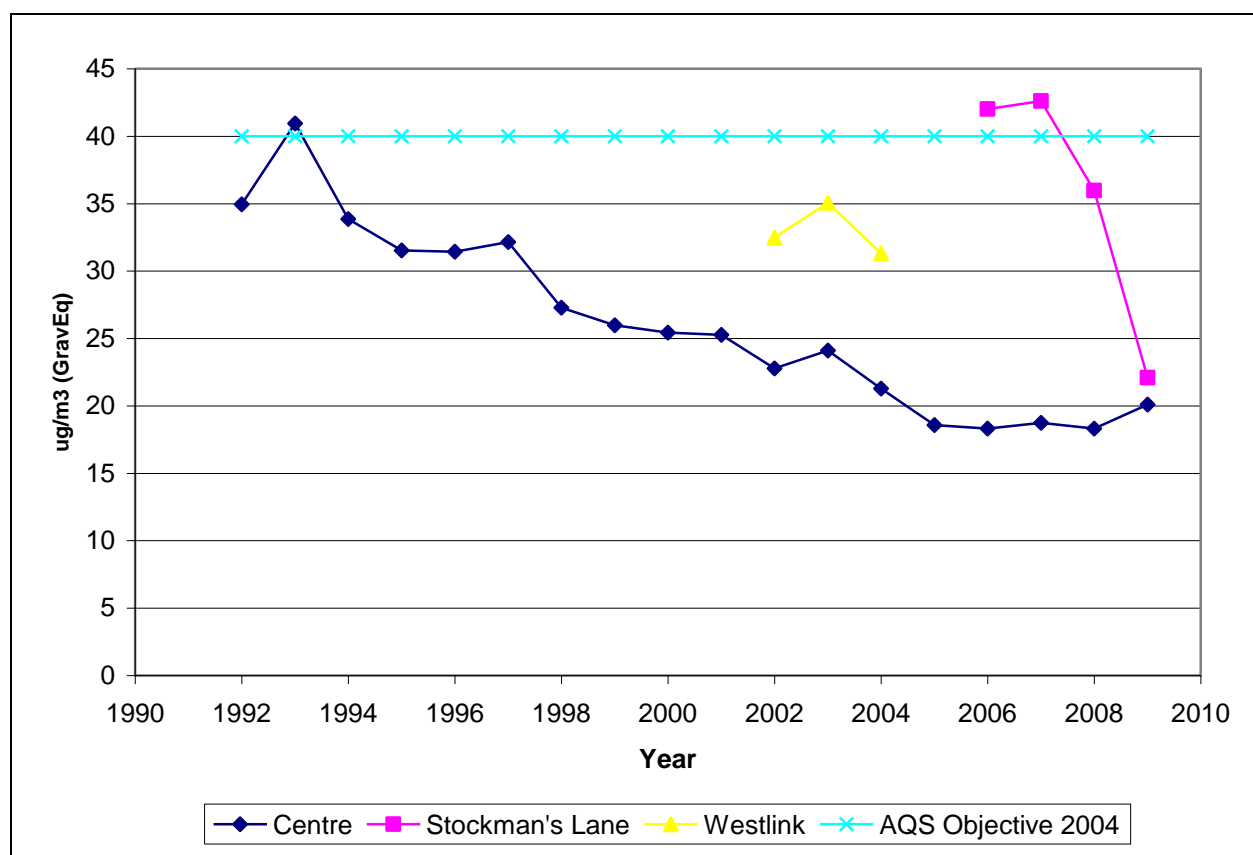


Table 2.5b Results of PM₁₀ Automatic Monitoring: Comparison with 24-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2009 %	Number of Exceedences of daily mean objective (50 µg/m ³)		
				2007	2008	2009
	Belfast Centre	N	84	5	7	3 (32)
	Belfast Stockman's Lane	Y	77	114	49	9 (38)

2.2.3 Sulphur Dioxide

Sulphur dioxide concentrations have been monitored at the Belfast Centre site since 1992. This continuous real time monitor is affiliated to Defra's Automatic Urban and Rural Network (AURN). The site is classed as an Urban Centre site and representative of typical population exposure in the city centre.

Previous rounds of R&A and monitored results from 2009 provided in Table 2.6 below confirm that there is no exceedence of the 15minute, the 1-hour mean and the 24-hour mean objective for sulphur Dioxide within Belfast. The last monitored exceedence was in 1998, therefore a Detailed Assessment is not considered necessary.

Table 2.6 Results of SO₂ Automatic Monitoring: Comparison with Objectives

Site ID	Location	Within AQMA?	Data Capture 2009 %	Number of Exceedences of: (µg/m ³)		
				15-minute Objective (266 µg/m ³)	1-hour Objective (350 µg/m ³)	24-hour Objective (125 µg/m ³)
	Belfast Centre	N	89	3	0	0

2.2.4 Benzene

Benzene concentrations have been monitored at the Belfast Centre and the Belfast Roadside site since 2002. Monitoring stopped at the Belfast Roadside site in October 2007. The Belfast Centre site monitors benzene exposure for the City Centre whilst the Belfast Roadside site monitored benzene concentrations experienced at a Roadside location. No exceedence of the 2010 National Air Quality Strategy Objective ($3.25 \mu\text{g m}^{-3}$ annual mean) or the 2010 EU Limit Value ($5 \mu\text{g m}^{-3}$ annual mean) for benzene has been monitored in Belfast since 2002.

Previous rounds of R&A and monitored results from 2009 provided in Table 2.7 below confirm that there is no exceedence of the running annual mean of $3.25 \mu\text{g m}^{-3}$ for Benzene within Belfast. Therefore a Detailed Assessment is not considered necessary.

Table 2.7 Results of Benzene Monitoring: Comparison with Running Annual Mean Objectives

Site ID	Location	Within AQMA?	Data Capture for full calendar year 2009 %	Running Annual mean concentrations (mg/m^3)		
				2007	2008	2009
	Belfast Centre	N	100	0.62	0.61	0.65

2.2.5 Other pollutants monitored

Previous rounds of R&A have confirmed that relevant Air Quality Objectives for carbon monoxide, 1,3-butadiene, Ozone and lead are being met throughout the city. No new sources have been identified which would have the potential to change this situation therefore these pollutants will not be considered in this report.

Summary of Compliance with AQS Objectives

Belfast City Council has examined the results from monitoring throughout the city. Measured concentrations of Nitrogen Dioxide above the annual mean objective at relevant locations have been identified. However, all these locations were identified in last years Update and Screening Assessment and a Detailed Assessment is currently ongoing to look at these areas in further detail.

Therefore there is no need to undertake a Detailed Assessment next year as all identified areas of concern will be considered in the 2010 Detailed Assessment.

3 New Local Developments

3.1 Road Traffic Sources

The following road traffic sources which may have an impact on air quality have been identified and considered:

- Narrow congested streets with residential properties close to the kerb.
- Busy streets where people may spend one hour or more close to traffic.
- Roads with a high flow of buses and/or HGVs.
- Junctions.
- New roads constructed or proposed since the last Updating and Screening Assessment.
- Roads with significantly changed traffic flows.
- Bus or coach stations.

Belfast City Council confirms that there has been no significant change to any of the above sources since the last Updating and Screening Assessment, therefore there is no need to proceed to a Detailed Assessment.

3.2 Other Transport Sources

The following additional transport sources which may have an impact on air quality have been identified and considered:

- Airports.
- Locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.
- Locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.
- Ports for shipping.

Belfast City Council confirms that there has been no significant change to any of the above sources since the last Updating and Screening Assessment, therefore there is no need to proceed to a Detailed Assessment.

3.3 Industrial Sources

The following industrial sources which may have an impact on air quality have been identified and considered:

- **Industrial installations:** new or proposed installations for which an air quality assessment has been carried out.
- **Industrial installations:** existing installations where emissions have increased substantially or new relevant exposure has been introduced.
- **Industrial installations:** new or significantly changed installations with no previous air quality assessment.
- Major fuel storage depots storing petrol.

- Petrol stations.
- Poultry farms.

Belfast City Council confirms that there has been no significant change to any of the above sources since the last Updating and Screening Assessment, therefore there is no need to proceed to a Detailed Assessment.

3.4 Commercial and Domestic Sources

The following commercial and domestic sources which may have an impact on air quality have been identified and considered:

- Biomass combustion plant – individual installations.
- Areas where the combined impact of several biomass combustion sources may be relevant.
- Areas where domestic solid fuel burning may be relevant.

Belfast City Council confirms that there has been no significant change to any of the above sources since the last Updating and Screening Assessment, therefore there is no need to proceed to a Detailed Assessment.

3.5 New Developments with Fugitive or Uncontrolled Sources

The following new developments with fugitive or uncontrolled sources which may have an impact on air quality have been identified and considered:

- Landfill sites.
- Quarries.
- Unmade haulage roads on industrial sites.
- Waste transfer stations etc.
- Other potential sources of fugitive particulate emissions.

Belfast City Council confirms that there has been no significant change to any of the above sources since the last Updating and Screening Assessment, therefore there is no need to proceed to a Detailed Assessment.

.

Belfast City 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.

4 Planning Applications

Of the planning applications received by The Environmental Protection Unit of Belfast City Council in 2009 seven new developments were identified as having the potential to have a negative impact on air quality. These proposed developments included large mixed use developments, a large foodstore, the erection of a restaurant/drive through and the proposed runway extension at the George Best Belfast City Airport.

Detailed air quality assessments submitted in support of these developments concluded that their individual impact would have minimal or insignificant impacts on localised air quality or the existing AQMAs. Several developments proposed mitigation measures during the construction phase that centred on controlling fugitive emissions of particulate matter. Details of these applications are provided below in Table 4.0

Table 4.1 New Developments that had a potential to have a negative impact on air quality in the 2009-10 period

Location	Development description	Outcomes of air quality impact assessment	Mitigation measures proposed
149 Glen Road	170 Residential Units, 1,410m ² Office Space, 945 m ² Local Centres.	DMRB screening assessment concluded minimal localised impact on NO ₂ and PM ₁₀ concentrations. No exposure to exceedences of Objectives.	Construction mitigation measures included control of movement of haulage vehicles, wheel washes, covering of loads and damping, erecting solid barriers to the site boundary.
90-120 Springfield Road	184 apartments, 5 retail units and basement car parking	Detailed dispersion model predicted no significant negative impact on existing local air quality. No exposure to exceedences of NO ₂ and PM ₁₀ Objectives.	Construction mitigation measures included control of movement of haulage vehicles, wheel washes, covering of loads, water spraying on surfaces and roads.
Sydenham Bypass	The proposed runway extension at the George Best Belfast City Airport	DMRB screening assessment and AERMOD dispersion model concluded minimal localised impact on NO ₂ and PM ₁₀ concentrations. No exposure to exceedences of Objectives.	Construction mitigation measures included control of movement of haulage vehicles, wheel washes, covering of loads and damping, site roads cleaning, site speed limits.
Hope street, 7-13 Lincoln Place and 1-17 St. Andrews Square East	130 Apartments, 2 retail units and 70 car parking spaces	DMRB screening assessment concluded minimal localised impact on NO ₂ and PM ₁₀ concentrations. No exposure to exceedences of Objectives.	None detailed

Location	Development description	Outcomes of air quality impact assessment	Mitigation measures proposed
189-191 Ormeau Road	Proposed new supermarket, 6 retail units, 41 apartments	Detailed dispersion model predicted no significant negative impact on existing local air quality. No exposure to exceedences of NO ₂ and PM ₁₀ Objectives	Construction mitigation measures included control of movement of haulage vehicles, wheel washes, covering of loads, water spraying on surfaces and roads.
327-329 Upper Newtownards Road	Demolition of existing buildings and erection of KFC restaurant and drive through	Detailed dispersion model predicted no significant negative impact on existing local air quality. No exposure to exceedences of NO ₂ and PM ₁₀ Objectives	Construction mitigation measures included control of movement of haulage vehicles, wheel washes, covering of loads and damping
160-220 Castlereagh Road	8,175m ² Foodstore with 618 car parking spaces	Detailed dispersion model predicted insignificant impact on local air quality for PM ₁₀ and NO ₂	None proposed as none required

5 Air Quality Planning Policies

It is important for all local authorities to think about how they can best bring air quality considerations into the planning process at the earliest possible stage and it is no longer satisfactory to simply demonstrate that a development is no worse than the existing or previous land use on a particular site.

Very little development bypasses the planning stage therefore it provides an opportunity to identify and prevent potential problems from arising in the first place an excellent example of where prevention is far better than trying to find a cure.

In light of this, Belfast City Council produced and in June 2009 launched 'Air quality and land use planning: A Belfast specific guidance note for developers and air quality consultants'. The document outlines what the Council, as a key consultee for the Planning Service, would look for in forming its opinion on a proposed development and its potential impact on air quality. If developers and consultants follow the procedures in this guidance, it will help ensure consistency in the approach to dealing with air quality and planning in Belfast.

The guidance's ultimate aim is to speed up the planning process and encourage developers to submit appropriate air quality related information with the initial planning application. On the basis of this submitted information this Department will then be able to take into due consideration the proposed development's impact on air quality. The guidance document is available at www.belfastcity.gov.uk/airquality.

6 Implementation of Action Plans

Belfast City Council also report annually on progress relating to the Action Plan. Since it was implemented in 2006, BCC and all partners have been pro-active in implementing the actions assigned. Action Plan Progress to date brings the total actions complete to 58%, with 38% still considered ongoing which is very encouraging, detailed information on the progress is provided in Table 6.1 below. Of the 4% where there has been no progress it is unlikely some of these actions will be implemented in the foreseeable future. These include major highway network schemes which in the current financial climate no private sector funding has been identified to deliver these projects, also some of the actions which have had no progress to date will no longer be pursued as over the last few years alternatives have been introduced which are more sustainable and cost-effective.

It is very difficult to quantify the emission reduction achieved through implementation and completion of the various actions within the 2006 action plan. Dependant on the outcomes from the ongoing Detailed Assessment BCC may update or if necessary produce a new action plan. New actions will focus on targeting emission reduction specifically in the AQMAs and will carefully consider how it will be possible to quantify effectiveness of the actions.

Table 6.1 Belfast City Action Plan Progress

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
1	Promote and support cycling initiatives.	Promote and support cycling initiatives through the BCC Active Living Initiatives.	BCC	2006	Annual Promotion and support of various initiatives including the Week of Cycling (June 06) and Week of Walking May (06).	Annual Promotion and support of various initiatives including the Week of Cycling (June) and Week of Walking May. Belfast City Council and partners consider incorporating actions into the Plan through which Belfast City Council and partners work with cycle manufacturers and retailers to increase accessibility/affordability of bikes either through special deals and/or cycle rental schemes at various facilities.	Annual Promotion and support of various initiatives including the Week of Cycling and Week of Walking May. Belfast City Council and partners consider incorporating actions into the Plan through which Belfast City Council and partners work with cycle manufacturers and retailers to increase accessibility/affordability of bikes either through special deals and/or cycle rental schemes at various facilities.	Complete
2	Promote Walk and Bike to Work days.	Promote Walk and Bike to Work days.	BCC	2006	Annual Promotion and support Bike to Work Week (June) and Week of Walking (May).	Annual Promotion and support Bike to Work Week (June) and Week of Walking (May).	Promotion and support Bike to Work Day (21st June 06) and Week of Walking May (06). Further initiatives planned.	Complete
3	Continue to promote healthy travel, bike to work etc	Promote availability of Belfast by Bike map.	Sustran	2006	Availability of hard copy and web based versions of Belfast by Bike map.	BCC together with Sustrans continue to promote availability of hard copy and web based versions of Belfast by Bike map.	Continues to promote availability of hard copy and web based versions of Belfast by Bike map	Complete
4	Install cycle parks at Council buildings.	Install cycle parks at Council buildings.	BCC	2006	BCC cycle parks are now available in Cecil Ward, City Hall.	BCC cycle parks are now available in Cecil Ward, City Hall. Translink - promotional leaflets e.g. 'bike it with translink', 'bicycle park and ride', 'bike to work' and bicycle safety.	BCC cycle parks are now available in Cecil Ward, City Hall. Translink - promotional leaflets e.g. 'bike it with translink', 'bicycle park and ride', 'bike to work' and bicycle safety.	Complete
5	Promote the availability of Cycle Usage Mileage for Council employees.	Promote the availability of Cycle Usage Mileage for Council employees.	BCC	August 2007	BCC Bike to Work membership currently approaching 250.	BCC Bike to Work scheme is now open indefinitely since January 2009. Scheme has been promoted to numerous other City employers and agencies - BCC membership currently approaching 250.	BCC Bike to Work scheme is now open indefinitely since January 2009. Scheme has been promoted to numerous other City employers and agencies - BCC membership currently approaching 250.	Complete
6	Secure and promote enhanced cycle mileage allowance for Council employees.	Secure and promote enhanced cycle mileage allowance for Council employees.	BCC	2006	Cycle mileage has not been pursued.	Results of the cycle use survey concluded, if you participate in the cycle to work scheme, then taxation laws do not permit the payment of tax free cycle mileage. On balance and having taken staff views, cycle mileage has not been pursued.	In August 06 the Greener Vehicles Group carried out a cycle use survey of 600 council employees, results of the cycle use survey concluded, if you participate in the cycle to work scheme, then taxation laws do not permit the payment of tax free cycle mileage. On balance and having taken staff views, cycle mileage has not been pursued.	Complete

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
7	Install cycle shelters at Translink locations.	Install cycle shelters at Translink locations.	Translink	2006	Covered bicycle parking is available at many public transport locations.	Covered bicycle parking is available at the following public transport locations: Antrim Bus and Rail Station, Bangor Bus and Rail Station, Carrickfergus Rail Station, Central Station, Coleraine Rail Station, Europa Bus Centre / Great Victoria Street Rail Station, Holywood Rail Station, Lisburn Buscentre, Lisburn Rail Station, Lurgan Rail Station, Moira Rail Station, Newcastle Bus Station, Newry Bus Centre, Portadown Rail Station, Strabane Bus Centre. Weblink www.translink.co.uk/bikeitwithtranslink/as	Covered bicycle parking is available at the following public transport locations: Antrim Bus and Rail Station, Bangor Bus and Rail Station, Carrickfergus Rail Station, Central Station, Coleraine Rail Station, Europa Bus Centre / Great Victoria Street Rail Station, Holywood Rail Station, Lisburn Buscentre, Lisburn Rail Station, Lurgan Rail Station, Moira Rail Station, Newcastle Bus Station, Newry Bus Centre, Portadown Rail Station, Strabane Bus Centre. Weblink www.translink.co.uk/bikeitwithtranslink/as	Complete
8	The integration of walking and cycling considerations in the planning process.	The promotion of walking and cycling through Development plans and Planning Policy Statements.	Planning Service	2006	Revision and publishing of Planning Policy Statement 3 in February 2005 and a policy in the emerging Belfast Metropolitan Area Plan	Continued commitment to ongoing initiatives to integrate cycling and walking considerations in the planning process. Examples include PPS13 'Transportation & Land Use' (2005), and a policy in the emerging Belfast Metropolitan Area Plan that focuses on Public, Transport, Walking and Cycling.	Continued commitment to ongoing initiatives to integrate cycling and walking considerations in the planning process. Examples include PPS13 'Transportation & Land Use' (2005), and a policy in the emerging Belfast Metropolitan Area Plan that focuses on Public, Transport, Walking and Cycling.	Complete
9	Improvements in the provision of walking and cycling facilities.	Provide improved facilities for walking and cycling as a result of traffic calming on local roads.	Road Service	April 2006	Traffic Calming measures have been introduced in 224 streets.	Within the period April 2006 to March 2009, Traffic Calming measures have been introduced in 284 streets.	Traffic Calming measures constructed so far in 224 streets. More are planned.	Complete
10	Improvements in the provision of walking and cycling facilities.	Establishing a quality walking network focused on each of the main urban centres and main transport corridors	Road Service	April 2006	Coordinated works to improve facilities for pedestrians have been carried out along Sloan Street, Lisburn; Clifton Street and Albertbridge Road,	Between April 2006 and March 2009, coordinated works to improve facilities for pedestrians have been carried out along Sloan Street, Lisburn; Clifton Street and Albertbridge Road, Belfast.	Between April 2006 and March 2009, coordinated works to improve facilities for pedestrians have been carried out along Sloan Street, Lisburn; Clifton Street and Albertbridge Road, Belfast.	Complete
11	Improvements in the provision of walking and cycling facilities.	Establishing a comprehensive cycle network complementing	Road Service	April 2006	36.7kms of cycle facility were provided, along with 8 Toucan	Within the period April 2006 to March 2009, an additional 36.7kms of cycle facility were provided, along with 8 Toucan crossings and 24 cycle stands.	Segregated cycle ways constructed on Ormeau Road and Park Road during 2004, installed 11 cycle stands throughout the city centre in 2005. Constructed 25.9km of cycle ways during 2005.	Complete

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
		existing provision for cyclists.			crossings and 24 cycle stands		Within the period April 2006 to March 2009, an additional 36.7kms of cycle facility were provided.	
12	Implementation of a new Metro bus operation for the Greater Belfast Area.	Implementation of a new Metro bus operation for the Greater Belfast Area.	Translink	February 2005	Metro Service in place	Metro Service launched on 7th February 2005. Metro Service in place	Metro Service launched on 7th February 2005.	Complete
13	Introduction of improved ticketing services including Smartlink cards and improved Integrated Ticketing.	Introduction of improved ticketing services including Smartlink cards and improved Integrated Ticketing.	Translink	2006	Smartlink Cards available for Adult and Child Fares	Smartlink Cards available for Adult and Child Fares. iLink - a new commercial smartcard, which can be used on both bus and rail services will be introduced later this year. iLink will be Translink's first truly integrated commercial smartcard product, making integrated multi-modal travel easier for passengers. The product will offer unlimited Day, Weekly or Monthly travel on both bus and rail services within three distinct new zones. Taxsmart - a new smartcard, known as TaxSmart is also in the pipeline. The Government are currently encouraging employers to set up schemes which offer their employees a 'tax break' on a yearly bus pass for travel between home and work.	Smartlink Cards available for Adult and Child Fares	Complete
14	Implementation of an extensive Quality Bus Corridor network.	Implementation of an extensive Quality Bus Corridor network.	DRD Roads Service / Translink	2006	QBC's operating on 12 main radial routes in Belfast	QBC's operating on 12 main radial routes in Belfast, including a 25% increased service frequency. A second phase would achieve a total of 50% with a further 25% increase in service frequency. 100% of Metro fleet 'accessible' according to Disability Discrimination. http://www.translink.co.uk/nithctcorpplan200910.asp	QBC implementation programme to be completed by 2010 has been agreed with Roads Service	2010
15	Introduction of new orbital bus routes to complement the radial QBC network.	Introduction of new orbital bus routes to complement the radial QBC network.	Road Services	2006	Several semi orbital routes in place serving new retail developments	QBC's operating on 12 main radial routes in Belfast, including a 25% increased service frequency. A second phase would achieve a total of 50% with a further 25% increase in service frequency. http://www.translink.co.uk/nithctcorpplan200910.asp	£9 million earmarked for the introduction of Orbital Bus Routes by 2015 and several semi orbital routes in place serving new retail developments	2015
16	Taxis Services.	Providing improved facilities for taxis at	Road Service	2005	Roads Service provided 16 new	Roads Service provided 16 new public hire taxi spaces at Mays Meadow, Central Station, within	Programme of station enhancement to include taxi facilities to be completed over the next two	Complete

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
		major bus and rail stations in the BMA.			public hire taxi spaces	the 05/06 financial year. Within the 09/10 financial year, it is planned to introduce 3 new taxi spaces at the Europa Bus Centre in Glengall Street.	years. Within the 09/10 financial year, it is planned to introduce 3 new taxi spaces at the Europa Bus Centre in Glengall Street.	
17	Providing bus priority on the Strategic Highway Network.	Providing bus priority as part of the rollout of the Quality Bus Corridor network.	Road Service	2007	M2 bus operational - 2007 Hard shoulder bus route along the M1 complete.	M2 (Sandyknowes) bus operational - 2007 Hard shoulder bus route along the M1 complete.	M2 (Sandyknowes) bus operational - 2007 Hard shoulder bus route along the M1 complete.	Complete
18	Rapid Transit.	The creation of a bus rapid transit network EWAY on the Upper Newtownards Road corridor.	DRD	2006 ongoing	-	Scheme earmarked to receive funding of £100 million in the RTS and also featured in the BMTP. A number of feasibility studies have already taken place.	Scheme earmarked to receive funding of £100 million in the RTS and also featured in the BMTP. A number of feasibility studies have already taken place	Ongoing programme
19	Demand Responsive Rural Bus Service.	The introduction of Demand Responsive Transport – including variable route and dial-a-ride services, both integrated with conventional fixed route bus services and community transport services.	DRD	2006	Guidance is available at the DVLNI website.	The Department continues to encourage applications from operators wishing to establish a Demand Responsive Bus Service. Extensive guidance is available at the DVLNI website.	The Department continues to encourage applications from operators wishing to establish a Demand Responsive Bus Services. Extensive guidance is available at the DVLNI website.	Ongoing programme
20	Development of Park and Ride Schemes.	Park and Ride on Antrim and Carrickfergus Corridor, the Lisburn Corridor, and the Bangor Corridor	DRD Roads Service / Translink	2006	Park and Ride at York Street, Sprucefield and Black's Road and Middlepath Street commenced.	Park and Ride at York Street, Sprucefield and Black's Road and Middlepath Street commenced	Park and Ride at York Street, Sprucefield and Black's Road and Middlepath Street commenced	Complete
21	Bus service and long distance bus/coach services.	Increase service frequencies on core routes.	DRD	2006+	Service frequency increased to between five and ten minutes on all 12 corridors.	Service frequency increased to between five and ten minutes on all 12 corridors. Further enhancement to other corridors planned.	Service frequency to increase to between five and ten minutes on all 12 corridors. Further enhancement to other corridors planned.	Complete

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
22	Bus service and long distance bus/coach services.	Increase cross town/city linking services.	DRD	2006+	Introduced service frequency of between 20 and 30 minutes on Goldline services.	Introduced service frequency of between 20 and 30 minutes on most popular Goldline interurban express services. Further enhancements are planned.	Introduced service frequency of between 20 and 30 minutes on most popular Goldline interurban express services. Further enhancements are planned.	Complete
23	Bus service and long distance bus/coach services.	Regular interval timetables and integrated ticketing.	DRD	2006+	Integrated ticketing options in place	Integrated ticketing options already exist for Smartpass, Students, Tourists and annual passes. A network wide stored value smart card is being evaluated.	Integrated ticketing options already exist for Smartpass, Students, Tourists and annual passes. A network wide stored value smart card is being evaluated.	Complete
24	Bus service and long distance bus/coach services.	Integration with rail services.	DRD	2006+	A single call centre and the Translink website provide information on all bus and rail services	A single call centre and the Translink website provide information on all bus and rail services, including the latest travel news every 15 minutes. New projects to improve passenger information are underway.	A single call centre and the Translink website provide information on all bus and rail services, including the latest travel news every 15 minutes. New projects to improve passenger information are underway.	Complete
25	Bus service and long distance bus/coach services.	Introduce modern accessible buses.	DRD	2006+	100% of Metro fleet 'accessible'	Currently 100% of Metro fleet 'accessible' according to Disability Discrimination Act.	172 new vehicles entered Northern Ireland fleet during 06/07, 272 during 07/08 and 121 during 08/09.	Complete
26	Bus service and long distance bus/coach services.	Provide new routes to access developments.	DRD	2006+		Network redesign to maximise the use of all resources to improve access to new major developments.	Network redesign to maximise the use of all resources to improve access to new major developments.	Complete
27	Urban Community Transport.	Improvements to make transport more accessible to people unable to use conventional public transport services, including those with disabilities.	DRD	2005+	100% of Metro fleet 'accessible' according to Disability Discrimination Act.	60 new low-floor double-deck buses introduced to the Metro fleet during 2005/06, meet DDA requirements. Currently 100% of Metro fleet 'accessible' according to Disability Discrimination Act.	60 new low-floor double-deck buses introduced to the Metro fleet during 2005/06, meet DDA requirements.	Complete
28	Rail service frequency and service pattern changes.	Increase in service frequencies up to 50% with additional trains focused on providing more express services. (Translink).	DRD	2006		Plans are being developed for further modernisation and expansion of the rail network and service frequency. These will be subject to economic appraisal, Government approval and funding.	Plans are being developed for further modernisation and expansion of the rail network and service frequency. These will be subject to economic appraisal, Government approval and funding	On going programme

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
29	New and improved or re-located rail stations.	New or re-located rail stations.	DRD	2007		Site for the provision of a new railway station at Tillysburn identified in the BMAP. Programme of station enhancement to be completed over next two years.	Site for the provision of a new railway station at Tillysburn identified in the BMAP.	2011
30	Rail-based park-and-ride.	Sites identified for new park-and-ride facilities at rail stations.	DRD	2007	Greenisland P&R scheme complete Jordanstown P&R scheme complete. Lisburn P&R scheme complete. Bangor Station P&R scheme complete.	An area south of the Trooperslane settlement is identified in the BMAP and forms part of the Translink portfolio of future Park and Ride schemes. Greenisland P&R scheme complete. Jordanstown P&R scheme complete. Lisburn P&R scheme complete. Bangor Station P&R scheme complete.	An area south of the Trooperslane settlement is identified in the BMAP and forms part of the Translink portfolio of future Park and Ride schemes. Greenisland P&R scheme complete. Jordanstown P&R scheme complete. Lisburn P&R scheme complete. Bangor Station P&R scheme complete.	Complete
31	Rail-based park-and-ride.	Increase in parking provision at stations by formalising existing parking arrangements along with pick up/set down areas, and providing new parking spaces where feasible.	DRD	2006		On going programme of improving parking provision at all train stations serving Belfast.	Rolling on going programme of improving parking provision at all train stations serving Belfast	Ongoing programme
32	Intelligent Transport Systems measures.	Intelligent Transport Systems measures expected to be implemented including: • Real time passenger information and integrated ticketing system. • Variable Message Signing (VMS) in conjunction with park and ride and parking provision • Linking of system	Road Service (3 actions) Translink (1)	2006+	170 Passenger information Points installed at bus stops and 104 junctions have been equipped with bus priority	170 Passenger information Points installed at bus stops and 104 junctions have been equipped with bus priority. 148 Midas incident detection sites have been installed. Northside and Eastside P & R sites have Passenger Information Points installed. There are only 12 city centre VMS signs which can be used for parking information. Traffic Control systems are UTMC (Urban Traffic Management and Control) compliant. Translink call centre and website provides up to date travel information every 15 minutes, considered the most comprehensive in the UK and Ireland.	Real time information on City Express and Centrelink routes and on bus shelters on Antrim Rd, Upper Newtownards Rd, Ormeau Rd, Castlereagh Rd. Further display boards planned	Complete

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
33	Bus Services.	Bus Revenue Support to include funding for Concessionary fares.	DRD	2007	Concessionary fare provision was reviewed in 2007.	Concessionary fare provision was reviewed in 2007. Future plans include: targeting concessionary fare provision to tackle social exclusion, to mirror fare policies in the rest of the UK, and to appraise the possible expansion of the eligible categories.	Concessionary fare provision was reviewed in 2007. Future plans include: targeting concessionary fare provision to tackle social exclusion, to mirror fare policies in the rest of the UK, and to appraise the possible expansion of the eligible categories.	Complete
34	Bus Services.	Bus Revenue Support to include funding for Fuel duty rebate.	DRD	2007	The scheme established to provide Fuel Duty Rebate for bus operators.	Well developed and on going scheme established to provide Fuel Duty Rebate for bus operators.	Well developed and on going scheme established to provide Fuel Duty Rebate for bus operators.	Complete
35	Bus Services.	Bus Revenue Support to include funding for other NITHC costs.	DRD	2007	The existing funding structure was shifted from a capital grant based one to revenue for services supported structure.	In March 2007 the Ports and Public Transport Division identified the need to shift the existing funding structure from a capital grant based one to revenue for services supported structure.	In March 2007 the Ports and Public Transport Division identified the need to shift the existing funding structure from a capital grant based one to revenue for services supported structure.	Complete
36	Test fleet vehicle emissions whenever routine servicing is carried out.	Test fleet vehicle emissions whenever routine servicing is carried out.	BCC	2006	Vehicle emissions now routinely tested at every service interval	Vehicle emissions now routinely tested at every service interval.	Vehicle emissions now routinely tested at every service interval	Complete
37	Vehicle Emission Testing.	Test fleet vehicle emissions whenever routine servicing is carried out.	Translink	2006	Vehicle emissions now routinely tested at every service interval	Vehicle emissions now routinely tested at every service interval.	Vehicle emissions now routinely tested at every service interval	Complete
38	Retrofitting pollution abatement equipment to Council heavy goods vehicles	Fitting of particulate traps to refuse collection vehicles, depending upon the EURO classification of the vehicle.	BCC	2006	Rolling programme of fitting particulate trap filters to relevant vehicles during service programmes	Rolling programme of fitting particulate trap filters to relevant vehicles during service programmes.	Rolling programme of fitting particulate trap filters to relevant vehicles during service programmes	Complete

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
39	Retrofitting pollution abatement equipment to older vehicles	Fitting of Oxidation Catalysts to older vehicles - to be concentrated on bus replacement.	Translink	2006	A combined oxidation catalyst and particulate trap (CRTs) retrofitted to Euro 2 and Euro 3 buses operating in Belfast.	A combined oxidation catalyst and particulate trap (CRTs) retrofitted to Euro 2 and Euro 3 buses operating in Belfast. Phasing out older buses. Can provide fleet list if required.	A combined oxidation catalyst and particulate trap (CRTs) retrofitted to Euro 2 and Euro 3 buses operating in Belfast.	Complete
40	Use of ultra low sulphur diesel and unleaded petrol.	Apply to approximately 80% of the Belfast City Council fleet.	BCC	2006	Ongoing programme to shift fleet to ultra low sulphur diesel. All petrol vehicles use unleaded fuel	Ongoing programme to shift fleet to ultra low sulphur diesel. All petrol vehicles use unleaded fuel.	Ongoing programme to shift fleet to ultra low sulphur diesel. All petrol vehicles use unleaded fuel	Complete
41	Use of ultra low sulphur diesel.	Use of ultra low sulphur diesel across the fleet.	Translink	2006	Biodiesel used across the bus fleet	Biodiesel (5% blend) used across the bus fleet.	Ultra low sulphur fuels routinely used throughout fleet.	Complete
42	Liquefied Petroleum Gas (LPG) fuelled light duty vehicles for Council use.	Initial purchase of 2 LPG fuelled Ford Connect light duty vehicles for Council use.	BCC	2006		Ongoing programme to purchase LPG fuelled vehicles.	Ongoing programme to purchase LPG fuelled vehicles.	Complete
43	Purchase new hybrid petrol cars to replace existing vehicles and evaluate the resulting emission reductions and fuel consumption savings.	Purchase new hybrid petrol cars to replace existing vehicles and evaluate the resulting emission reductions and fuel consumption savings.	BCC	2005	Two Hybrid vehicles purchased by BCC.	Two Hybrid vehicles purchased for use by the noise team during the night and the waste recycling advisors during the day. Programme to determine fuel savings established.	Two Hybrid vehicles purchased for use by the noise team during the night and the waste recycling advisors during the day. Programme to determine fuel savings on going.	Complete
44	Evaluate the feasibility of introducing biodiesel across the bus fleet.	Evaluate the feasibility of introducing biodiesel across the bus fleet.	Translink	September 2006	Biodiesel used across the bus fleet.	Completed Bio Diesel trial that was started in September 06. Biodiesel (5% blend) used across the bus fleet.	Completed Bio Diesel trial that was started in September 06	Complete

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
45	Investigate the use of Liquefied Petroleum Gas (LPG) and Compressed Natural Gas (CNG).	Investigate the use of Liquefied Petroleum Gas (LPG) and Compressed Natural Gas (CNG).	Translink	2006	The performance of the latest diesel is certainly as good as the principle gas alternatives and substantially more cost effective.	For the foreseeable future diesel fuel coupled with the latest diesel engine technology will continue to be the recommended fuel. The performance of the latest diesel is certainly as good as the principle gas alternatives and substantially more cost effective.	For the foreseeable future diesel fuel coupled with the latest diesel engine technology will continue to be the recommended fuel. The performance of the latest diesel is certainly as good as the principle gas alternatives and substantially more cost effective.	Complete
46	Investigate use of Liquefied Petroleum Gas (LPG).	Investigate use of LPG when purchasing new works vehicles. Translink will consider the use of LPG fuelled vehicles when purchasing new works vans and other vehicles.	Translink	2006		Limited application to small number of fork lift trucks in use at bus garages, no plans to purchase replacements for the foreseeable future	Limited application to small number of fork lift trucks in use at bus garages, no plans to purchase replacements for the foreseeable future	Complete
47	Introduce requirement to purchase vehicles complying with the prevailing Euro standards.	Introduce requirement to purchase vehicles complying with the prevailing Euro standards.	BCC	2006	Programme established to purchase vehicles complying with the prevailing standards.	Programme established to purchase vehicles complying with the prevailing standards.	Programme established to purchase vehicles complying with the prevailing Euro standard.	Complete
48	Introduce requirement to purchase vehicles complying with the prevailing Euro standards.	Introduce requirement to purchase vehicles complying with the prevailing Euro standards.	Translink	October 2006	All vehicles registered from October 2006 meet the Euro standards.	All vehicles registered from October 2006 meet the Euro 4 standards and from 2009 will meet the Euro 5 standard.	All vehicles registered from October 2006 meet the Euro 4 standards and from 2009 will meet the Euro 5 standard.	Complete
49	Establish Belfast City Council vehicle replacement programme	Programmed replacement of cars every 4 yrs, light duty vehicles (< 7.5 tonnes) every 5 yrs and vehicles >7.5 tonnes every 7 yrs.	BCC	2006	Programme established to replace cars every 4 years, LDVs every 5 and HGVs every 7 years.	Programme established to replace cars every 4 years, LDVs every 5 and HGVs every 7 years.	Programme established to replace cars every 4 years, LDVs every 5 and HGVs every 7 years.	Complete

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
50	Establish an end of life vehicle policy for Translink vehicles.	Seek a contractor to decommission end of life vehicles.	Translink	2006	Contractor secured to decommission end of life vehicles.	Contractor secured to decommission end of life vehicles.	Contractor secured to decommission end of life vehicles.	Complete
51	Establish an end of life vehicle policy for Council vehicles.	Seek a contractor to decommission end of life vehicles.	BCC	2006	Contractor secured to decommission end of life vehicles.	Contractor secured to decommission end of life vehicles.	Contractor secured to decommission end of life vehicles.	Complete
52	Establish a programme to enable vehicle fuel consumption efficiency to be improved.	Purchase software to enable a baseline survey to be undertaken and subsequent fuel usage logging to be introduced.	BCC	2009		New fuel management system to be procured during 2009 that will enable good fuel performance benchmarks to be developed.	Ongoing programme to purchase software to enable a baseline survey to be undertaken and subsequent fuel usage.	Ongoing programme
53	Establish a programme to enable vehicle fuel consumption efficiency to be improved.	Conduct review of current fuel monitoring procedures and establish recommendations	Translink	2008	Projected fuel consumption assessed over the projected life of the vehicle and factored into selection process for new purchases	Projected fuel consumption assessed over the projected life of the vehicle and factored into selection process for new purchases.	Projected fuel consumption assessed over the projected life of the vehicle and factored into selection process for new purchases	Complete
54	Improve procedures for recording and monitoring fuel usage.	Improve procedures for recording and monitoring fuel usage.	BCC	2009		To be developed in 2009 in conjunction with the new fuel management system.	Ongoing programme to improve procedures for recording and monitoring fuel usage.	Ongoing programme
55	Establish a baseline study of fuel usage by mobile plant used within Belfast City Council's Parks & Cemeteries Service Section.	Establish a baseline study of fuel usage by mobile plant used within Belfast City Council's Parks & Cemeteries Service Section.	BCC	2009		New fuel management system to be procured during 2009 that will enable good fuel performance benchmarks to be developed and used within BCCs Parks & Cemeteries Service Section.	Ongoing programme to establish a baseline study of fuel usage by mobile plant used within Belfast City Council's Parks & Cemeteries Service Section.	Ongoing programme

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
56	Establish a baseline study of fuel usage by mobile plant / infrastructure plant used within Translink's Infrastructure & Property Department.	Establish a baseline study of fuel usage by mobile plant / infrastructure plant used within Translink's Infrastructure & Property Department.	Translink	2006		Monitoring programme on going.	Monitoring programme on going	Ongoing programme
57	Monitor and trial fuel additives or additional devices to reduce fuel consumption and emissions.	Monitor and trial fuel additives or additional devices to reduce fuel consumption and emissions.	Translink	2006		Monitoring programme on going.	Monitoring programme on going	Ongoing programme
58	Latest technology engines used, meeting most stringent emission legislation. First vehicles now in service.	Latest technology engines used, meeting most stringent emission legislation. First vehicles now in service.	Translink	2008	All class 80 trains replaced with 23 C3Ks.	2008-All class 80 trains replaced with 23 C3Ks. New project for 2010 to replace 9 class 450 trains and increase capacity. 2009-An order for 20 new trains was placed in March 2009. These will be delivered to us from 2011 and will enter service 2012.	All class 80 trains replaced with 23 C3Ks. New project for 2010 to replace 9 class 450 trains and increase capacity	Complete
59	Switching the electricity tariff in Council buildings to an environmentally friendly tariff	Reduce pollution levels by switching the electricity tariff in Council buildings to an environmentally friendly tariff based upon renewable energy.	BCC	2006	75% of overall electricity requirements now come from renewable sources. Some individual buildings now on a 100% renewable tariff.	75% of overall electricity requirements now come from renewable sources. Some individual buildings now on a 100% renewable tariff.	75% of overall electricity requirements now come from renewable sources. Some individual buildings now on a 100% renewable tariff.	Complete
60	Adoption of the carbon reduction programme and implementation of recommendation	Adoption of the carbon reduction programme and implementation of recommendations.	BCC	October 2006	New energy conservation strategy adopted in October 2006.	New energy conservation strategy adopted in October 2006 which establishes carbon reduction targets for each year up to 2012.	New energy conservation strategy adopted in October 2006 which establishes carbon reduction targets for each year up to 2012.	Complete

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
61	Adoption of the Belfast City Council Draft Carbon reduction programme.	Manage landfill gas generation at the Belfast City Council North Foreshore site.	BCC	2006	Landfill gas extracted and flared on a daily basis.	Landfill gas extracted and flared on a daily basis.	Landfill gas extracted and flared on a daily basis. Tender assessment of possibly power generating companies currently on going	Complete
62	Adoption of the Belfast City Council Draft Carbon reduction programme.	Introduce combined heat and power plants at selected Council facilities.	BCC	2006	7 CHP plants currently in operation.	7 CHP plants currently in operation with a further 2 planned.	7 CHP plants currently in operation with a further 2 planned	Complete
63	Switching the electricity tariff at Translink properties - renewable energy.	Reduce pollution levels by switching the electricity tariff at Translink properties / locations to an environmentally friendly tariff based upon renewable energy.	Translink	2008	Properties have switched to Green Energy via contracts with Airtricity and ESB	Properties have switched to Green Energy via contracts with Airtricity and ESB. 2009 -Optimise Green Energy contracts where possible	Properties have switched to Green Energy via contracts with Airtricity and ESB	Complete
64	Review current Belfast City Council Transport Policy	Investigate options for more effective travel planning for Council employees and for other public sector organisations.	BCC	2006	Greener Vehicles Group and Car Share Schemes in place.	Greener Vehicles Group and Car Share Schemes currently evaluating and progressing with effective travel planning arrangements.	Greener Vehicles Group and Car Share Schemes currently evaluating and progressing with effective travel planning arrangements	Complete
65	Review current Belfast City Council Transport Policy	Adoption and implementation of a travel plan for the Council owned Gasworks Business Park.	BCC	September 2006	The free shuttle bus service runs every twenty minutes week days from 8AM to 6PM.	On 11th September 2006 a free shuttle bus service was introduced to serve the Gas Works site to the centre of town. The service runs every twenty minutes week days from 8AM to 6PM.	On 11th September 2006 a free shuttle bus service was introduced to serve the Gas Works site to the centre of town. The service runs every twenty minutes week days from 8AM to 6PM.	Complete
66	Participate in Active Living Weeks in conjunction with the Investing for Health Strategy.	Participate in Active Living Weeks in conjunction with the Investing for Health Strategy.	BCC	2006	Working in partnership with Health promotion bodies	Participation in the Active Living Weeks achieved during 06-09, further events are planned. Working in partnership with Health promotion bodies	Participation in the Active Living Weeks achieved during 06 and 08, further events are planned	Complete

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
67	Support the regeneration of Belfast's major arterial routes as part of a regional regeneration agenda.	Develop and implement integrated regeneration plans for designated Arterial Routes across the City.	BCC	2006 Ongoing programme		Regeneration of arterial routes supported by BCC, work on development and implementation of integrated regeneration plans still on going.	Regeneration of arterial routes supported by BCC, work on development and implementation of integrated regeneration plans still on going	Ongoing programme
68	Support the planting of greater numbers of trees across Belfast.	Support the planting of greater numbers of trees across Belfast.	BCC	2006	100,000 trees were given to community groups during 2006.	Established a programme of tree planting through the Forest of Belfast project. 100,000 trees were given to community groups during 2006.	Established a programme of tree planting through the Forest of Belfast project. 100,000 trees were given to community groups during 2006	Complete
69	Use of the Planning System to ensure that developments do not lead to a deterioration of air quality and that all potential mitigation measures are considered.	Include air quality considerations in responses to the Planning Service.	BCC	2006	Air Quality considered during the consultation process between the Environmental Health Department and the Planning Service	Air Quality considered during the consultation process between the Environmental Health Department and the Planning Service now as a matter of routine.	Air Quality considered during the consultation process between the Environmental Health Department and the Planning Service now as a matter of routine	Complete
70	Use of the Planning System to ensure that developments do not lead to a deterioration of air quality and that all potential mitigation measures are considered.	Produce guidance for Belfast City Council staff on air quality and land use planning in line with recommendations contained within the National Society for Clean Air 2004 document - Development Control: Planning for Air Quality.	BCC	2006 & 2009	BCC published 'Air quality and land use planning' - A Belfast specific guidance note for developers and air quality consultants.	Specific Environmental Protection Unit guidance has been drawn up using both the 2004 and 2006 published NSCA Guidance. Guidance serves to inform officers when a Planning Application may have a detrimental impact on air quality and when to request an Air Quality Assessment to accompany planning applications. In May 2009 BCC published 'Air quality and land use planning' - A Belfast specific guidance note for developers and air quality consultants.	Specific Environmental Protection Unit guidance has been drawn up using both the 2004 and 2006 published NSCA Guidance. Guidance serves to inform officers when a Planning Application may have a detrimental impact on air quality and when to request an Air Quality Assessment to accompany planning applications.	Complete

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
71	Influence policy development for the city through the development of corporate policies and responses to promote more sustainable development.	Lobby for the development of a memorandum of understanding between the Planning Service and Belfast City Council.	BCC	2006 Ongoing programme		Work on going.	Work on going	Ongoing programme
72	Influence policy development for the city through the development of corporate policies and responses to promote more sustainable development.	Development and implement a Master Plan for Belfast based on sustainable development principles.	BCC	2008	Implement a Master Plan for Belfast based on sustainable development principles.	Master Plan for Belfast based on the Concept City Model and acknowledges the Sustainable Development requirements of the Regional Development Strategy and PPS5.	Master Plan for Belfast based on the Concept City Model and acknowledges the Sustainable Development requirements of the Regional Development Strategy and PPS5	Complete
73	Local abatement and emission control.	Regulation of Part C processes under the Industrial Pollution Control (NI) Order 1997 & Pollution Prevention & Control Regs.(NI) 2003	BCC	2006	Dedicated IPC staff officer inspects and regulates premises that fall under the regime	Dedicated IPC staff officer inspects and regulates premises that fall under the regime.	Dedicated IPC staff officer inspects and regulates premises that fall under the regime	Complete
74	Local abatement and emission control.	Regulation of Part A & B processes under the Industrial Pollution Control (NI) Order 1997 & Pollution Prevention & Control Regs.(NI) 2003	IPRI	2006	Dedicated staff officers inspect and regulate premises that fall under the regime.	Dedicated staff officers inspect and regulate premises that fall under the regime.	18 Part A & B Processes regulated by IPRI within Belfast City boundary. New relevant processes assessed for emissions to air.	Complete

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
75	The reduction of emissions from domestic fossil fuel burning.	Enforcement control under the Clean Air (NI) Order – introduction of programmed inspections in the winter months for domestic smoke emissions.	BCC	Levels of black smoke have been monitored in Belfast since 1961	Ambient air quality monitoring has indicated the SO ₂ levels are no longer a priority within Belfast.	BCC has already completed a smoke control program for the entire city. Clean Air (NI) Order introduced "authorised" fuels. Belfast 2006 AQAP includes the actions such as the enforcement within smoke control areas (The reduction of emissions from domestic fuel burning) the use of cleaner fuels and the replacement of older vehicles with newer cleaner versions. Ambient air quality monitoring has indicated the SO ₂ levels are no longer a priority within Belfast.	BCC has already completed a smoke control program for the entire city. Clean Air (NI) Order introduced "authorised" fuels. Belfast 2006 AQAP includes the actions such as the enforcement within smoke control areas (The reduction of emissions from domestic fuel burning) the use of cleaner fuels and the replacement of older vehicles with newer cleaner versions. Ambient air quality monitoring has indicated the SO ₂ levels are no longer a priority within Belfast.	Complete
76	Reduction of pollution arising from the burning either commercial or domestic waste.	Regulate under the Public Health (Ireland) Act 1878 and the Pollution Control and Local Government (NI) Order 1978.	BCC	2006	All reported incidences of burning routinely investigated by Environmental Health Officers	Reduction of pollution arising from the burning either commercial or domestic waste. All reported incidents of burning are routinely investigated by EHO.	All reported incidences of burning routinely investigated by Environmental Health Officers	Complete
77	Strategic highway network capacity enhancements.	Widening of the M1 and Westlink from Blacks Road through to Divis St to provide three dual lanes of carriageway.	Road Service	2006 - March 2009	Construction work completed March 2009	Construction work completed March 2009	Construction work on going and due to finish by Spring 2009	Complete
78	Strategic highway network capacity enhancements.	Segregated bus way facility between Broadway & Roden St.	Road Service	June 2009	Construction work completed June 2009	Construction work completed June 2009	Construction work on going and due to finish by Spring 2009	Complete
79	Strategic highway network capacity enhancements.	Widening of the M2 from 2 lanes to 3 lanes between Sandyknowes and Greencastle junction.	Road Service	2009	Construction work completed 2009	Construction work completed 2009.	Construction work completed 2009.	Complete
80	Strategic highway network capacity enhancements.	Widening of the A2 at Greenisland on the Carrickfergus corridor	Road Service	February 2006 Ongoing programme	Public consultation of scheme ran from February to May 2006.	Public consultation of scheme ran from February to May 2006. Construction due.	Public consultation of scheme ran from February to May 2006. Construction due.	Ongoing programme

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
81	Strategic highway network capacity enhancements.	Widening of the A2 Sydenham Bypass between Tillysburn and the M3 Lagan Crossing	Road Service	Proposed 2004- Ongoing programme		Scheme proposed in the 2004 - Regional Transport Plan. Construction due between 2014 and 2018.	Scheme proposed in the 2004 - Regional Transport plan. Construction due between 2010 and 2015.	2010-2014
82	Strategic highway network capacity enhancements.	Widening of the A55 Outer Ring Road at Knock Road.	Road Service	2006 - Ongoing programme		Publication of statutory orders issued Autumn 2009.	Public consultation of scheme started in June 2006, construction planned for 2008/2009	Ongoing programme
83	Non-strategic highway network capacity enhancements.	Construction of the Connsbank Link.	Road Service	This scheme may not be implemented		No private sector funding identified to deliver scheme. This scheme may not be implemented.	Proposed in Belfast Metropolitan Area Plan 2004 Implementation expected after 2015	This scheme may not be implemented
84	non-strategic highway network capacity enhancements.	Construction of the Hollywood Arches bypass.	Road Service	This scheme may not be implemented		No private sector funding identified to deliver scheme. This scheme may not be implemented.	Proposed in Belfast Metropolitan Area Plan 2004. Implementation expected after 2015Area Plan 2004. Implementation expected after 2015	This scheme may not be implemented
85	Non-strategic highway network capacity enhancements.	Construction of new road link between Quarry Corner and East Link Road	Road Service	This scheme may not be implemented		This scheme may not be implemented. Linked to DRD's Rapid transit proposals for Eway.	Proposed in Belfast Metropolitan Area Plan 2004. Implementation expected after 2015	This scheme may not be implemented
86	Non-strategic highway network capacity enhancements.	Construction of Bankmore Link	Road Service	Proposed 2005 - Ongoing programme		In RS Forward Planning schedule. Preferred options study underway.	Proposed in Belfast Metropolitan Transport Plan 2005. Construction expected by 2015	2015
87	Strategic highway network traffic management.	Route Management Strategies on the Upper Newtownards Road.	Road Service	2006	Vehicle activated signs completed in 2006.	Improvements made for Public transport priority.	Strategies designed to aide flow of traffic such as Yellow Box scheme at Thornhill Park and vehicle activated signs completed in 2006. further works due in 2007	Complete
88	Strategic highway network traffic management.	Route Management Strategies on the Saintfield Road.	Road Service	2007	Strategies designed to aide traffic flow completed in 2006.	Improvements made for Public Transport priority.	Strategies designed to aide traffic flow completed in 2006. Further Improvements made in 2007.	Complete

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
89	Strategic highway network capacity enhancements.	Route Management Strategies on the A55 outer ring.	Road Service	2009/10		Study proposed for 2009/10.	Route management strategies for A55 went to public consultation in Spring 2006	2010
90	Non-strategic highway network capacity enhancements.	Implementation of traffic calming measures on local roads and in residential areas.	Road Service	April 2006	Within the period April 2006 to March 2009, Traffic Calming measures have been introduced in 224 streets.	Within the period April 2006 to March 2009, Traffic Calming measures have been introduced in 224 streets.	Within the period April 2006 to March 2009, Traffic Calming measures have been introduced in 224 streets.	Complete
91	Non-strategic highway network capacity enhancements.	Traffic management measures on local and distributor roads to improve the flow of traffic.	Road Service	2007		Ongoing improvements to network to improve traffic flow.	Ongoing improvements to network to improve traffic flow	Ongoing programme
92	Non-strategic highway network capacity enhancements.	Traffic management measures in Belfast City Centre comprising the reduction of existing road capacity within the core of the city centre.	Road Service	2006 - Ongoing programme	Plans under development to reduce traffic levels in the central area of Belfast	Traffic regulation Orders being processed to facilitate DSD's Streets Ahead Project. Plans under development to reduce traffic levels in the central area and facilitate a greater degree of priority for buses and accommodate rapid transit.	Ongoing measures to reduce town centre capacity ongoing	Ongoing programme
93	Advanced Traffic Control strategy.	Introduce Variable Message signs.	Road Service	2006	VMS have been installed on the motorways and on the motorway bus lanes.	20 VMS have been installed on the motorways and 6 rotating prism VMS on the motorway bus lanes.	20 VMS have been installed on the motorways and 6 rotating prism VMS on the motorway bus lanes.	Complete
94	Advanced Traffic Control strategy.	Introduce telematics to manage highway speeds, headway and incidents.	Road Service	2009	New Traffic Control System implemented on Westlink/M1 in 2009/10.	New Traffic Control System comprising variable mandatory speed limits implemented on Westlink/M1 in 2009/10.	New Traffic Control System comprising variable mandatory speed limits implemented on Westlink/M1 in 2009/10.	Complete

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
95	Advanced Traffic Control strategy.	Operate CCTV traffic flow monitoring.	Road Service	2006	CCTV cameras have been installed; 32 bus lane cameras; 10 motorway cameras; 7 urban cameras.	The following cameras have been installed; 32 bus lane cameras; 10 motorway cameras; 7 urban cameras.	CCTV network significantly extended throughout the city to assist with flow mentoring.	Complete
96	Implementation of Parking Measures.	Implementation of a parking policy focused on central Belfast to include a Controlled Parking Zone, improved enforcement, regulation and planning measures.	Road Service	October 2006	Within the period April 2006 to March 2009, 80 on-street spaces added in the current CPZ. 150 spaces in Belfast were changed from free to charge.	On 30th October 2006 parking enforcement transferred from PSNI to DRD. Newly empowered traffic attendants to concentrate on ensuring street parking restrictions are adhered to. Within the period April 2006 to March 2009, 80 on-street spaces added in the current CPZ. Current proposal to extend the CPZ to provide a further 294 spaces. The current tariff review carried out by the division proposes changing 150 spaces in Belfast from free to charge.	Newly empowered Traffic Attendants to concentrate on ensuring street parking restrictions are adhered to. Draft policy to provide a framework to allow DRD to introduce Residents Parking Schemes currently out to Public Consultation	Ongoing programme
97	Implementation of Parking Measures.	Residents only parking with restriction as to who is permitted to park by using a system of parking permits.	Road Service	2006	Insufficient support was received to allow the schemes to progress.	The first attempt to implement schemes was rejected by residents, largely as a result of the proposed cost of a permit. Charges were dropped and a second consultation exercise was carried out in May/June 2009 within 6 Belfast city centre areas. Insufficient support was received to allow the schemes to progress.	The first attempt to implement schemes was rejected by residents, largely as a result of the proposed cost of a permit. Charges were dropped and a second consultation exercise was carried out in May/June 2009 within 6 Belfast city centre areas. Insufficient support was received to allow the schemes to progress.	Complete
98	Review of current BCC Transport Policy.	Participate in Active Living Weeks in conjunction with the Investing for Health Strategy.	BCC	2006	BCC supports and participates in the Active Living Weeks.	BCC continue to support and participate in the Active Living Weeks.	BCC continue to support and participate in the Active Living Weeks.	Complete
99	Develop a policy to tackle pollution from bonfire	Piloting of an agreed Community Code of Conduct for managing bonfire sites.	BCC	2006	BCCI and Groundwork-NI Bonfire Management Group established	Belfast City Council and Groundwork-NI Bonfire Management Group established in 2005. Management plan for bonfire sites followed by participating sites in 2006.	Belfast City Council and Groundwork-NI Bonfire Management Group established in 2005. Management plan for bonfire sites followed by participating sites in 2006.	Complete
100	Develop a policy to tackle pollution from bonfire	Educate the community on the types of material which should be burnt on bonfires.	BCC	2006	In 2006 there were no tyres on participating sites.	In 2006 there were no tyres on participating sites. Also trials of beacon-type bonfires (e.g., Woodvale).	In 2006 there were no tyres on participating sites. Also trials of beacon-type bonfires (e.g., Woodvale).	Complete

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
101	Develop a policy to tackle pollution from bonfire.	Agree target dates for the collection and build up of material.	BCC	2006	Agreed for participating sites.	Agreed for participating sites.	Agreed for participating sites.	Complete
102	Education campaign for young people highlighting the health problems related to air pollution.	Develop and deliver a targeted education campaign via the Council's web site or published material.	BCC	2006	Education campaigns regarding air quality issues on the BCC website.	Council website currently going through a major re-vamp. Education campaigns regarding air quality issues will form a part of this work.	Council website currently going through a major re-vamp. Education campaigns regarding air quality issues will form a part of this work.	Ongoing programme
103	Continue to promote healthy travel, bike to work day, etc	Establish working partnerships with relevant health promotion bodies.	BCC	2006	Promotional campaigns	Relevant health bodies identified and included during relevant promotional campaigns.	Relevant health bodies identified and included during relevant promotional campaigns.	Complete
104	Continue to promote healthy travel, bike to work etc	Promote the Safe Routes to School initiatives and new routes.	Sustrans	2006	Projects to promote the Safe Routes to Schools	Projects to promote the Safe Routes to Schools continue and more planned for forthcoming years.	Projects to promote the Safe Routes to Schools continue and more planned for forthcoming years.	Complete
105	Explore the possibility of a public display with real time air quality information.	Provide real-time air quality information via the Council's web site or on a public display system.	BCC	2006	Real time air quality information now available at www.airqualityni.co.uk .	Real time air quality information now available at www.airqualityni.co.uk .	Real time air quality information now available at www.airqualityni.co.uk .	Complete
106	Develop the use of advertising space at Lombard Street air quality monitoring station.	Promote air quality issues via posters at the Belfast City Centre AURN Site.	BCC	2009	Lombard Street Station was stone cladded in September 2009	Lombard Street Station was stone cladded in September 2009 to reduce incidents of fly posting and make the site aesthetically more acceptable.	Currently investigating possibility of cladding the Belfast Centre air quality station to reduce incidents of fly posting	Complete
107	Provide free emissions testing supported by promotional material for car owners.	Implement a programme of voluntary emissions testing for car owners and develop supporting promotional literature.	BCC	2005	Six monthly scheduled emission testing of council employees vehicles was carried out until 2007	Six monthly scheduled voluntary emission testing of council employees vehicles carried out by the Environmental Protection Unit until 2007. Due to changes in MOT emission requirements in NI emission testing is no longer carried out by the unit.	Six monthly scheduled voluntary emission testing of council employees vehicles carried out by the Environmental Protection Unit until 2007. Due to changes in MOT emission requirements in NI emission testing is no longer carried out by the unit.	Complete

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
108	Promote the use of alternative fuels and vehicle types via the Energy Saving Trust	Promote emissions testing amongst large organisations in Belfast.	BCC	2006		Belfast City Council has commenced upon preliminary investigations regarding biodiesel however, government policy and the provisions of the Renewable Transport Fuel Obligation are unclear at this time.	Work on going	Ongoing programme
109	Encourage members of the public to report smoke emissions from chimneys with smoke control areas.	Promote the Belfast City Council Smoke Hotline for reporting smoky chimneys within Smoke Control Areas.	BCC	2006	Smoke Hotline number available on website. All reports investigated by Environmental Health Officers.	Smoke Hotline number available on website and on literature distributed by Environmental Protection Unit. All reports investigated by Environmental Health Officers.	Smoke Hotline number available on website and on literature distributed by Environmental Protection Unit. All reports investigated by Environmental Health Officers.	Complete
110	Reduce pollution arising from the burning of either commercial or domestic garden waste.	Implement further work to publicise the health effects of pollution from domestic and commercial burning.	BCC	2007	Guidance produced.	Bonfire Working Group convened and guidance produced.	NSCA published guidance on burning issued to interested parties. Belfast specific guidance to be drawn up	Complete
111	Development and implement a policy for dealing with commercial and domestic bonfires.	Promote composting at Civic Amenity Facilities to reduce the need for domestic bonfires.	BCC	2008	Central composting facility now operating at Dargan Road Landfill. Domestic Brown bin collection of garden wastes.	Central composting facility now operating at Dargan Road Landfill. Domestic Brown bin collection of garden wastes. Home composting kits available from Home Composting Officer and Green Waste now accepted at eight of the nine civic amenity sites.	Central composting facility now operating at Dargan Road Landfill. Domestic Brown bin collection of garden wastes. Home composting kits available from Home Composting Officer and Green Waste now accepted at eight of the nine civic amenity sites.	Complete
112	Development and implement a policy for dealing with commercial and domestic bonfires.	Implement annual education programme for Tyre Distributors to encourage environmentally friendly disposal.	BCC	2008	Nuisance legislation, green recycling collections and facilities at recycling centres	Being dealt with via nuisance legislation, green recycling collections and facilities at recycling centres	Partnership work with Groundwork on going	Complete

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
113	Undertake ambient pollution monitoring throughout Belfast in order to identify areas of poor air quality.	Install and operate air quality monitoring equipment at potential locations of potential poor air quality throughout the City.	BCC	2006	4 real time monitoring stations throughout Belfast.	Since 2006 new real time monitoring stations established on the Ormeau Road, and Stockman's Lane, a new station was installed along the Westlink corridor in 2010. The NO2 Diffusion tube network has been increased from 32 to 45 to cover areas not previously monitored.	Since 2006 new real time monitoring stations established on the Ormeau Road, and Stockman's Lane, a further station to be installed along the Westlink corridor in 2009/10. The NO2 Diffusion tube network has been increased from 32 to 45 to cover areas not previously monitored.	Complete
114	Evaluate monitoring from ambient pollution monitors throughout Belfast.	Compare ambient air pollution monitoring levels against the health based National Air Quality Strategy Objectives	BCC	2004	Ambient air pollution throughout Belfast is annually evaluated against the health based National AQ Strategy Objective	Ambient air pollution throughout Belfast is annually evaluated against the health based National Air Quality Strategy Objective through the LAQM Review and Assessment Process, all reports are submitted to the DOE (NI) and DEFRA.	Ambient air pollution throughout Belfast is annually evaluated against the health based National Air Quality Strategy Objective through the LAQM Review and Assessment Process, all reports are submitted to the DOE (NI) and DEFRA.	Complete
115	Support sustainable (renewable) energy, energy efficiency and low carbon transport promotions.	Belfast City Council will work in partnership with and provide financial support to the Energy Saving Trust Advice Centre.	BCC	2008	BCC has committed to partnership with NIEAC	BCC has committed to partnership with NIEAC	BCC has committed to partnership with NIEAC	Complete
116	Changing Travel Attitudes.	Support and promote Travel Plans, implemented through planning agreements or conditions on planning permission.	Road Service	2006	8 separate workplaces in Belfast received specific advice on Travel Plans, 16 Travelwise presentations to workplaces were carried out.	8 separate workplaces in Belfast received site specific advice on Workplace Travel Plans (WTP), 16 Travelwise presentations to workplaces were carried out. A WTP seminar was held for Belfast Chamber of Commerce. Further visits and Travel Plan advisory sessions are planned for 2009/10.	8 separate workplaces in Belfast received site specific advice on Workplace Travel Plans (WTP), 16 Travelwise presentations to workplaces were carried out. A WTP seminar was held for Belfast Chamber of Commerce.	Complete

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
117	Changing Travel Attitudes.	Implement a BMA-wide travel awareness campaign supplemented by localised campaigns in conjunction with the implementation of major public transport schemes.	Road Service	2006	Numerous travel awareness campaigns supported by DRD.	Numerous travel awareness campaigns supported by DRD, targeting school runs and commuters with information on sustainable travel. Travelwise participated in Personal Travel Plan project in Stranmillis and is currently supporting the communication strategy for A2 Shore Road project.	Numerous travel awareness campaigns supported by DRD, more planned for following years	Complete
118	Changing Travel Attitudes.	Implementation of the Safer Routes to school initiatives.	Road Service	2006	School safety zones were implemented at 38 schools in Eastern Division, Road Service.	Within the period April 2006 to March 2009 school safety zones were implemented at 38 schools in Eastern Division, Road Service.	Within the period April 2006 to March 2009 school safety zones were implemented at 38 schools in Eastern Division, Road Service.	Complete
119	Review of current Translink transport options and promotions.	Develop an Environmental information leaflet.	Translink	2007	Environmental Strategy published and available on the environment section of the Translink website.	Environmental Strategy published and available on the environment section of the Translink website - www.translink.co.uk/environmental.asp	Environmental Strategy published and available on the environment section of the Translink website - www.translink.co.uk/environmental.asp	Complete
120	Review of current Translink transport options and promotions.	Further develop Translink partnerships with public sector organisations and large employers.	Translink	2006	'Corporate Commuter Initiative'	Through our 'Corporate Commuter Initiative', we visit major employers to tell their staff about the bus or rail services they could use to travel to work. Belfast City Hospital, Halifax, Department for Employment and Learning, Northern Ireland Housing Executive and IKEA are among those visited.	Translink actively seeks the participation of local communities with environmental projects.	Complete
121	Review of current Translink transport options and promotions.	Participate in Active Living Weeks.	Translink	2006	Translink promote many initiatives internally with its staff and also externally with the general public.	Translink promote many initiatives internally with its staff and also externally with the general public and particular groups.	Translink promote many initiatives internally with its staff and also externally with the general public and particular groups.	Complete
122	Continue to promote healthy travel.	Establish working partnerships with relevant health promotion bodies.	Translink	2006	Working in partnership with Health promotion bodies	Working in partnership with Health promotion bodies.	Working in partnership with Health promotion bodies	Complete

No.	Measure	Focus	Lead authority	Implementation phase	Indicator	Progress to date	Progress in last 12 months	Estimated completion date
123	Continue to promote healthy travel.	Promote the Walk and Bike to Work Days.	Translink	2006	Translink promote many initiatives internally with its staff and also externally with the general public.	Translink promote many initiatives internally with its staff and also externally with the general public and particular groups.	Translink promote many initiatives internally with its staff and also externally with the general public and particular groups.	Complete
124	Continue to promote healthy travel.	Promote availability of Cycle Maps/ Cycle Ways.	Translink	2006	Bike it with Translink section on website.	Bike it with Translink section on website.	Bike it with Translink section on website.	Complete
125	Develop the use of advertising space at Translink centres to promote air quality issues.	Work in conjunction with other interested parties to promote air quality issues.	Translink	2006	Switch to Efficiency Campaign currently being promoted throughout Translink locations.	Partnerships established to promote air quality issues. Switch to Efficiency Campaign currently being promoted throughout Translink locations.	Partnerships established to promote air quality issues. . Switch to Efficiency Campaign currently being promoted throughout Translink locations.	Complete

7 Conclusions and Proposed Actions

7.1 Conclusions from New Monitoring Data

New monitoring data for the 2009 period as presented in this report would indicate that nitrogen dioxide levels exceed the objective at a number of relevant locations outside existing AQMAs. On a more positive note, both automatic and diffusion tube monitoring along the Ormeau Road AQMA continue to record levels below the objective. These findings support those identified in the 2009 Update and Screening Assessment whereby it was considered that a Detailed Assessment (DA) should be undertaken to look more closely at a few areas of concern. This DA is currently ongoing, therefore it is not deemed appropriate to proceed to DA again in the 2011 period.

7.2 Conclusions relating to New Local Developments

Of the planning applications received and reviewed in 2009 it was concluded they would have no significant negative impact on existing local air quality. In addition no significant changes in local circumstances were identified within Belfast which would require more detailed consideration. It is therefore not considered necessary to proceed to a 'Detailed Assessment' based on new local developments or potential sources.

7.3 Proposed Actions

Monitoring data presented in this report would indicate it is not necessary to proceed to a Detailed Assessment in 2011 for any pollutant. A number of diffusion tube monitoring sites both within and outside AQMAs exceed the nitrogen dioxide (NO₂) annual mean objective of 40µg/m³, however, these locations further validate the conclusions of the 2009 Update and Screening Assessment and a Detailed Assessment is currently ongoing to look at these locations in more detail. Potential outcomes from this Detailed Assessment could result in parts of the city centre being declared as AQMAs, revoking of the Ormeau Road AQMA is also under consideration.

An extensive nitrogen dioxide monitoring network exists throughout Belfast and currently captures all areas of potential concern, therefore it is not envisaged the existing network will be increased unless a change in local circumstances is identified. Nitrogen dioxide continues to be identified as the biggest problem with road traffic as the main source.

Significant progress has been made by all partners involved in the Air Quality Action Plan, it is anticipated focus over the next year will be on achieving completed status to those actions currently considered ongoing.

Under the Local Air Quality Management Review and Assessment process the next course of action for Belfast City Council will be to submit a progress report in 2011.

8 References

Belfast City Council, 2007. Belfast City Detailed Air Quality Assessment, 2007, Final Version, April 2007. Available at: www.airqualityni.co.uk/laqm

Belfast City Council, 2008. Belfast City Progress Report 2008, Final Version, April 2008. Available at: www.airqualityni.co.uk/laqm

Belfast City Council, 2009. Belfast City Update and Screening Assessment, 2009, Final Version, April 2009. Available at: www.airqualityni.co.uk/laqm

Local Air Quality Management – Technical Guidance (09). 2009. Available at: www.defra.gov.uk/environment/airquality/index

Appendices

Appendix A: QA/QC Data

Appendix B: Belfast City Council Air Quality Management Area Location Map

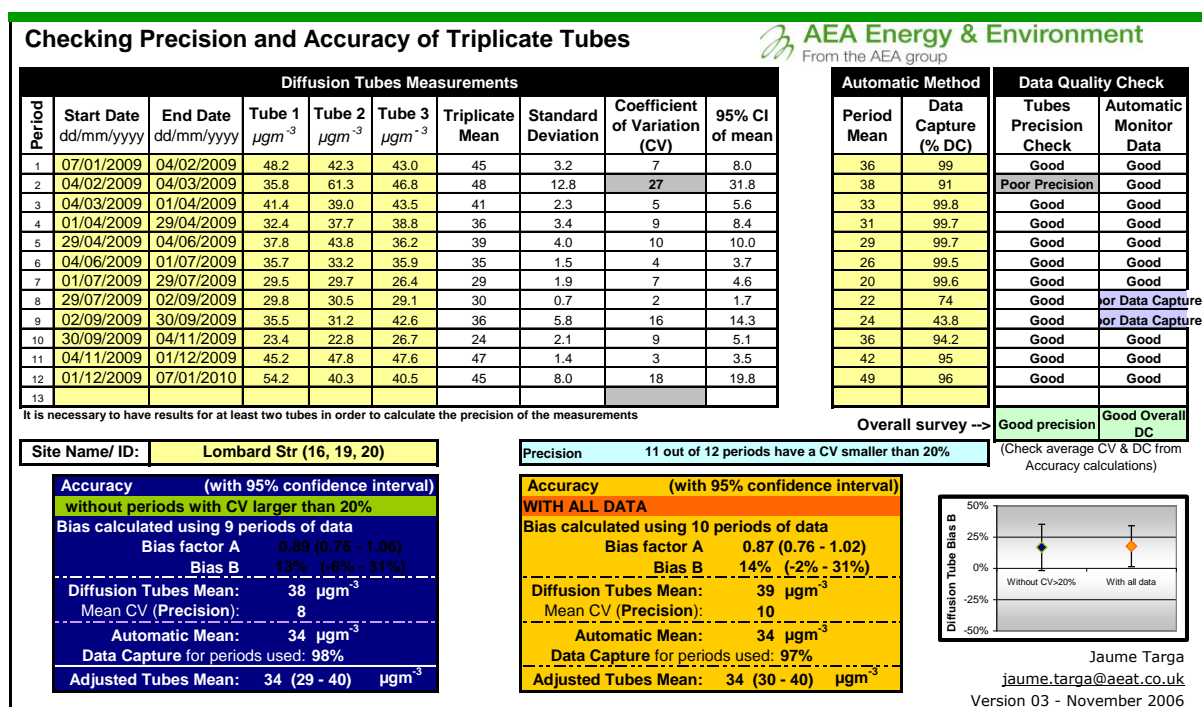
Appendix C: Belfast City Council Air Quality Monitoring Station Details

Appendix A: QA:QC Data

Diffusion Tube Monitoring

Belfast City Council use Gradko International for the supply and analysis of diffusion tubes. The laboratory constantly delivers high performance both in terms of results and service, it operates in accordance with LAQM-TG(09), and participates in the WASP scheme.

2009 Bias-adjusted Results and Factor from Local Co-location Study



Adjustment of SINGLE Tubes

Diffusion Tube Measurements													
Site Name/ID	Periods												
	1	2	3	4	5	6	7	8	9	10	11	12	13
1. RVH	35.8	35.5	30.5	25.9	23.2	21.3	16.9	18.4	22.2	21.2	27.6	34.9	
2. Blacks Rd	58.1	51.5	51.0	43.6	48.4	46.4	39.9	41.3	54.9	52.9	57.5	59.9	
3. 61 Cromac Str	53.0	51.6	55.0	43.7	49.5	48.7	35.4	39.4	44.9	46.2	52.9	62.8	
4. Ravenhill Rd	41.6	44.5	37.9	33.5	35.6	42.3	27.7	24.0	33.2	17.8	32.4	51.0	
5. Queens Bridge	33.4	35.6	30.8		34.7		20.0						
6. North Road	21.8	28.7	20.4	15.0	15.0	12.8	11.1	11.5	17.7	13.6	23.3	14.3	
7. Donegal Sq. South	52.3	57.8	57.6	47.6	46.9	56.6	38.4	37.2			44.1	61.2	
8. Milner Str		47.3					24.7			29.7	34.1	40.2	
9. Short Strand	64.9	58.6	53.2	54.3	56.3	59.2	44.6	39.8	50.2	59.7	56.8	58.4	
10. 301 Ormeau Rd	46.4	47.1	41.7	34.4	41.3	38.7	32.5	33.0	33.9	18.7	43.2	50.0	
11. 400 Ormeau Rd	41.1	42.7	36.1	37.8	31.9	32.0	24.0	22.6	27.5	17.8	38.1	48.8	
12. Knock Rd	55.9	61.4	54.5	45.0	57.8	54.2	35.4	39.7	42.5	38.9	51.0	65.3	
13. Gr Georges Str	70.3	61.6	58.6	61.8	58.9	79.8	48.6	42.6	46.0	33.3	39.6	59.0	
14. Lisburn Rd		47.7		33.0	37.4		27.4	27.4	39.5	19.6	41.1	52.6	
15. Shaftesbury Sq	53.6	62.6	43.1	38.7	44.1	47.9	33.9	33.6	36.4	26.8	36.5		
17. Albert Clock	68.1	45.5	55.3	47.4	53.5	54.1	36.8	43.7	35.8	36.6	56.1	55.0	
18. Victoria Str	48.1	45.6	42.6	52.1		51.5	35.8	31.0	37.1	31.0	54.4	61.6	
25. Whitewell Rd		23.7			25.7	38.4	21.7		18.0	16.2	21.1	27.9	
26. Donegal Rd	40.5	40.5	40.1	32.8	32.3	40.5	28.6	23.5	33.6	25.7	36.8		
27. Grovesner Rd	60.1	57.2	53.6	46.3	42.1	38.4	26.7	27.3			49.0		
28. Falls and Andytown	46.2	45.6		36.3	36.3		27.2	26.5	32.0	31.3	32.9	40.2	
29. Sydenham Bypass	34.6	49.0	40.1	26.7	28.3	28.6	27.1	26.1	35.1	23.3	33.6	41.1	
30. Station Rd		42.2	36.1	24.7	18.5	22.7	20.8	18.5	29.3	23.7	32.5	40.3	
31 House of Sport	32.6	29.9	29.2	26.4	21.1	23.9		15.8	21.3	16.2	28.3	41.3	

Adjusted measurement confidence interval) (95%) with all the data	
10 periods used in this calculations	
Bias Factor A 0.87 (0.76 - 1.02)	
Bias B 14% (-2% - 31%)	
Tube Precision: 10	Automatic DC: 97%
Adjusted with 95% CI	23 (20 - 27)
Adjusted with 95% CI	44 (38 - 51)
Adjusted with 95% CI	42 (37 - 50)
Adjusted with 95% CI	31 (27 - 36)
Adjusted with 95% CI	27 (23 - 32)
Adjusted with 95% CI	15 (13 - 17)
Adjusted with 95% CI	43 (38 - 51)
Adjusted with 95% CI	31 (27 - 36)
Adjusted with 95% CI	48 (42 - 56)
Adjusted with 95% CI	33 (29 - 39)
Adjusted with 95% CI	29 (25 - 34)
Adjusted with 95% CI	44 (38 - 51)
Adjusted with 95% CI	48 (42 - 56)
Adjusted with 95% CI	31 (28 - 37)
Adjusted with 95% CI	36 (32 - 42)
Adjusted with 95% CI	43 (37 - 50)
Adjusted with 95% CI	39 (34 - 46)
Adjusted with 95% CI	21 (18 - 25)
Adjusted with 95% CI	30 (26 - 35)
Adjusted with 95% CI	39 (34 - 45)
Adjusted with 95% CI	31 (27 - 36)
Adjusted with 95% CI	29 (25 - 33)
Adjusted with 95% CI	24 (21 - 29)
Adjusted with 95% CI	23 (20 - 27)
Adjusted with 95% CI	#VALUE!

The bias adjustment factor used in these calculations include all the data and no screening of data due to poor precision has been applied.

Checking Precision and Accuracy of Triplicate Tubes

Diffusion Tubes Measurements									
Period	Start Date dd/mm/yyyy	End Date dd/mm/yyyy	Tube 1 $\mu\text{g m}^{-3}$	Tube 2 $\mu\text{g m}^{-3}$	Tube 3 $\mu\text{g m}^{-3}$	Triplicate Mean	Standard Deviation	Coefficient of Variation (CV)	95% CI of mean
1	07/01/2009	04/02/2009	48.2	42.3	43.0	45	3.2	7	8.0
2	04/02/2009	04/03/2009	35.8	61.3	46.8	48	12.8	27	31.8
3	04/03/2009	01/04/2009	41.4	39.0	43.5	41	2.3	5	5.6
4	01/04/2009	29/04/2009	32.4	37.7	38.8	36	3.4	9	8.5
5	29/04/2009	04/06/2009	37.8	43.8	36.2	39	4.0	10	10.0
6	04/06/2009	01/07/2009	35.7	33.2	35.9	35	1.5	4	3.7
7	01/07/2009	29/07/2009	29.5	29.7	26.4	29	1.9	6	4.6
8	29/07/2009	02/09/2009	29.8	30.5	29.1	30	0.7	2	1.8
9	02/09/2009	30/09/2009	35.5	31.2	42.6	36	5.8	16	14.4
10	30/09/2009	04/11/2009	23.4	22.8	26.7	24	2.1	9	5.1
11	04/11/2009	01/12/2009	45.2	47.8	47.6	47	1.4	3	3.5
12	01/12/2009	07/01/2010	54.2	40.3	40.5	45	8.0	18	19.8
13									

It is necessary to have results for at least two tubes in order to calculate the precision of the measurements

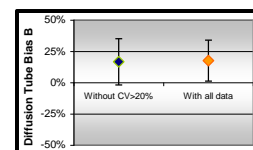
Automatic Method		Data Quality Check	
Period	Data Capture (% DC)	Tubes Precision Check	Automatic Monitor Data
36	99	Good	Good
38	91	Poor Precision	Good
33	99.8	Good	Good
31	99.7	Good	Good
29	99.7	Good	Good
26	99.5	Good	Good
20	99.6	Good	Good
22	74	Good	for Data Capture
24	43.8	Good	for Data Capture
36	94.2	Good	Good
42	95	Good	Good
49	96	Good	Good

Overall survey -->

Good precision
Good Overall
DC
(Check average CV & DC from Accuracy calculations)

Site Name/ ID:	Lombard Str (16, 19, 20)
Accuracy (with 95% confidence interval)	
without periods with CV larger than 20%	
Bias calculated using 9 periods of data	
Bias factor A	0.89 (0.76 - 1.06)
Bias B	13% (-6% - 31%)
Diffusion Tubes Mean:	38 $\mu\text{g m}^{-3}$
Mean CV (Precision):	8
Automatic Mean:	34 $\mu\text{g m}^{-3}$
Data Capture for periods used:	98%
Adjusted Tubes Mean:	34 (29 - 40) $\mu\text{g m}^{-3}$

Precision	11 out of 12 periods have a CV smaller than 20%
Accuracy (with 95% confidence interval)	
WITH ALL DATA	
Bias calculated using 10 periods of data	
Bias factor A	0.87 (0.76 - 1.02)
Bias B	14% (-2% - 31%)
Diffusion Tubes Mean:	39 $\mu\text{g m}^{-3}$
Mean CV (Precision):	10
Automatic Mean:	34 $\mu\text{g m}^{-3}$
Data Capture for periods used:	97%
Adjusted Tubes Mean:	34 (30 - 40) $\mu\text{g m}^{-3}$



Jaume Targa

jaume.targa@aeat.co.uk

Version 03 - November 2006

[illegible]

Discussion of Choice of Factor to Use

In deciding the appropriate bias-adjustment factor to use Belfast City Council considered a number of factors and came to the conclusion co-location bias-adjustment was the preferred choice. This decision was based on the most suitable approach as outlined in LAQM-TG(09) Box 3.3 on the grounds that the co-location site used generally has “good” precision for the diffusion tubes with high quality results. In addition, this method was also chosen for constancy reasons as the site has been used for co-location bias-adjustment in previous rounds of R&A.

PM Monitoring Adjustment

Both the Belfast Centre and Stockman's Lane site use an FDMS for particulate matter monitoring. Belfast City Council do not make any adjustments to the PM₁₀ data as AEA Energy & Environment have been appointed to undertake all data management. AEA have confirmed no correction factor was applied to the 2009 data as FDMS monitoring generates a nominal "gravimetric-equivalent result".

QA/QC of Automatic Monitoring

Belfast City Council staff carry-out regular calibrations of all the automatic monitoring stations, and aim to carry-out a calibration every two weeks, however this is not always possible due to staff constraints.

In addition to the routine in-house calibrations BCC have appointed AEA Energy & Environment to undertake quality control audits to all monitoring stations. The quality control programme employed by this independent organisation is based on that outlined within LAQM.TG(09).

The audits provide valuable information on equipment performance and also a six-monthly assessment of all station calibration cylinder concentrations, ensuring that the concentrations remain stable and are thus suitable for data scaling purposes.

To ensure high quality data and uninterrupted data dissemination BCC appointed AEA Energy & Environment to undertake data management services to all monitoring stations.

This service provides:

- Daily data collection
- Screening, scaling and data ratification
- Fault notification to facilitate engineering support call out
- Data reporting (via the Northern Ireland Air Quality Archive)

QA/QC of Diffusion Tube Monitoring

GRADKO Environmental Laboratory; Nitrogen Dioxide (NO₂) WASP Results.

Jan 09 Round 104 Ref Value : 2.02ugNO₂; Measured Value : 1.85ugNO₂ Z Score -0.7 **Satisfactory.**

Ref Value : 1.22ug NO₂; Measured Value : 1.21ugNO₂ Z Score - 0.1 **Satisfactory.**

Apr 09 Round 105 Ref Value : 1.68ugNO₂; Measured Value : 1.63ugNO₂ Z Score -0.4 **Satisfactory.**

Ref Value : 0.96ug NO₂; Measured Value : 0.92ugNO₂ Z Score - 0.5 **Satisfactory.**

July 09 Round 106 Ref Value : 1.84ugNO₂; Measured Value : 1.88ugNO₂ Z Score 0.3 **Satisfactory.**

Ref Value : 1.42ug NO₂; Measured Value : 1.34ugNO₂ Z Score - 0.8 **Satisfactory.**

Oct 09 Round 107 Ref Value : 2.03ugNO₂; Measured Value : 1.87ugNO₂ Z Score –1.1 **Satisfactory.**

Ref Value : 2.20ug NO₂; Measured Value : 1.99ugNO₂ Z Score -1.4 **Satisfactory.**

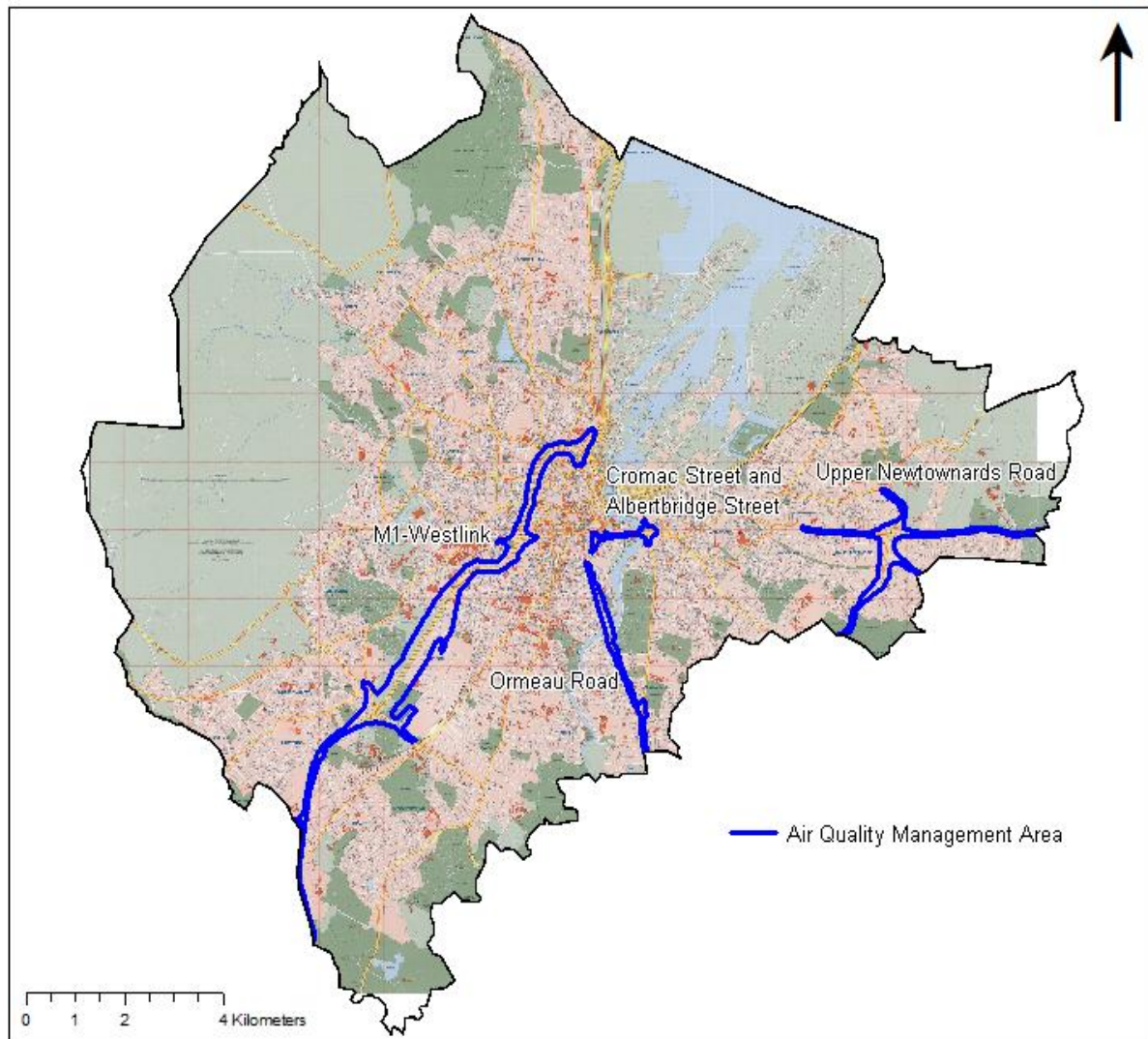
The criteria for Z-scores are: Z score of < +/- 2 Satisfactory Result

Z score of < +/- 2 and < +/- 3 Questionable (Warning) Result

Z score of > +/- 3 Unsatisfactory Result

The above criteria has been set by HSL and AEA, and as from April 2010 the performance scores will be based on Rolling Performance Index (RPI) and not Z-scores.

Appendix B: Belfast City Council Air Quality Management Area Location Map



Appendix C: Belfast City Council Air Quality Monitoring Station Details

Belfast Centre

Site Name: Belfast Centre

Site Type: Urban Centre

Site Comments: Lombard St. Irish Grid Coords: J333898 374358

Monitoring Network: Non-Automatic Hydrocarbon Network

Parameter	Date Started	Date Ended
Benzene	07/05/2002	Ongoing

Monitoring Network: Northern Ireland Automatic Urban Network

Parameter	Date Started	Date Ended
Carbon monoxide	08/03/1992	Ongoing
Nitric oxide	08/03/1992	Ongoing
Nitrogen dioxide	08/03/1992	Ongoing
Ozone	08/03/1992	Ongoing
PM10 particulate matter (hourly Measured)	08/03/1992	Ongoing
Sulphur dioxide	08/03/1992	Ongoing
Nitrogen oxides as nitrogen dioxide	08/03/1992	Ongoing
Enclosure Temperature	08/03/1992	Ongoing



Stockman's Lane**Site Name:** Belfast Stockman's Lane**Site Type:** Roadside**Site Comments:** Irish Grid Coords: J331004 371230**Monitoring Network:** Northern Ireland Automatic Urban Network

Parameter	Date Started	Date Ended
Nitric oxide	13/04/2006	Ongoing
Nitrogen dioxide	13/04/2006	Ongoing
Nitrogen oxides as nitrogen dioxide	13/04/2006	Ongoing
PM10 particulate matter (hourly Measured)	13/04/2006	Ongoing

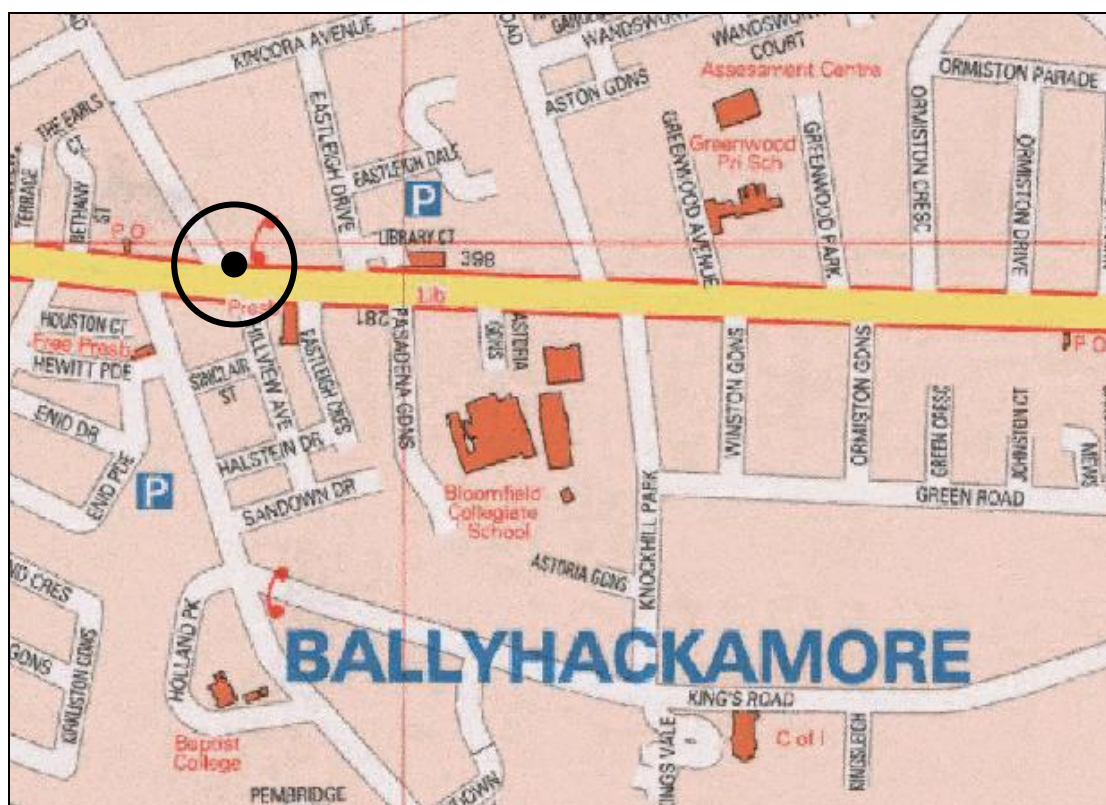


Upper Newtownards Road**Site Name:** Belfast Roadside**Site Type:** Roadside**Site Comments:** Irish Grid Coords: J337911 373972**Monitoring Network:** Non-Automatic Hydrocarbon Network

Parameter	Date Started	Date Ended
Benzene	07/05/2002	09/10/2007

Monitoring Network: Northern Ireland Automatic Urban Network

Parameter	Date Started	Date Ended
Nitric oxide	01/04/2002	Ongoing
Nitrogen dioxide	01/04/2002	Ongoing
Nitrogen oxides as nitrogen dioxide	01/04/2002	Ongoing



Ormeau Road**Site Name:** Belfast Ormeau Road**Site Type:** Roadside**Site Comments:** Irish Grid Coords: J334272 373012**Monitoring Network:** Northern Ireland Automatic Urban Network

Parameter	Date Started	Date Ended
Nitric oxide	24/05/2006	Ongoing
Nitrogen dioxide	24/05/2006	Ongoing
Nitrogen oxides as nitrogen dioxide	24/05/2006	Ongoing

