LISBURN
CITY COUNCIL

2011 Air Quality Progress Report for Lisburn City Council

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

May 2011

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Executive Summary

The Air Quality Strategy has established the framework for air quality management in the UK. Local Authorities have a duty under the Environment Act 1995 and subsequent regulations to review and assess air quality in their areas on a periodic basis so as to identify all areas where the air quality objectives are being or are likely to be exceeded. A phased approach has been adopted for the review and assessment process so that the level of assessment undertaken is commensurate with the risk of an exceedence of an air quality objective.
An updating and screening assessment (USA) is required to be prepared every three years by all local authorities in the UK. The last updating and screening assessment of air quality was undertaken in 2009 and the next is due by the end of April 2012, with two interim progress reports.

This report is the 2010 progress report and has been completed using the recommended template. The assessment is fully compliant with the applicable policy and technical guidance.

Lisburn city council is located southwest of Belfast and is the second largest Council in Northern Ireland, it covers 174square miles and has a population of over 114,000. Spanning parts of southwest County Antrim and Northwest County Down, the Council stretched from Glenavy and Dundrod in the north to Dromara and Hillsborough in the South, and from Drumbo in the east to Moira and Aghalee in the west.

The progress report identified no exceedences of the Air Quality Strategy objectives for 2010 for any of the pollutants assessed. No AQMA’s are currently declared in Lisburn City Council Area, and it is not envisaged that this situation will change before 2011.

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1 Introduction

1.1 Description of Local Authority Area

Lisburn City Council covers an area totalling 174 square miles of southwest Antrim and northwest Down stretching from Glenavy and Dundrod in the north to Dromara and Hillsborough in the south, and from Drumbo in the east to Moira and Aghalee in the west. The population is approximately 114,000 and it is bounded by Belfast City Council, Craigavon Borough Council, Castlereagh Borough Council, Banbridge District Council Antrim Borough Council and Down District Council.

The major road network within the Lisburn consists of the M1 dissecting the Borough on its route from Belfast and bordering on Dunmurry, Lisburn and Moira.

The A1 takes a route out of Belfast through the centre of Dunmurry and Lisburn town. At Sprucefield it forms a junction with the M1 and then takes a route, bordering on Hillsborough, towards Dublin.

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 micrograms per cubic metre µg/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 $\mu g/m^3$	Running annual mean	31.12.2003
	3.25 $\mu g/m^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu g/m^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu g/m^3$	Annual mean	31.12.2004
	0.25 $\mu g/m^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu g/m^3$	Annual mean	31.12.2005
Particles (PM10) (gravimetric)	50 $\mu g/m^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu g/m^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu g/m^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu g/m^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu g/m^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

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

Stage 1 Report (LBC, 2000)	The first stage review and assessment found that the air quality objectives for 4 of the 7 specified parameters namely carbon monoxide, nitrogen dioxide, PM_{10} and sulphur dioxide were all unlikely to be achieved by 2003-2005.
Stage 2/3 Air Quality Review (LCC, 2003, 2004)	The stage 2/3 review for road emissions and domestic fuel combustion concluded that an Air Quality Management Area (AMQA) should not be declared for NO_2, PM_{10} and SO_2, as there were not predicted to be exceedences of the air quality objectives.
Progress report (LCC,2005)	This reported data for 2004.The progress report concluded that PM_{10}, NO_2 and SO_2 were not predicted to cause exceedences of the air quality objectives at relevant receptors.
Updating and Screening Assessment (USE, 2006)	This reported data for 2005. This indicated that current objectives in relation to SO_2, NO_2 and PM_{10} would be achieved at the location of the automatic monitoring stations.
Progress report (EG, 2007)	This reported the 2006 measurements
Progress report (EG, 2008)	This reported the 2007 measurements It continues to be the case that no current air quality objectives are being exceeded in the Lisburn City Council area. PAH levels are being monitored in Dunmurry as earlier studies have indicated elevated levels of this pollutant.
Updating and Screening Assessment (USE, 2009)	This reported 2008 measurements.
Progress Report (LCC,2010)	This reported 2009 measurements and all current objectives were achieved.

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

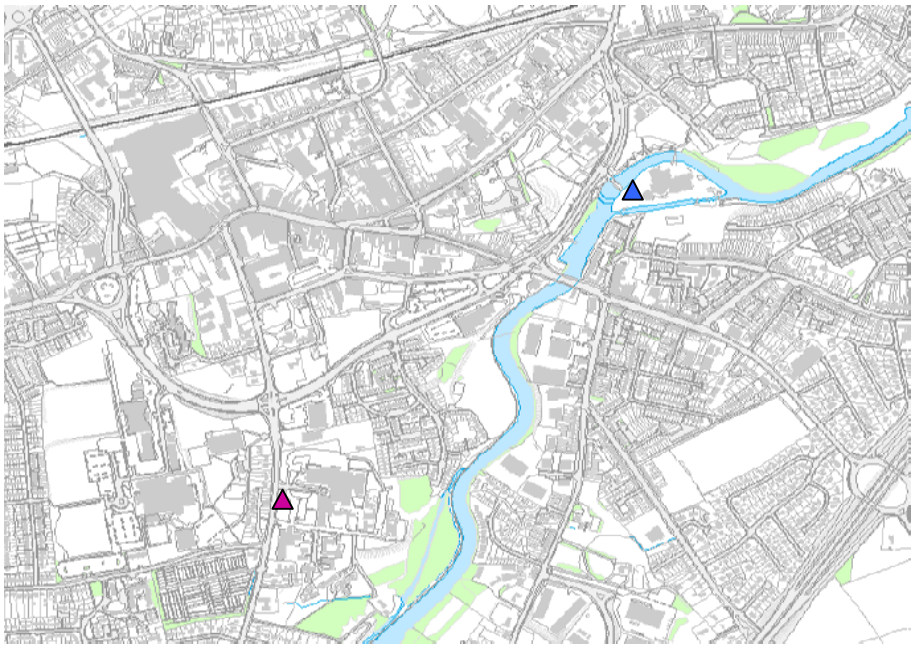
Lisburn City Council presently has three automatic sites measuring NOx, SO_2, PM10 and $PM_{2.5}$ using chemiluminescence analysers for the NOx , UV analyser for the SO_2, and the TEOM FDMS for PM. The TEOM data is corrected and reported using Volatile Correction Model.

Lagan Valley Hospital
Lagan Valley Island
Dunmurry High School

See Appendix A: Details of Quality Assurance and Quality Control

Figure 2.1 Map(s) of Automatic Monitoring Sites

Automatic Air Monitoring Stations Lisburn City



Lagan Valley Hospital
Lagan Valley Island

Air Monitoring Site Dunmurry

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref		Pollutants Monitored	Monitoring Technique	In AQ MA ?	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
Dunmurry High School	Urban Background	X328595	Y367325	PM10, PM2.5 SO2	TEOM FDMS UV Analyser	NO	YES 40M	50M	NO
Island Civic Centre	Urban Background	X327202	Y364336	PM10	TEOM	NO	YES 300M	40M	NO
Lagan Valley Hospital	Roadside	X326537	Y363700	Pm10 (a) No2	Teom chemiluminescence analyser	NO	YES 40M	5M	YES

(a)The Lagan Valley Hospital PM10 analyser was decommissioned on the 31st March 2010

2.1.2 Non-Automatic Monitoring

Lisburn City Council has maintained a number of NO_2 diffusion tubes at roadside and background sites for a number of years. The diffusion tube studies for Lisburn for the past five years do not show any particular trends. (See Fig. 2.4) Only the Northern Bank site shows an exceedence of the objective. However, this is a historical kerb side site without relevant exposure and was removed at the beginning of 2010 and re-located to Sloan Street adjacent to relevant exposure. Annual variation is more likely to be as a result of climatic conditions rather than changes in emissions. All other monitoring has shown results below the current objectives.

The NO_2 diffusion tubes are supplied by Bureau Veritas and analysed by Eurofins. Preparation method is 20% TEA in water. A co-location study is carried out at the Lagan Valley Hospital Automatic site.

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

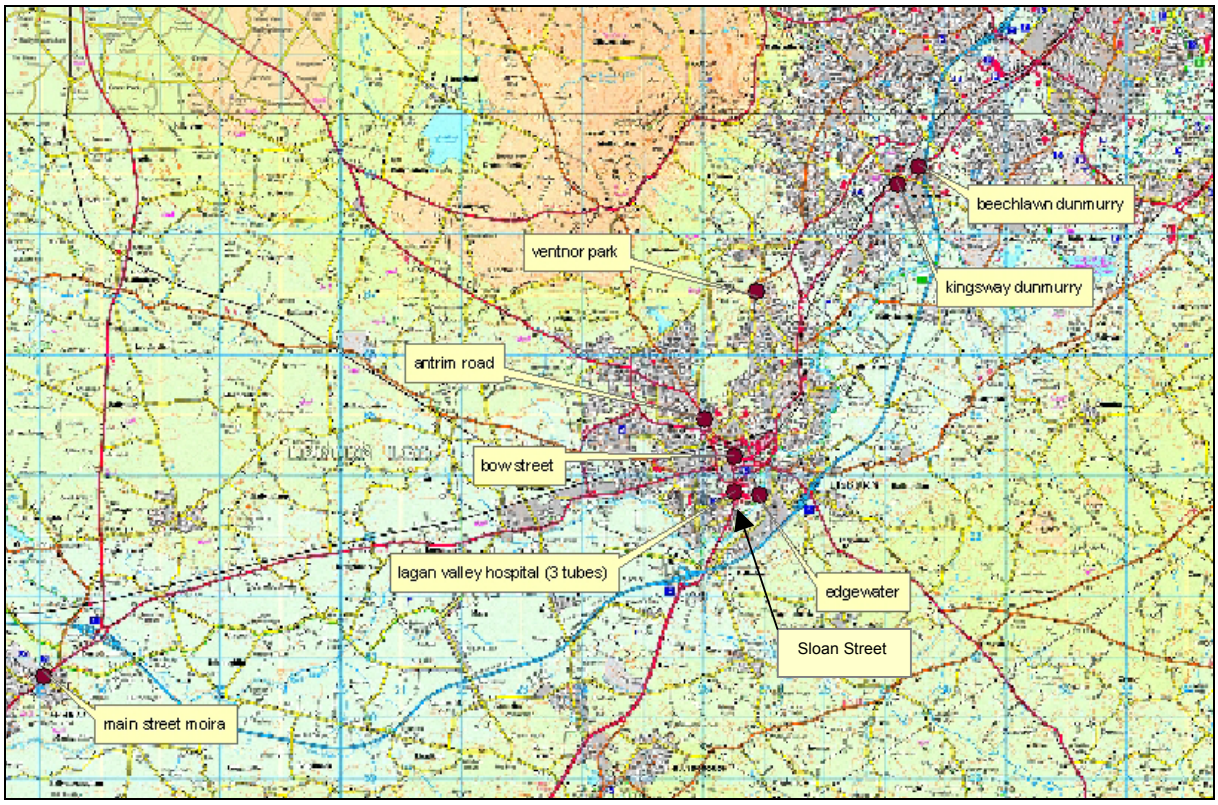


Table 2.2 Details of Non- Automatic Monitoring Sites

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?
Northern bank (removed 31st March 2010)	Roadside	326507	364415	NO_2	No	No	0.5m	No
Antrim Rd	Roadside	326313	364621	NO_2	No	Yes 7m	1m	Yes
Ventnor Pk	Background	326900	362013	NO_2	No	No	0.5m	No
Edgewater	Background	327202	363718	NO_2	No	No	0.5m	No
Moira	Roadside	315100	360621	NO_2	No	No	0.5m	Yes
Kingsway	Roadside	329502	386915	NO_2	No	Yes 30m	1m	Yes
Lagan Valley Hospital	Co location	329610	369105	NO_2	No	Yes 40m	5m	Yes
Beechlawn	Roadside	326165	362491	NO_2	No	Yes 10m	1mm	Yes
Sprucefield Court	Roadside	327586	363586	NO_2	No	Yes 1m	15m	Yes
Benford Park	Roadside	326507	364415	NO_2	No	Yes 1m	15m	Yes
Sloan Street From 1st April 2010	Roadside	327236	364102	NO_2	No	Yes 4m	1.5m	Yes

2.2 Comparison of Monitoring Results with Air Quality Objectives

No exceedences of the AQS objectives have been identified from the monitoring data collected since the last Update and Screening Assessment. All monitored pollutant concentrations have been well below their respective air quality objective limits.

2.2.1 Nitrogen Dioxide

In the following section results are presented for NO_2 at the automatic and diffusion tube sites and compared with the objective. All sites meet the objective.

Automatic Monitoring results

Table 2.3a presents the annual mean concentrations of NO_2 determined at the automatic site in 2010 from the hourly measurements.

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These data have been fully ratified by AEA

POLLUTANT	NO	NO_2	NO_X
Number Very High	-	0	-
Number High	-	0	-
Number Moderate	-	0	-
Number Low	-	8735	-
Maximum 15-minute mean	1063 μgm^{-3}	256 μgm^{-3}	1874 μgm^{-3}
Maximum hourly mean	904 μgm^{-3}	208 μgm^{-3}	1589 μgm^{-3}
Maximum running 8-hour mean	551 μgm^{-3}	161 μgm^{-3}	999 μgm^{-3}
Maximum running 24-hour mean	302 μgm^{-3}	113 μgm^{-3}	573 μgm^{-3}
Maximum daily mean	298 μgm^{-3}	113 μgm^{-3}	567 μgm^{-3}
Average	27 μgm^{-3}	33 μgm^{-3}	73 μgm^{-3}
Data capture	99.7 %	99.7 %	99.7 %

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Nitrogen Dioxide	Annual mean > 40 μgm^{-3}	0	-
Nitrogen Dioxide	Hourly mean > 200 μgm^{-3}	2	2

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

Results have been consistent since installation of automatic station, there was a slight elevation in 2010 but this was more likely due to the severe climate conditions.

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

Site ID	Location	Within AQMA?	Data Capture for monitoring period [a] %	Data Capture for full calendar year 2010 [b] %	Annual mean concentrations (µg/m^3)		
					2008 [c, d]	2009 [c,d]	2010 [c]
	Lagan Valley Hospital	NO		99.7	26	25	33

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

Site ID	Location	Within AQMA?	Data Capture for monitoring period [a] %	Data Capture for full calendar year 2010 [b] %	Number of Exceedences of hourly mean (200 µg/m^3)		
					2008 [c]	2009 [c]	2010
	Lagan Valley Hospital	No		99.7	0	0	2

Diffusion Tube Monitoring Data

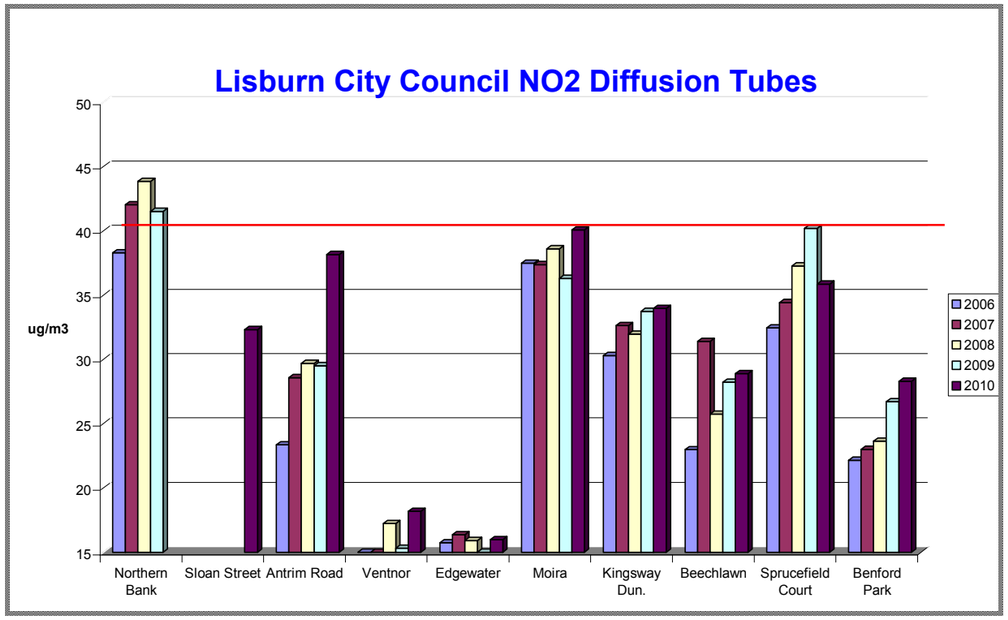
Lisburn City Council has maintained a number of NO_2 diffusion tubes at roadside and background sites for a number of years. The diffusion tube studies for Lisburn for the past five years do not show any particular trends. Only the Northern Bank site shows previous exceedences of the objective and in 2010 the site in Moira averaged at 40 ug/m3. However, these are historical kerb side sites without relevant exposure. The Council will continue monitoring at the Moira site as there is a possibility of relevant exposure in the future. The Northern bank site was removed at the beginning of 2010 and re-located to Sloan Street. Annual variation is more likely to be as a result of climatic conditions rather than changes in emissions.
A co-location study has been carried out at the Lagan Valley Hospital site, and its results included in the LAQM data base. The 2010 local bias was 0.97. There are 4 co-location studies carried out within the local Eastern Group area and the average of these is 0.84, and therefore a decision was made to use the LAQM data base bias adjustment for Eurofins of 0.84.

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

Table 2.4 Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Data Capture for monitoring period[a] %	Data Capture for full calendar year 2010[b] %	Annual mean concentrations (µg/m^3) Adjusted for bias		
					2008 [c, d]	2009 [c,d]	2010 [c]
	Northern Bank 62 Bow Street Lisburn	No		100	40.7	35.5	
	Antrim Road Lisburn	No		100	27.5	25.3	38
	22 Ventnor Park Lambeg	No		100	16.0	12.8	18
	75 Edgewater Lisburn	No		100	14.8	11.5	16
	Main Street Moira	No		100	35.8	32.6	40
	18 Kingsway Dunmurry	No		100	29.6	28.6	34
	10 Beechlawn Park Dunmurry	No		100	23.9	23.7	29
	9 Sprucefield Court Lisburn	No		100	34.6	35.2	36
	18 Benford Park Lisburn	No		100	21.9	23.1	28
	Sloan Street	No		75			32

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



2.2.2 PM_{10}

Automatic monitoring of PM_{10} in 2010 was undertaken at three sites in the Lisburn City Council area and ratified by AEA. Summaries of this data, with regard to annual and hourly mean objectives, are presented below. The Lagan Valley Hospital TEOM was decommissioned on 8th April 2010 as levels had continued to be well below the objective.
The remaining two sites annual means were significantly below the objective of 40µg/m^3 and the number of exceedences of the hourly mean objective of 50µg/m^3 was well below the limit of 35.

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These data have been fully ratified by AEA

POLLUTANT	PM_{10}*+	PM_{25}~
Number Very High	0	-
Number High	53	-
Number Moderate	99	-
Number Low	7137	-
Maximum 15-minute mean	189 μgm^{-3}	187 μgm^{-3}
Maximum hourly mean	189 μgm^{-3}	187 μgm^{-3}
Maximum running 8-hour mean	180 μgm^{-3}	176 μgm^{-3}
Maximum running 24-hour mean	119 μgm^{-3}	112 μgm^{-3}
Maximum daily mean	119 μgm^{-3}	111 μgm^{-3}
Average	20 μgm^{-3}	19 μgm^{-3}
Data capture	83.5 %	79.9 %

* PM_{10} in gravimetric units μgm^{-3}
+ PM_{10} and ~ PM_{25} instruments: FDMS
All mass units are at 20'C and 1013mb

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

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These data have been fully ratified by AEA

POLLUTANT	PM_{10}+	PM_{10} VCM*	PM_{10} GR10
Number Very High	-	-	0
Number High	-	-	0
Number Moderate	-	-	62
Number Low	-	-	2283
Maximum 15-minute mean	299 µg m^{-3}	-	389 µg m^{-3}
Maximum hourly mean	197 µg m^{-3}	-	256 µg m^{-3}
Maximum running 8-hour mean	102 µg m^{-3}	-	133 µg m^{-3}
Maximum running 24-hour mean	61 µg m^{-3}	-	80 µg m^{-3}
Maximum daily mean	56 µg m^{-3}	68 µg m^{-3}	73 µg m^{-3}
	35 µg m^{-}	45 µg m^{-3}	45 µg m^{-}
Average	22 µg m^{-3}	28 µg m^{-3}	28 µg m^{-3}
Data capture	26.6 %	26.6%	26.6 %

+ PM_{10} as measured by a TEOM
*PM_{10} VCM – TEOM data corrected using Volatile Correction Model
PM_{10} GR10 - indicative gravimetric corrected, i.e. 'raw' TEOM PM_{10} data with a 1.3 factor applied
Particulate matter concentrations are reported at ambient temperature and pressure

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
PM_{10} Particulate Matter (VCM Corrected)	Daily mean > 50 µgm^{-3}	6	6
PM_{10} Particulate Matter (VCM Corrected)	Annual mean > 40 µgm^{-3}	-	-

LISBURN ISLAND CIVIC CENTRE
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These data have been fully ratified by AEA

POLLUTANT	PM_{10}+	PM_{10} VCM*	PM_{10} GR10
Number Very High	-	-	0
Number High	-	-	0
Number Moderate	-	-	5
Number Low	-	-	8395
Maximum 15-minute mean	142 µg m^{-3}	-	185 µg m^{-3}
Maximum hourly mean	117 µg m^{-3}	-	152 µg m^{-3}
Maximum running 8-hour mean	77 µg m^{-3}	-	100 µg m^{-3}
Maximum running 24-hour mean	51 µg m^{-3}	-	66 µg m^{-3}
Maximum daily mean	51 µg m^{-3}	74 µg m^{-3}	66 µg m^{-3}
90th percentile of daily means	26 µg m^{-3}	36 µg m^{-3}	34 µg m^{-3}
Average	16 µg m^{-3}	22 µg m^{-3}	20 µg m^{-3}
Data capture	95.4 %	86.3%	95.4 %

+ PM_{10} as measured by a TEOM
*PM_{10} VCM – TEOM data corrected using Volatile Correction Model
PM_{10} GR10 - indicative gravimetric corrected, i.e. 'raw' TEOM PM_{10} data with a 1.3 factor applied
Particulate matter concentrations are reported at ambient temperature and pressure.

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
PM_{10} Particulate Matter (VCM Corrected)	Daily mean > 50 µgm^{-3}	6	6
PM_{10} Particulate Matter (VCM Corrected)	Annual mean > 40 µgm^{-3}	-	-

The Previous years ratified results are shown in Appendix B

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

Site ID	Location	Within AQMA?	Data Capture for monitoring period [a] %	Data Capture for full calendar year 2010 [b] %	Annual mean concentrations (µg/m^3)		
					2008 [c, d]	2009 [c,d]	2010 [c]
	Dunmurry High School (PM_{10})	No	100	83.5	16	18	20
	Dunmurry High School ($PM_{2.5}$)	No	100	79.9	14	15	19
	Lagan Valley Hospital	No	26.6	26.6	20	19	28
	Lagan Valley Island	No	100	90.3	20	17	22

Data capture was only 83.5% for PM10 and 79.9% for PM2.5 in Dunmurry due to breakdown of the equipment. These issues have now been resolved with the replacement of worn parts.
The Lagan Valley hospital site was decommissioned on 8th April 2010 hence 26.6% data capture

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

Site ID	Location	Within AQMA?	Data Capture for monitoring period [a] %	Data Capture 2010 [b] %	Number of Exceedences of daily mean objective (50 µg/m^3)		
					2008 [c]	2009 [c]	2010 [c]
	Dunmurry High School (PM_{10})	No	100	83.5	2	1	0
	Dunmurry High School ($PM_{2.5}$)	No	100	79.9	2	1	n/A
	Lagan Valley Hospital	No	26.6	26.6	10	0	6
	Lagan valley Island	No	100	90.3	2	0	6

2.2.3 Sulphur Dioxide

The SO_2 automatic site at Lagan Valley Island was decommissioned in December 2006 and moved to Dunmurry. Automatic monitoring of SO_2 has taken place since January 2007 and ratified by AEA. Results have been low in common with all SO_2 measurements throughout the Eastern group area. The monitor was moved from its Civic Island site in Lisburn in order to inform the ongoing measurements in relation to PAH.

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These data have been fully ratified by AEA

POLLUTANT	SO_2
Number Very High	0
Number High	0
Number Moderate	0
Number Low	33607
Maximum 15-minute mean	45 μgm^{-3}
Maximum hourly mean	43 μgm^{-3}
Maximum running 8-hour mean	30 μgm^{-3}
Maximum running 24-hour mean	22 μgm^{-3}
Maximum daily mean	22 μgm^{-3}
Average	3 μgm^{-3}
Data capture	96.9 %

All mass units are at 20'C and 1013mb

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Sulphur Dioxide	15-minute mean > 266 μgm^{-3}	0	0
Sulphur Dioxide	Hourly mean > 350 μgm^{-3}	0	0
Sulphur Dioxide	Daily mean > 125 μgm^{-3}	0	0

Table 2.6 Results of SO_2 Automatic Monitoring: Comparison with Objectives

Sit	Location	Within AQMA	Data Capture for monitoring period [a] %	Data Capture 2009 [b] %	Number of Exceedences of: ($\mu g/m^3$)		
					15-minute Objective (266 $\mu g/m^3$)	1-hour Objective (350 $\mu g/m^3$)	24-hour Objective (125 $\mu g/m^3$)
	Dunmurry High School	No	100	96.9	0	0	0

Previous years ratified results are shown in Appendix B

2.2.4 Benzene

No monitoring of Benzene is carried out.

2.2.5 Other pollutants monitored

PAHs

Monitoring of PAH has been carried out at Dunmurry High School since 1999 and during the winter of 2007 /2008 additional sites were operated at Seymour Hill and Lisburn. Samples during this time were analysed daily instead of quarterly or monthly as required for the national PAH monitoring network.
The average concentrations of Benzo(a)pyrene (BaP) on days when all three samplers gave valid samples were 1.4ng/m3, 0.92ng/m3 and 0.99ng/m3. The UK National Air Quality Objective for PAHs is an annual average of 0.25ng BaP/m3. The EU target for PAHs is an annual average of 1ng BaP/m3. The annual average would be expected to be perhaps 50% of the values measured over a winter quarter. This suggests that none of the three sites is likely to breech the EU target however all are likely to be in exceedence of the UK national objective.

Further actions would need to be pursued to ensure reduction in emissions below the NAQO however this has not been undertaken to date to due to lack of funding.

Radiation Monitoring

Radiation monitoring has been carried out in Lisburn City Council for a number of years periodically throughout the year.
The measurements for 2010 are listed below:-

6-80 results for 2010

Carryduff

Date	µGy hr $^{-1}$
08/02/2010	0.07
17/08/2010	0.07
04/11/2010	0.07

Derriaghy

Date	µGy hr $^{-1}$
08/02/2010	0.06
12/05/2010	0.07
16/08/2010	0.07
07/10/2010	0.07

2.2.6 Summary of Compliance with AQS Objectives

Lisburn City Council has examined the results from monitoring in the City Council area. Concentrations are all below the objectives; therefore there is no need to proceed to a Detailed Assessment.

3 New Local Developments

3.1 Road Traffic Sources

Lisburn City Council confirms that there are no new or newly identified Road traffic sources which may have an impact on air quality within the Local Authority area.

3.2 Other Transport Sources

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

3.3 Industrial Sources

Electricity Generating Plant (Proposed Installation)
A proposal has been received to install a landfill gas generation scheme at Aughrim Landfill Site. The scheme will give rise to NO_x and CO emissions from the generators. The air quality assessment concludes that short term levels a the receptors is insignificant when compared to the environmental assessment level (EAL). Further comparison of the long term levels to the background levels in the area show that these are also insignificant. The conclusion is therefore that the potential impact of emissions from the proposed plant on sensitive receptors is not of potential significance.

3.4 Commercial and Domestic Sources

Sprucefield Park (Proposed Development)
The air quality assessment for this proposed John Lewis Store has assessed future air pollutant concentrations as a result of the development with regard to the predicted increase in traffic volumes. The predictions indicate concentrations in compliance with the air quality objectives for all pollutants whether the development is in operation or not.

Cemetery and Crematorium (Proposed Development)
The air quality impact assessment considers the potential impacts arising from the operation of the proposed crematorium on the outskirts of Moira to the West of the

Council area. The main potential air quality impacts that may arise from the proposed crematorium development include emissions of Particulate matter, Mercury, Hydrogen Chloride and Dioxins. The report concludes that due to the mitigation measures proposed in the application there is likely to be an impact of minor significance on the local air quality during operation.

3.5 New Developments with Fugitive or Uncontrolled Sources

There are no new landfill sites, quarries, unmade roads, waste transfer stations or other potential sources of fugitive particulate emissions

Lisburn 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

5 Local Transport Plans and Strategies

The Belfast Metropolitan Transport Plan 2015, of which Lisburn is part, proposed a number of transportation initiatives, which it stated will further enhance Lisburn's accessibility and support its role as a strategic location within the region, many of these should have a knock on effect on air quality i.e:

- The improvement of the rail services by up to 50% between Lisburn and Belfast, served by trains to/from Belfast and by the Belfast-Dublin Enterprise service;
- The provision of park and ride facilities at Kennedy Way on the M1 and the development of park and ride opportunities at Sprucefield;
- Development of a Quality Bus Corridor between Lisburn and Belfast City Centres;
- The introduction of Intelligent Transport Systems (ITS) solutions including Variable Message Signs (VMS) in conjunction with parking provision; and
- The widening of the M1 and junction improvements on Westlink.

Further significant improvements to the M1 between Blacks Road and Sprucefield, and the connection between the M1 and A1 are proposed. It is expected that the implementation of these measures will be outside the Plan period. However, development pressures in the Sprucefield area or at the Maze area may require these schemes to be implemented earlier, with developers responsible for their funding either in full or in a very substantial part.
In order to encourage greater use of public transport and more walking and cycling, thereby reducing car dependency, a range of measures are proposed which include:

- The development of an integrated network of Quality Walking Routes and cycle routes including the provision of improved links to bus and rail stations;
- Improvements to local bus services and inter urban bus services with improved frequencies on core routes supported by the introduction of bus priority measures at key junctions and in the city centre one way system;
- And a contra-flow bus lane that enables buses to access the bus station without having to pass round the full one-way system.

6 Conclusions and Proposed Actions

6.1 Conclusions from New Monitoring Data

No monitoring sites within the Council Area have showed exceedences of the air quality objectives.

6.2 Conclusions relating to New Local Developments

N/A

6.3 Proposed Actions

Lisburn City Council has decided to fund the Lagan Valley Hospital NO_2 site and continue monitoring for a further 12 months. The Lisburn Island Civic Centre PM_{10} site will be decommissioned in 2011, as results have remained consistently low. Monitoring of PM_{10} and $PM_{2.5}$ will continue in Dunmurry.

7 References

LCC 2000	Air Quality reported submitted to the Department of the Environment Northern Ireland by Lisburn City Council.
LCC 2003/2004	Second/Third stage review and assessment of local air quality submitted to the Department of the Environment by Lisburn City Council
LCC 2005	Progress report submitted by Lisburn City Council to the Department of the Environment on local air quality
USA 2006	Air Quality Updating and Screening Assessment submitted to the Department of the Environment by Lisburn City Council and prepared by AEA Technology May 2006
EG 2007	Eastern Group Air Quality Progress Report. Annual report on air quality in the Eastern Group of local authorities including Lisburn City Council
EG 2008	Eastern Group Air Quality Progress report. Annual report on air quality in the Eastern Group of local authorities including Lisburn City Council.
USA 2009	Air Quality Updating and Screening Assessment submitted to the Department of the environment by Lisburn City Council and prepared by AEA Technology May 2009

Appendices

Appendix A: QA/QC Data

Diffusion Tube Bias Adjustment Factors

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

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

Factor from Local Co-location Studies (if available)

The bias adjustment factors from the local co-located study is 0.97

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

Discussion of Choice of Factor to Use

Lisburn City Council used the national bias adjustment factor of 0.84, published on the Review and Assessment helpdesk. A co-location study is carried out at the automatic site at Lagan Valley Hospital, and the local bias adjustment factor for 2010 was 0.97. There are 4 co-location studies carried out within the local Eastern Group area and the average of these is 0.84, and therefore a decision was made to use the National bias of 0.84.

PM Monitoring Adjustment

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

QA/QC of automatic monitoring

Lisburn City Council commissioned AEA Technology to provide the QA/QC of the automatic measurements of NO_2/NOx and PM_{10} from the three sites. AEA Technology is the current QA/QC contractor for the national automatic urban and rural network (AURN) operated by the Department for Environment, Food and Rural Affairs and the Devolved Administrations. Local authority staff act as the local site operator and visit the sites on a fortnightly basis carrying out any manual calibration or filter changes required. AEA Technology carries audits of the three sites on a six monthly basis.

QA/QC of diffusion tube monitoring

The tubes are supplied by Bureau Veritas labs and the preparation method is 20% TEA in water. Bureau Veritas Laboratories that have demonstrated satisfactory performance in the WASP scheme for analysis of NO2 diffusion tubes.
http://www.laqmsupport.org.uk/Summary_of_Laboratory_Performance_in_WASP_R103-107.pdf

Appendix B: Previous Years Ratified Results

LISBURN DUNMURRY HIGH SCHOOL
01 January to 31 December 2009

These data have been fully ratified by AEA

POLLUTANT	PM_{10}*+	PM_{25}~	SO_2
Number Very High	-	-	0
Number High	-	-	0
Number Moderate	-	-	0
Number Low	-	-	31603
Maximum 15-minute mean	239 μgm^{-3}	136 μgm^{-3}	45 μgm^{-3}
Maximum hourly mean	239 μgm^{-3}	136 μgm^{-3}	37 μgm^{-3}
Maximum running 8-hour mean	85 μgm^{-3}	86 μgm^{-3}	26 μgm^{-3}
Maximum running 24-hour mean	69 μgm^{-3}	64 μgm^{-3}	16 μgm^{-3}
Maximum daily mean	62 μgm^{-3}	56 μgm^{-3}	16 μgm^{-3}
Average	18 μgm^{-3}	15 μgm^{-3}	3 μgm^{-3}
Data capture	93.4 %	92.8 %	91.2 %

+ PM_{10} as measured by a FDMS using a factor of 1
~ PM_{25} instruments: FDMS from 7 February 2008 to 26 February 2009
All mass units are at 20'C and 1013mb

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
PM_{10} Particulate Matter (Gravimetric)	Daily mean > 50 μgm^{-3}	2	2
PM_{10} Particulate Matter (Gravimetric)	Annual mean > 40 μgm^{-3}	0	-
Sulphur Dioxide	15-minute mean > 266 μgm^{-3}	0	0
Sulphur Dioxide	Hourly mean > 350 μgm^{-3}	0	0
Sulphur Dioxide	Daily mean > 125 μgm^{-3}	0	0

LISBURN ISLAND CIVIC CENTRE
01 January to 31 December 2009

These data have been fully ratified by AEA

POLLUTANT	PM_{10}*+
Number Very High	-
Number High	-
Number Moderate	-
Number Low	-
Maximum 15-minute mean	144 μgm^{-3}
Maximum hourly mean	102 μgm^{-3}
Maximum running 8-hour mean	68 μgm^{-3}
Maximum running 24-hour mean	44 μgm^{-3}
Maximum daily mean	40 μgm^{-3}
Average	14 μgm^{-3}
Data capture	90.3 %

LISBURN LAGAN VALLEY HOSPITAL

01 January to 31 December 2009

These data have been fully ratified by AEA

POLLUTANT	PM_{10}*+	NO	NO_2
Number Very High	-	-	0
Number High	-	-	0
Number Moderate	-	-	0
Number Low	-	-	8740
Maximum 15-minute mean	225 μgm^{-3}	631 μgm^{-3}	222 μgm^{-3}
Maximum hourly mean	133 μgm^{-3}	494 μgm^{-3}	191 μgm^{-3}
Maximum running 8-hour mean	81 μgm^{-3}	264 μgm^{-3}	126 μgm^{-3}
Maximum running 24-hour mean	51 μgm^{-3}	135 μgm^{-3}	85 μgm^{-3}
Maximum daily mean	46 μgm^{-3}	133 μgm^{-3}	83 μgm^{-3}
Average	15 μgm^{-3}	19 μgm^{-3}	25 μgm^{-3}
Data capture	96.5 %	99.8 %	99.8 %

* PM_{10} Indicative Gravimetric Equivalent μgm^{-3}

+ PM_{10} as measured by a TEOM using a factor of 1.3 for Indicative Gravimetric Equivalence

All mass units are at 20'C and 1013mb

NO_X mass units are NO_X as NO_2 μgm^{-3}