



Local Air Quality Progress Report

May 2007

Executive Summary

Under the Local Air Quality Management (LAQM) regime, introduced by the Environment (NI) Order 2002, Craigavon Borough Council has a duty to review and assess local air quality against health-based, statutorily prescribed pollutant limits and to undertake measures aimed at reducing pollutant levels where appropriate.

The Council's Second Round, Review and Assessment (USA) Report 2006, was recently appraised by the University of West England (UWE) on behalf of the Department of Environment's Environment and Heritage Service (EHS), and accepted unconditionally. It concluded that no further detailed assessment was required at this time for any of the pollutants reviewed and that there was currently no requirement for any statutory Air Quality Management Areas (AQMA's) to be declared.

Preparation of this Progress Report is the final activity prescribed in the timetable for the Second Round of reviews and assessments as set out in LAQM Policy Guidance (LAQM.PGNI(03)). The report has been produced in accordance with guidance detailed in Progress Report Guidance LAQM.PRGNI(04), and summarises the findings of the LAQM activities undertaken by the Council including the currently available air quality monitoring results for 2006/2007.

Significant capital expenditure has already been incurred for continuous automatic monitoring for PM₁₀, NO₂ & SO₂. Results obtained to date would indicate that there is no negligible risk of exceeding prescribed standards, and it was recommended after the second round 'Review and Assessment' that monitoring at the automated sites within Craigavon **will not be** continued. In due course, consideration may be given to relocation of the automatic monitors to other locations or local authorities that have more potential to be affected by the pollutants concerned.

The conclusion of this report confirms that for all the prescribed air pollutants, concentrations in the Borough are well within the statutory limits. However it is fully acknowledged that this favourable position is based upon a somewhat limited pool of currently available information. The Council will continue to participate fully in the ongoing LAQM Review & Assessment process, to ensure that local air quality across all parts of the Borough is managed in a way that effects compliance with health-based, statutory pollutant limits.

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1.0 Introduction

1.1 Purpose and Role of Progress Reports

In 1995 the UK Government published its strategic framework for air quality management and established national strategies and policies on air quality. The Northern Ireland Environment Order came into force in January 2003 and implements the European Air Framework Directive 96/62EC and the UK Air Quality Strategy here in Northern Ireland.

Under the Local Air Quality Management (LAQM) regime, councils are required to review present local air quality, make projections on future trends and assess whether the nationally prescribed objectives are likely to be achieved. Progress reports are required to be produced in the years when the authority is not carrying out updating and screening assessments or detailed assessments of air quality.

This progress report has been prepared as part of Craigavon Borough Council's responsibilities under the Environment (Northern Ireland) Order 2002 to "fill the gap" between three yearly rounds of review and assessment of local air quality. The progress report has been introduced into the local air quality management system, as a means of combating the 'stop-start' approach to environmental reporting and integrate the concepts of local air quality management into the routine of local authority operations.

It is intended that progress reports can assist the district councils in the following ways;

- By helping to retain a profile for LAQM within the council, including the retention of staff with knowledge of air quality issues.
- By providing a means for communicating air quality information to elected members and the public.
- By maximising the value of the investment in monitoring equipment.
- By making the next round of review and assessment that much easier, as there will be a readily available up-to-date source of information.
- By helping district councils respond to requests for up-to-date information on air quality.
- By providing information to assist in other policy areas, such as transport and land use planning.
- By providing a ready source of information on air quality for developers carrying out environmental assessments for new schemes.
- By demonstrating progress with implementation of air quality Action Plans and/or air quality strategies.
- By providing a timely indication of the need for further measures to improve air quality, rather than delaying until the next full round of review and assessment.

The overall aims of this progress report are to:

- Report progress on implementing local air quality management.
- Report progress in achieving and maintaining concentrations of prescribed pollutants below the air quality objectives.

This report has been prepared in accordance with the Environment & Heritage Service guidelines as published in Progress Report Guidance LAQM.PRGNI(04), November 2004.

1.2 Air Quality Strategy Objectives

The following air quality objectives set out in the Air Quality Regulations (NI) 2003 provide the statutory basis for the system of Local Air Quality Management.

Table 1: Air Quality Strategy Objectives

Pollutant	Objective	Measured as	To be achieved by
Benzene	3.25 µg/m ³	Running Annual Mean	31/12/2010
1,3-Butadiene	2.25 µg/m ³	Running Annual Mean	31/12/2003
Carbon monoxide	10.0 mg/m ³	Maximum daily running 8 Hour Mean	31/12/2003
Lead	0.5 µg/m ³	Annual Mean	31/12/2004
	0.25 µg/m ³	Annual Mean	31/12/2008
Nitrogen dioxide	200 µg/m ³ Not to be exceeded more than 18 times per year	1 Hour Mean	31/12/2005
	40 µg/m ³	Annual Mean	31/12/2005
Particles (PM₁₀) (gravimetric)^d	50 µg/m ³ Not to be exceeded more than 35 times per year	24 Hour Mean	31/12/2004
	40 µg/m ³	Annual Mean	31/12/2004
Sulphur Dioxide	266 µg/m ³ Not to be exceeded more than 35 times per year	15 Minute Mean	31/12/2005
	350 µg/m ³ Not to be exceeded more than 24 times per year	1 Hour Mean	31/12/2004
	125 µg/m ³ Not to be exceeded more than 3 times per year	24 Hour Mean	31/12/2004

1.3 Conclusions of First Round of Review and Assessment

PM₁₀

Stage 1 of the second round of review and assessment completed in 2006, concluded that PM₁₀ emissions were not significantly contentious. However, since PM₁₀ monitoring equipment is installed at Lord Lurgan Park, it was deemed useful to keep updated emissions data for PM₁₀, as it is considered one of the key pollutants with regards to road traffic emissions. With the M1 & M12 motorway links passing through the Craigavon Borough Council area, the monitoring of PM₁₀ data remains an essential element in ongoing assessment of local air quality in the area.

SO₂

Stage 1 of the second round of review and assessment completed in 2006, concluded that SO₂ emissions did not require a further Stage 2/3 assessment on the basis of results gathered from the automatic monitoring station at Lord Lurgan Park.

NO₂

Stage 1 of the second round of review and assessment completed in 2006, concluded that NO₂ emissions did not require a further Stage 2/3 assessment on the basis of results gathered from diffusion tube monitoring and automatic monitoring at a number of sampling locations within the district.

Other Prescribed Pollutants – Benzene, 1,3-Butadiene, Carbon Monoxide, and Lead

These pollutants were all screened out at the first stage of the first round of the review and assessment, as being insignificant in terms of potential for exceedence of prescribed standards. Consequently no monitoring of these pollutants has been initiated in the Borough.

2.0 New Monitoring Data

2.1 Summary of Monitoring Undertaken

Craigavon Borough Council undertakes ambient monitoring of the following pollutants in their area throughout 2006:

- **PM₁₀** (by Automatic Air Monitoring Equipment)
- **NO₂** (by Automatic Air Monitoring Equipment & Diffusion Tube)
- **SO₂** (by Automatic Air Monitoring Equipment & Diffusion Tube)

Table 2.1 : Air Quality Monitoring In Craigavon

Pollutant	Equipment	Location	Eastings	Northings	Site Ref.
PM₁₀	TEOM series 1400a	Lord Lurgan Park	307980	359301	82880
SO₂	Fluorescent Real-Time Analyser 100A	Lord Lurgan Park	307980	359301	82880
	Diffusion Tubes	Lord Lurgan Park	N/A	N/A	82880
		Ashgrove Community Centre	N/A	N/A	82881
		Corcrain Community Centre	N/A	N/A	82882
		Mourneview Community Centre	N/A	N/A	82883
		Lake Street	N/A	N/A	82884
		Ardboe Drive	308130	357830	82885
		Castle Lane Public Toilets	308230	358450	82886
		Kernan Hill	N/A	N/A	82887
	8 Port Bubbler	Town Hall, Edward Street, Portadown	N/A	N/A	N/A
NO_x & NO₂	Chemiluminescence Real-Time Analyser Model 200A	Castle Lane, Lurgan	308230	358450	82886
NO₂	Nitrogen Dioxide Network of diffusion tubes managed by AEA Technology	Craigavon 5N, Town Hall, Union Street, Lurgan, Craigavon BT66 8YD	308260	358250	82760 K
		Craigavon 9N, West Street, Portadown, Craigavon BT62 3JY	301040	353760	82979 K
		Craigavon 7N, 36 Ardboe Drive, Lurgan, Craigavon BT66 8HP	308130	357830	82762 B
		Craigavon 8N, 27 Ballyhannon Road, Portadown, Craigavon BT63 5SE	303170	354260	82763 B
NO₂	Diffusion Tube	4 Cluandara, Derrymacash, Craigavon	304402	359301	82767
		Castle Lane Public Toilets	308230	358450	82886

NO ₂	Diffusion Tube	Ashgrove Community Centre	N/A	N/A	82881
		Lord Lurgan Park	307980	359301	82880

No other pollutants covered in the air quality strategy objectives are monitored in the Craigavon Borough Council..

2.1.1 Automatic Monitoring Sites

Following the Second Round ‘Updating and Screening Assessment’ 2006, Craigavon Borough Council has decided to cease operation of all its automated monitoring stations at Lord Lurgan Park and Castle Lane, Lurgan. Data retrieved from the stations over a sustained period indicated that exceedences of the objective limits was unlikely at these locations and supported the council’s view that monitoring was logistically and financially unnecessary. The council will examine the possibility of relocating the monitoring equipment to a more suitable location or to a local authority which has the potential to be affected by the pollutants concerned.

PM₁₀

PM₁₀ is the fraction of airborne particles less than 10µm in diameter. These particles can be breathed into the lungs and can carry elements hazardous to human health. PM₁₀ is considered as one of the main pollutants included in the air quality objectives and is responsible for approximately 10,000 premature deaths per year in the UK. Significantly the major sources of PM₁₀ in the UK are considered as Road Transport (25%), Power Stations (15%), Industry (13%) and Mining and Quarrying Activities (10%). Particles may also be transported from other parts of the UK and continental Europe.

There are two Air Quality Objectives associated with PM₁₀ concentrations which have been derived from the EU Stage 1 limit values in the first Air Quality Daughter Directive. These limits are currently referenced in the Local Air Quality Management, Technical Guidance Document TG(03) as 40µg/m³ annual mean and 50µg/m³ as the 24 hour mean not to be exceeded more than 35 days per year (also see Table 1).

Changes to the current limit values are scheduled for implementation in 2010. These limit values have been set by the Department of the Environment Northern Ireland as provisional targets to be achieved by the end of 2010 and are in line with EU Stage 2 limit values to be implemented at the same time. These are 20µg/m³ as the annual mean and 50µg/m³ as the 24 hour mean not to be exceeded more than 7 days per year. However, since these are provisional targets they have not yet been introduced as LAQM regulations. Therefore all emissions data collected are referenced to the current Air Quality Objectives.

Craigavon Borough Council has a Rupprecht & Patashnick Continuous Analyser (TEOM series 1400a) located at Lord Lurgan Park (see Appendix A, figure 3). The location is a public park owned and maintained by Craigavon Borough Council. This is considered as an urban background site and is close to a number of residential housing estates and surrounding transport

links, including road and rail. The R&P TEOM 1400a, measures particulate matter with a diameter of less than $10\mu\text{m}$ using a gravimetric air sampling method and can determine mean hourly concentrations. The analyser is housed in an air conditioned and secure cabin.

The daily variances of PM_{10} emissions data can be accessed remotely by both Craigavon Borough Council and the Environment & Heritage Service in Belfast via a PC modem/telephone line link up. This system allows exceedences of the objective limits to be identified quickly. It also allows technical errors and equipment malfunctions to be quickly rectified as well as providing a back up data base of results.

SO_2

SO_2 is considered as one of the main air quality objectives and is an associated by-product of combustion processes. Significantly a major source of SO_2 is from Power Stations, which contribute up to 71% of all the SO_2 emissions in the UK. Domestic fuel usage now only contributes up to 4% of the total SO_2 emissions, while road transport only accounts for 1% of the total emissions. Although in Northern Ireland the proportion of SO_2 emissions contributed by domestic fuel use is significantly higher than in Great Britain.

There are three Air Quality Objectives associated with SO_2 concentrations which are equivalent to the EU limit values in the first Air Quality Daughter Directive. These limits are currently referenced in the Local Air Quality Management, Technical Guidance Document TG(03) as a 1 hour mean of $350\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times per year and $125\mu\text{g}/\text{m}^3$ as the 24 hour mean not to be exceeded more than 3 times per year (see Table 1), both objectives to be reached by the end of 2004. The third limit is a 15 min mean of $266\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times per year, and to be complied with by the end of 2005.

Craigavon Borough Council has a continuous SO_2 analyser (Fluorescent Real-Time Analyser Model 100A) located at Lord Lurgan Park (see Appendix A, figure 3). The location is a public park owned and maintained by Craigavon Borough Council. It is close to number of residential housing estates and surrounding transport links, including road and rail. This is considered as an urban background. The analyser is housed in an air conditioned and secure cabin.

NO_2

NO_2 is an oxide of nitrogen and is considered as one of the main air quality objectives. It is a direct by-product of all combustion processes, mostly in the form of nitric oxide. Road transport is the most significant source of NO_2 in the UK comprising 40% of the total UK emissions in 2000. Areas close to motorways, major highways and city centres are therefore more likely to have higher NO_2 concentrations than in any other area.

There are two Air Quality Objectives associated with NO_2 concentrations in Northern Ireland which are, an annual mean of $40\mu\text{g}/\text{m}^3$ and a 1 hour mean of $200\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times per year. These limits are currently referenced in the Local Air Quality Management, Technical Guidance Document TG(03). It is expected that these objectives are reached by the end of 2005. These limits are similar to the objectives set out in the first Air Quality Daughter Directive by the EU.

Craigavon Borough Council has a continuous NO₂ analyser (Chemiluminescence Real-Time Analyser Model 200A) located at Castle Lane in Lurgan and has been in operation since April 2002 (see Appendix A, Figure 3). The location is a public street in the town centre. This location is close to a number of commercial properties, car parks, busy town centre roadways and surrounding transport links, including the bus station. This is considered as a kerbside site. The continuous analyser, measures nitrogen dioxide levels and can determine mean hourly concentrations. The analyser is housed in an air conditioned and secure cabin.

QA / QC

Craigavon Borough Council currently has a QA/QC and Data Management contract with Netcen (AEA Technology Plc). QA/QC audits have been completed on the automatic monitoring equipment which was located at Lord Lurgan Park and Castle Lane. These audits took place on 16th December 2003, 18th May 2004 and 29th September 2004. Full calibration checks were completed and certified by qualified personnel on the monitoring equipment and reports were subsequently delivered to Craigavon Borough Council on the 22 July 2004 and 4th January 2005 and February 2006. The reports determined that all of the equipment was in good working order and complied with all relevant standards.

2.1.2 NO₂ Diffusion Tube Monitoring Sites

Craigavon Borough Council carries out monitoring of NO₂ by diffusion tubes at eight sites within its District, illustrated in Figure 4 Appendix A. The NO₂ diffusion tubes are prepared and analysed by Lambeth Environmental Laboratories. This laboratory takes part in the NO₂ Network QA/QC Field Intercomparison. The tubes are prepared by coating the grids in a 50% v/v solution of the absorbent, triethanolamine (TEA) in water. Analysis is carried out using a colorimetric technique.

Four of the sites are included in the UK NO₂ Network, but none of the sites were co-located with an automatic NO₂ analyser. Details are given in Table 2.1

Table 2.1.2: Diffusion Tube Monitoring Site Details in Craigavon

Pollutant	Equipment	Location	Eastings	Northings	Site Ref.
NO₂	Nitrogen Dioxide Network of diffusion tubes managed by AEA Technology	Craigavon 5N, Town Hall, Union Street, Lurgan, Craigavon BT66 8YD	308260	358250	82760 K
		Craigavon 9N, West Street, Portadown, Craigavon BT62 3JY	301040	353760	82979 K
		Craigavon 7N, 36 Ardboe Drive, Lurgan, Craigavon BT66 8HP	308130	357830	82762 B
		Craigavon 8N, 27 Ballyhannon Road, Portadown, Craigavon BT63 5SE	303170	354260	82763 B

NO₂	Diffusion Tube	4 Cluandara, Derrymacash, Craigavon	304402	359301	82767
		Castle Lane Public Toilets	308230	358450	82886
		Ashgrove Community Centre	N/A	N/A	82881
NO₂	Diffusion Tube	Lord Lurgan Park	307980	359301	82880

Roadside = 1-5m from kerb, urban background = at least 50m from the kerb of any major road.

2.1.3 SO₂ Diffusion Tube Monitoring Sites

Craigavon Borough Council carried out monitoring of SO₂ by diffusion tubes at 8 sites within the Borough during 2006. However, since it was determined that SO₂ monitoring by diffusion tube is no longer considered as viable method of testing for accurate levels of the pollutant, Craigavon Borough Council ceased SO₂ diffusion tube monitoring in October 2006

There is 1 SO₂ diffusion tube co-located with the automatic SO₂ analyser at Lord Lurgan Park, Lurgan, Craigavon. Details are given in Table 2.1.3 below,

Table 2.1.3: Diffusion Tube Monitoring Site Details in Craigavon

Pollutant	Equipment	Location	Eastings	Northings	Site Ref.
SO₂	Diffusion Tubes	Lord Lurgan Park	307980	359301	82880
		Ashgrove Community Centre	N/A	N/A	82881
		Corcrain Community Centre	N/A	N/A	82882
		Mourneview Community Centre	N/A	N/A	82883
		Lake Street	N/A	N/A	82884
		Ardboe Drive	308130	357830	82885
		Castle Lane Public Toilets	308230	358450	82886
		Kernan Hill	N/A	N/A	82887

2.2 NEW MONITORING

No new monitoring sites have been set up, since the previous Updating and Screening Assessment. Craigavon Borough Council has discontinued monitoring NO₂ emissions at the automatic monitoring station located at Castle Lane in Lurgan. Monitoring data recorded over the sampling period indicated that emissions of NO₂ at this location were unlikely to exceed the objective limits and therefore sampling was discontinued pending relocation of the equipment to a more suitable site.

2.3 MONITORING RESULTS AND COMPARISON WITH AQS OBJECTIVES

2.3.1 PM₁₀ (Automatic Monitoring Station)

Data Summary – Lord Lurgan Park 1st January 2006 to 31st December 2006

Ratified data capture of 64.4% for PM₁₀ was reported over the period 1st January to 31st December 2006. Data capture during this monitoring period did not meet the review and assessment target of 90% for ratified data sets. There was significant data loss across the period due to technical problems.

The DoE Northern Ireland objective value of 50 µg/m³ based on daily gravimetric equivalent data was exceeded on 6 occasions during the period. The objective allows up to 35 exceedences in a year. The annual mean concentration of 22 µg/m³ gravimetric equivalent was below the objective value of 40 µg/m³.

Table 2.3.1 PM₁₀ exceedences at Lord Lurgan Park – 1st January 2006 to 31st December 2006

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
PM ₁₀ Particulate Matter (Gravimetric)	Daily Mean > 50 µg/m ³	6	6
PM ₁₀ Particulate Matter (Gravimetric)	Annual mean > 40 µg/m ³	0	-

Data Summary – Lord Lurgan Park 1st January 2005 to 31st December 2005

Ratified data capture of 94.1% for PM₁₀ was reported over the period 1st January to 31st December 2005. Data capture during this monitoring period met the review and assessment target of 90% for ratified data sets. There was significant data loss across the period due to technical problems.

The DoE Northern Ireland objective value of 50 µg/m³ based on daily gravimetric equivalent data was exceeded on 3 occasions during the period. The objective allows up to 35 exceedences in a year. The annual mean concentration of 20 µg/m³ gravimetric equivalent was below the objective value of 40 µg/m³.

Table 2.3.1 PM₁₀ exceedences at Lord Lurgan Park – 1st January 2005 to 31st December 2005

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
PM ₁₀ Particulate Matter (Gravimetric)	Daily Mean > 50 µg/m ³	3	3
PM ₁₀ Particulate Matter (Gravimetric)	Annual mean > 40 µg/m ³	0	-

Data Summary – Lord Lurgan Park 1st May 2004 to 31st October 2004

Ratified data capture of 97% for PM₁₀ was reported over the period 1st May to 31st October 2004. Data capture during this monitoring period met the review and assessment target of 90% for ratified data sets. There was no significant data loss across the period.

PM₁₀ concentrations were recorded in the DoE Northern Ireland LOW band throughout the period. The DoE Northern Ireland objective value of 50 µg/m³ based on daily gravimetric equivalent data was not exceeded during the period. The annual mean TEOM concentration of 13 µg/m³, when corrected to 17 µg/m³ gravimetric equivalent was below the objective value of 40 µg/m³.

Table 2.3.2: PM₁₀ exceedences at Lord Lurgan Park - 1st May 2004 to 31st October 2004

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
PM ₁₀ Particulate Matter (Gravimetric)	Daily Mean > 50 µg/m ³	0	0
PM ₁₀ Particulate Matter (Gravimetric)	Annual mean > 40 µg/m ³	0	-

2.3.2 SO₂ (Automatic Monitoring Station)**Data Summary – Lord Lurgan Park 1st January 2006 to 31st December 2006**

Ratified data capture of 83% for SO₂ was reported over the period 1st January to 31st December 2006. Data capture during this monitoring period did not meet the review and assessment target of 90% for ratified data sets. There was significant data loss across the period due to technical problems.

SO₂ concentrations were recorded in the DoE Northern Ireland LOW band throughout the period. The maximum 15 minute mean of 80 µg/m³ was below the DoE Northern Ireland 15 minute objective value of 266 µg/m³. The maximum hourly mean of 53 µg/m³ was below the objective value of 350 µg/m³. The maximum daily mean of 16 µg/m³ was below the objective of 125 µg/m³.

Table 2.3.3: SO₂ exceedences at Lord Lurgan Park – 1st January to 31st December 2006

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Sulphur Dioxide	15-Minute Mean > 266 µg/m ³	0	0
Sulphur Dioxide	Hourly Mean > 350 µg/m ³	0	0
Sulphur Dioxide	Daily Mean > 125 µg/m ³	0	0

Data Summary – Lord Lurgan Park 1st January to 31st December 2005

Ratified data capture of 83% for SO₂ was reported over the period 1st January to 31st December 2005. Data capture during this monitoring period did not meet the review and assessment target of 90% for ratified data sets. There was significant data loss across the period due to technical problems.

SO₂ concentrations were recorded in the DoE Northern Ireland LOW band throughout the period. The maximum 15 minute mean of 106 µg/m³ was below the DoE Northern Ireland 15 minute objective value of 266 µg/m³. The maximum hourly mean of 77 µg/m³ was below the objective value of 350 µg/m³. The maximum daily mean of 24 µg/m³ was below the objective of 125 µg/m³.

Table 2.3.3: SO₂ exceedences at Lord Lurgan Park – 1st January to 31st December 2005

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Sulphur Dioxide	15-Minute Mean > 266 µg/m ³	0	0
Sulphur Dioxide	Hourly Mean > 350 µg/m ³	0	0
Sulphur Dioxide	Daily Mean > 125 µg/m ³	0	0

Data Summary – Lord Lurgan Park 27th October 2003 to 30th April 2004

Ratified data capture of 95% for SO₂ was reported over the period 27th October 2003 to 30th April 2004. Data capture during this monitoring period met the review and assessment target of 90% for ratified data sets. There was no significant data loss across the period.

SO₂ concentrations were recorded in the DoE Northern Ireland LOW band throughout the period. The maximum 15 minute mean of 80 µg/m³ was below the DoE Northern Ireland 15 minute objective value of 266 µg/m³. The maximum hourly mean of 67 µg/m³ was below the objective value of 350 µg/m³. The maximum daily mean of 29 µg/m³ was below the objective of 125 µg/m³.

Table 2.3.3: SO₂ exceedences at Lord Lurgan Park - 27th October 2003 to 30th April 2004

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Sulphur Dioxide	15-Minute Mean > 266 µg/m ³	0	0
Sulphur Dioxide	Hourly Mean > 350 µg/m ³	0	0
Sulphur Dioxide	Daily Mean > 125 µg/m ³	0	0

Data Summary – Lord Lurgan Park 1st May 2004 to 31st October 2004

Ratified data capture of 95% for SO₂ was reported over the period 1st May 2004 to 31st October 2004. Data capture during this monitoring period met the review and assessment target of 90% for ratified data sets. There was no significant data loss across the period.

SO₂ concentrations were recorded in the DoE Northern Ireland LOW band throughout the period. The maximum 15 minute mean of 74 µg/m³ was below the objective value of 266 µg/m³. The maximum hourly mean of 53 µg/m³ was below the objective value of 350 µg/m³. The maximum daily mean of 16 µg/m³ was below the objective of 125 µg/m³.

Table 2.3.4: SO₂ exceedences at Lord Lurgan Park - 1st May 2004 to 31st October 2004

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Sulphur Dioxide	15-Minute Mean > 266 µg/m ³	0	0
Sulphur Dioxide	Hourly Mean > 350 µg/m ³	0	0
Sulphur Dioxide	Daily Mean > 125 µg/m ³	0	0

Graphs 1 & 2 in Appendix C (pg 34 &35) illustrates the 15 Min Mean and Hourly concentrations as monitored at Lord Lurgan Park between 27th October 2003 to 31st October 2004.

2.3.3 NO₂ (Automatic Monitoring Station)**Data Summary – Castle Lane, Lurgan 1st January 2006 to 31st Decemeber 2006**

Ratified data capture of 81.3% for NO₂ was reported over the period 1st January 2006 to 31st December 2006. Data capture during this monitoring period did not meet the review and assessment target of 90% for ratified data sets. There was significant data loss across the period, due to technical problems.

NO₂ concentrations were recorded in the Defra LOW band throughout the period. The maximum hourly mean of 76 µg/m³ was below the objective value of 200 µg/m³. The mean daily concentration of 15 µg/m³ was below the objective of 40 µg/m³.

Table 2.3.5: NO₂ exceedences at Castle Lane, Lurgan – 1st January to 31st December 2006

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Nitrogen Dioxide	Annual Mean > 40 µg/m ³	0	-
Nitrogen Dioxide	Hourly Mean > 200 µg/m ³	0	0

Data Summary – Castle Lane, Lurgan 1st January to 31st December 2005

Ratified data capture of 86.6% for NO₂ was reported over the period 27th October 2003 to 30th April 2004. Data capture during this monitoring period did not meet the review and assessment target of 90% for ratified data sets. There was significant data loss across the period due to technical problems.

NO₂ concentrations were recorded in the Defra LOW band throughout the period. The maximum hourly mean of 78 µg/m³ was below the objective value of 200 µg/m³. The mean daily concentration of 15 µg/m³ was below the objective of 40 µg/m³.

Table 2.3.5: NO₂ exceedences at Castle Lane, Lurgan – 1st January to 31st December 2005

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Nitrogen Dioxide	Annual Mean > 40 µg/m ³	0	-
Nitrogen Dioxide	Hourly Mean > 200 µg/m ³	0	0

Data Summary – Castle Lane, Lurgan 27th October 2003 to 30th April 2004

Ratified data capture of 99% for NO₂ was reported over the period 27th October 2003 to 30th April 2004. Data capture during this monitoring period met the review and assessment target of 90% for ratified data sets. There was no significant data loss across the period.

NO₂ concentrations were recorded in the Defra LOW band throughout the period. The maximum hourly mean of 94 µg/m³ was below the objective value of 200 µg/m³. The mean daily concentration of 19 µg/m³ was below the objective of 40 µg/m³.

Table 2.3.5: NO₂ exceedences at Castle Lane, Lurgan - 27th October 2003 to 30th April 2004

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Nitrogen Dioxide	Annual Mean > 40 µg/m ³	0	-
Nitrogen Dioxide	Hourly Mean > 200 µg/m ³	0	0

Data Summary –Castle Lane, Lurgan 1st May 2004 to 31st October 2004

Ratified data capture of 91% for NO₂ was reported over the period 1st May 2004 to 31st October 2004. Data capture during this monitoring period met the review and assessment target of 90% for ratified data sets. Significant data loss during the period was:

- 16 days of NO_x data deleted between 20th July and 4th August 2004 due to analyser fault.

NO₂ concentrations were recorded in the Defra LOW band throughout the period. The maximum hourly mean concentration of 53 µg/m³ was below the objective value of 200 µg/m³. The mean concentration of 11 µg/m³ was below the objective of 40 µg/m³.

Table 2.3.6: NO₂ exceedences at Castle Lane, Lurgan - 1st May 2004 to 31st October 2004

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
Nitrogen Dioxide	Annual Mean > 40 µg/m ³	0	-
Nitrogen Dioxide	Hourly Mean > 200 µg/m ³	0	0

2.4.1 NO₂ (Diffusion Tube Monitoring)

NO₂ diffusion tube monitoring results have been bias corrected for NO₂ from 2003 to 2006. The annual mean for sites 2, 3, 5 & 8 were calculated using a ratio of nitrogen dioxide diffusion tube results from long term sites within 3 neighbouring council districts (Armagh, Banbridge & Newry and Mourne). This method is detailed in BOX 6.5 of LAQM TG(03).

Nitrogen Dioxide concentrations recorded by the diffusion tubes indicate that Nitrogen Dioxide concentrations currently comply with the annual mean Air Quality Strategy objective at all measurement locations.

Tables 1 to 4 in Appendix B, list the results for NO₂ diffusion tubes during 2003 to 2006.

2.5.1 SO₂ (Diffusion Tube Monitoring)

Sulphur Dioxide concentrations recorded by the diffusion tubes indicate that Sulphur Dioxide concentrations currently comply with the annual mean Air Quality Strategy objective at all measurement locations.

Recent studies have shown that the monitoring of SO₂ emissions by diffusion tube has raised questions about the limitations and accuracy of this method. Craigavon Borough Council has been advised by the University of West England help-desk, that the inaccuracies associated with this method may justify the cessation of any future SO₂ monitoring projects using diffusion tubes. Craigavon Borough Council ceased monitoring using SO₂ diffusion tubes.

Tables 3 & 4 in Appendix B, List the results for SO₂ diffusion tubes during 2003 and 2004.

3.0 New Developments – Since the First Stage Review & Assessment

3.1 Industrial Processes

3.1.1 Part A Industrial Processes

No new Part A processes were authorised for operation.

None of the existing Part A processes underwent significant changes likely to increase their emissions by 30% or more.

3.1.2 Part B Industrial Processes

No new Part B industrial processes were authorised in Craigavon. No previously existing Part B processes underwent significant changes likely to increase their emissions by 30% or more.

3.1.3 Other Industrial Processes

3.1.3.1 New landfill, Quarrying and Mineral Processes

No landfill, quarrying or mineral processes have started operation or significantly changed.

3.1.3.2 New Fuel Storage Depots

No new major fuel storage depots, either in or close to the Craigavon Borough, have been identified.

3.1.3.3 Small Boilers

Craigavon Borough Council are not aware of any significant changes to $>5\text{MW}_{(\text{thermal})}$ fuel plants and processes.

3.1.4 Industrial Process Closures

Craigavon Borough Council has not identified any process closures within the borough.

3.2 Transport

3.2.1 New Road Developments

No new roads have been constructed or proposed since the previous Updating and Screening Report in February 2004.

3.2.2 Significant Changes to Existing Roads

Craigavon Borough Council identified no significant road layout changes or roadworks.

3.2.3 Newly Identified Public Exposure to Vehicle Emissions

No roads have been identified with annual average daily traffic flow (AADTF) greater than 10,000 vehicles per day, which have experienced large increases (25% or more) in traffic flow, since the previous Updating and Screening Report. Local Authorities are required to consider whether there are any of the following in their area, either new since the last Report, or newly identified:

1. Narrow congested streets meeting the following criteria:
 - Residential properties are within 5m of the kerb.
 - Average traffic speeds are 50kph or less.
 - The carriageway is less than 10m wide, and
 - AADTF is greater than 10,000.
2. Busy streets where people may spend 1 hour or more close to traffic (most likely in streets of shops, bars, cafes etc.), meeting the following criteria:
 - Public exposure for 1 hour or more within 5m of the kerb
 - AADT > 10,000 vehicles per day.

The Updating and Screening Assessment of March 2004 identified no roads in Craigavon meeting these criteria. There are no new, or newly identified streets meeting these criteria since the previous report.

3.2.4 Other Transport Sources

As well as road vehicles, public exposure to emissions from planes, buses, trains, ships etc. must also be considered.

3.2.4.1 Trains

There are no new, or newly identified, locations where diesel locomotives are regularly stationary for five minutes or more and -

- There is potential for public exposure within 15m of the locomotives
- There are more than two occasions a day when diesel locomotives are stationary with engines running for more than 15 minutes.

3.2.4.2 Airports

There are no airports in Craigavon or neighbouring authorities that have a throughput of 5 million passengers per year and/or 500,000 tonnes of freight.

3.2.4.3 Bus Stations

The main bus stations within the Craigavon Borough have less than 1000 bus movements per day. There are no newly identified bus stations with more than 1000 bus movements per day, and no bus stations where movements have increased to more than 1000 per day since the previous Updating and Screening Report.

3.2.4.4 Shipping

Craigavon is inland and has no ports with more than 5,000 shipping movements per year

3.3 Residential, Commercial and Public

3.3.1 New Housing Developments

There are no new housing developments proposed for the Craigavon Borough area that have full planning permission granted.

3.3.2 New Commercial Developments

There are no new commercial developments (e.g. retail parks, office blocks, leisure centres).

3.3.3 New Public Developments

New public developments such as schools, hospitals, stations, major car parks require consideration as they may impact on local traffic flow.

No new public developments have been confirmed since the previous Updating and Screening Assessment.

4.0 Conclusions and Recommendations

4.1 Conclusions from New Monitoring Data

Since preparation of the Second Round, Review and Assessment Report of 2006, monitoring results indicate that concentrations of the most significant of the prescribed pollutants, NO₂, PM₁₀ & SO₂ are unlikely to exceed the statutory limits.

This Progress Report has not identified any sources that require further assessment. Therefore at this stage there is no need for Craigavon Borough council to proceed to a detailed assessment for any of the pollutants in advance of the scheduled Third Round of Reviews and Assessments.

4.2 Recommendations

Passive sampling by diffusion tube is a simple cost effective method of monitoring and tracking air quality in an area. It is recommended that the NO₂ monitoring should be continued, targeting areas that are most likely to be problematic. The diffusion tube survey will comply with the objectives and sampling methods as set out in LAQM TG(03).

Significant capital expenditure has already been incurred for continuous automatic monitoring for PM₁₀, NO₂ & SO₂. Results obtained to date would indicate that there is no negligible risk of exceeding prescribed standards, and it was recommended after the second round 'Review and Assessment' that monitoring at the automated sites within Craigavon will not be continued since it was logistically and financially unnecessary. In due course, consideration may be given to relocation of the automatic monitors to other locations identified by future screening that have more potential to be affected by the pollutants concerned.

Craigavon Borough Council currently has its Air Quality Management Strategy in place and is working to fulfil the objectives that were initiated as part of the Strategy. The Strategy is currently at the end of its first year since being launched in March 2006 and the council has been involved in a successful 'Walk to School' campaign to highlight the issues of air pollution and road traffic caused by the school run. The council is also registered on the DOE Travelwise 'Carshare' scheme. Since local air quality management work by the council has to date indicated that the Borough enjoys a relatively good standard of air quality, it is anticipated that the strategy will focus on protecting this position for the future.

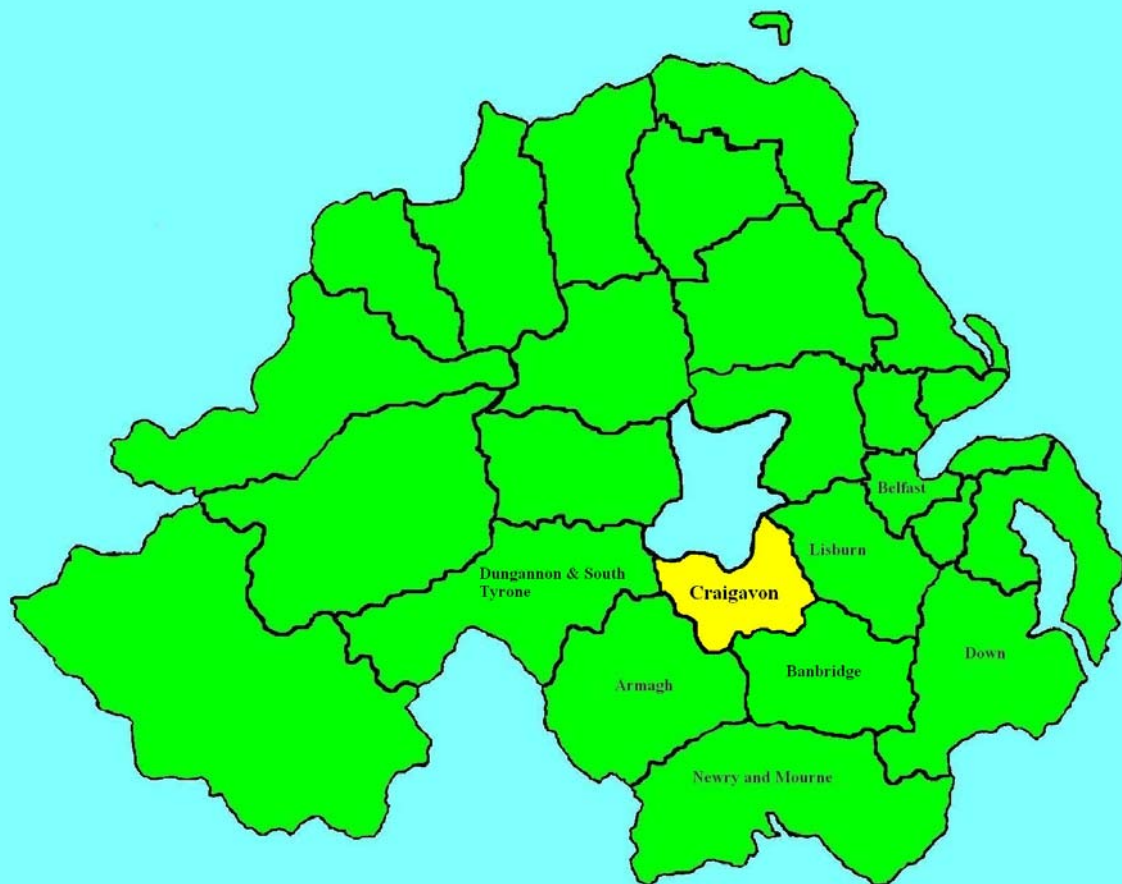
APPENDIX A

CRAIGAVON BOROUGH COUNCIL

Local Air Quality Monitoring Maps

Appendix 1

Map of Northern Ireland showing the location of Banbridge District Council





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CAN: CR0120004A

DRAWN: ELR

DATE: January 2005

Craigavon Borough Council Area

FIGURE 1

Craigavon Borough and surrounding road network

Craigavon Borough Council



KEY

- Areas of Receptors
- M1 Road Assessed
- NO₂ Diffusion Tube Monitoring

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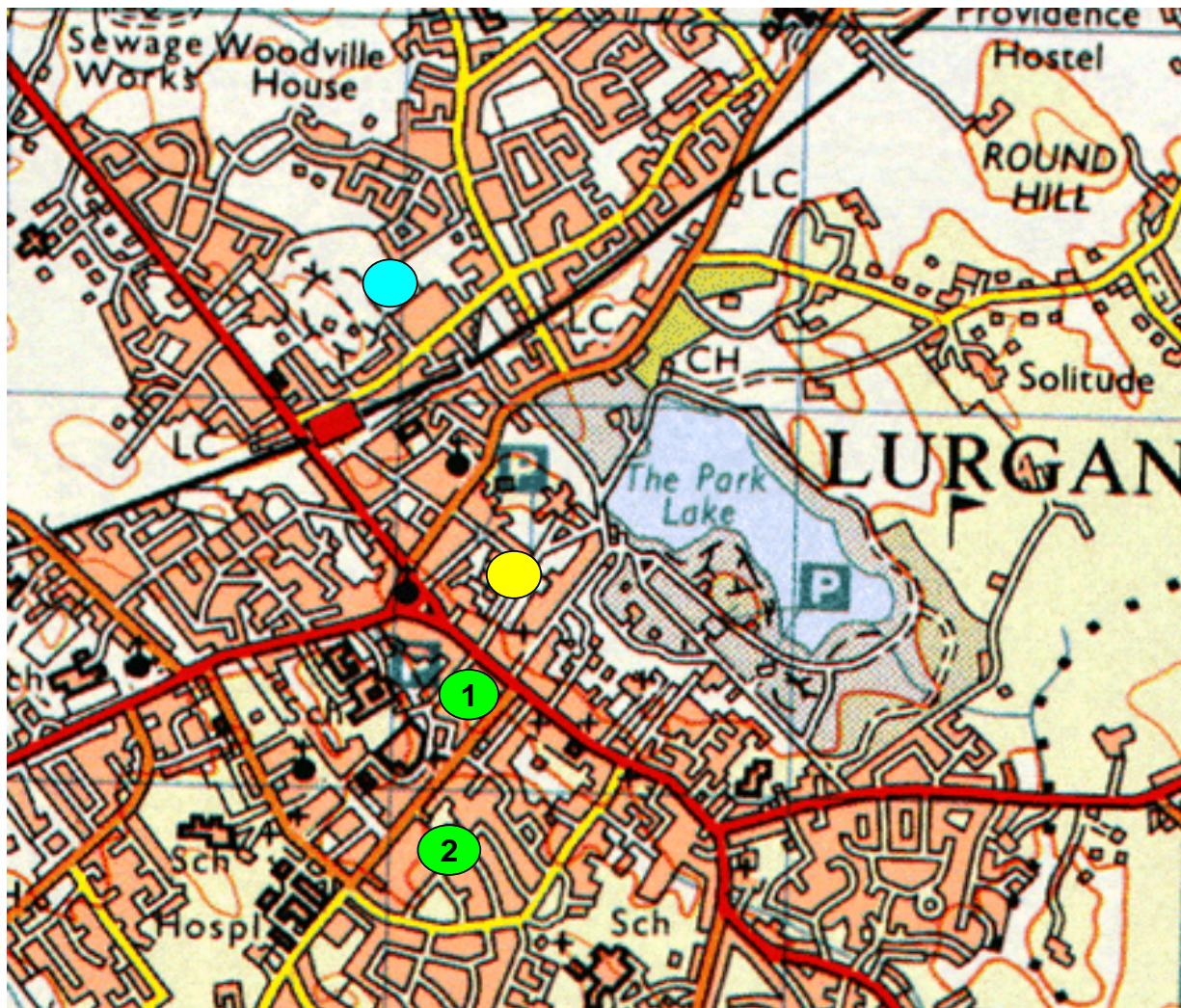
DATE: January 2005

Craighavon Borough Council: Air Quality Progress Report
April 2005

FIGURE 2

Monitoring and assessment locations used for assessment of traffic using the M1 and NO₂ Diffusion Tube at 4 Cluandara Drive.

Craighavon Borough Council



KEY

- NO₂ Continuous Monitoring: Castle Lane
- PM₁₀ & SO₂ Continuous Monitoring & SO₂ Diffusion Tube Monitoring: Lord Lurgan Park
- ① NO₂ Diffusion Tube Monitoring: Union Street (5N)
- ② NO₂ Diffusion Tube Monitoring: Ardboe Drive (7N)

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DRAWN: ELR

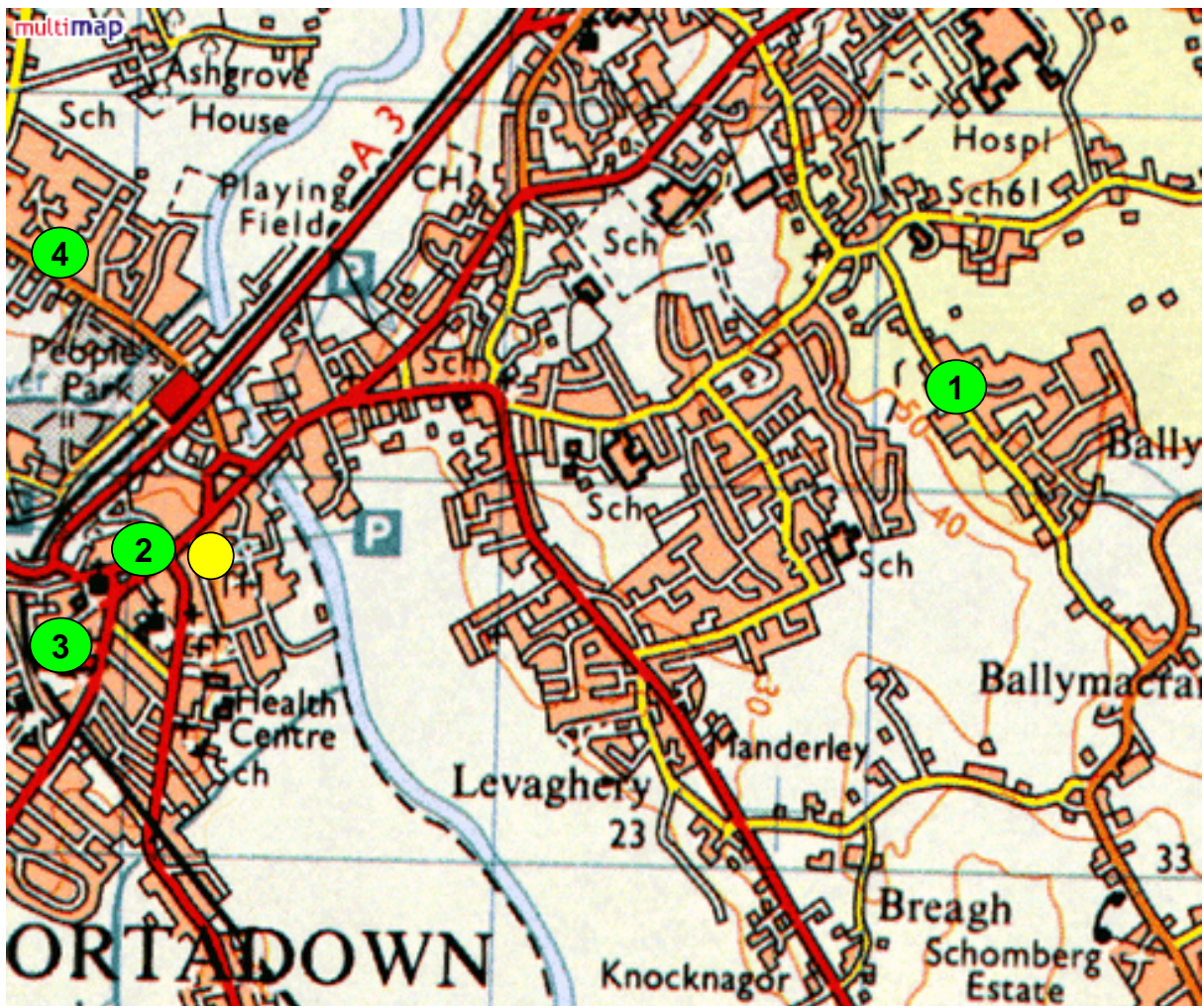
DATE: January 2005

Craigavon Borough Council: Air Quality Progress Report
April 2005

FIGURE 3

Monitoring Locations in Lurgan

Craigavon Borough Council



KEY

- 8-port SO₂ bubbler monitor: Edward Street
- 1 NO₂ Diffusion Tube Monitoring: Ballyhannon Road (8N)
- 2 NO₂ Diffusion Tube Monitoring: Market Street (9N)
- 3 NO₂ Diffusion Tube: West Street
- 4 NO₂ Diffusion Tube: Ashgrove Community Centre

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CAN: CR0120004A

DRAWN: ELR

DATE: January 2005

Craigavon Borough Council: Air Quality Progress Report
April 2005

FIGURE 4

Monitoring Locations in Portadown

Craigavon Borough Council

APPENDIX B

PM₁₀, SO₂ & NO_x DATA

CRAIGAVON BOROUGH COUNCIL **2003 to 2006**

CRAIGAVON LORD LURGAN PARK

01 January to 31 December 2006

These data have been fully ratified by AEA Energy & Environment

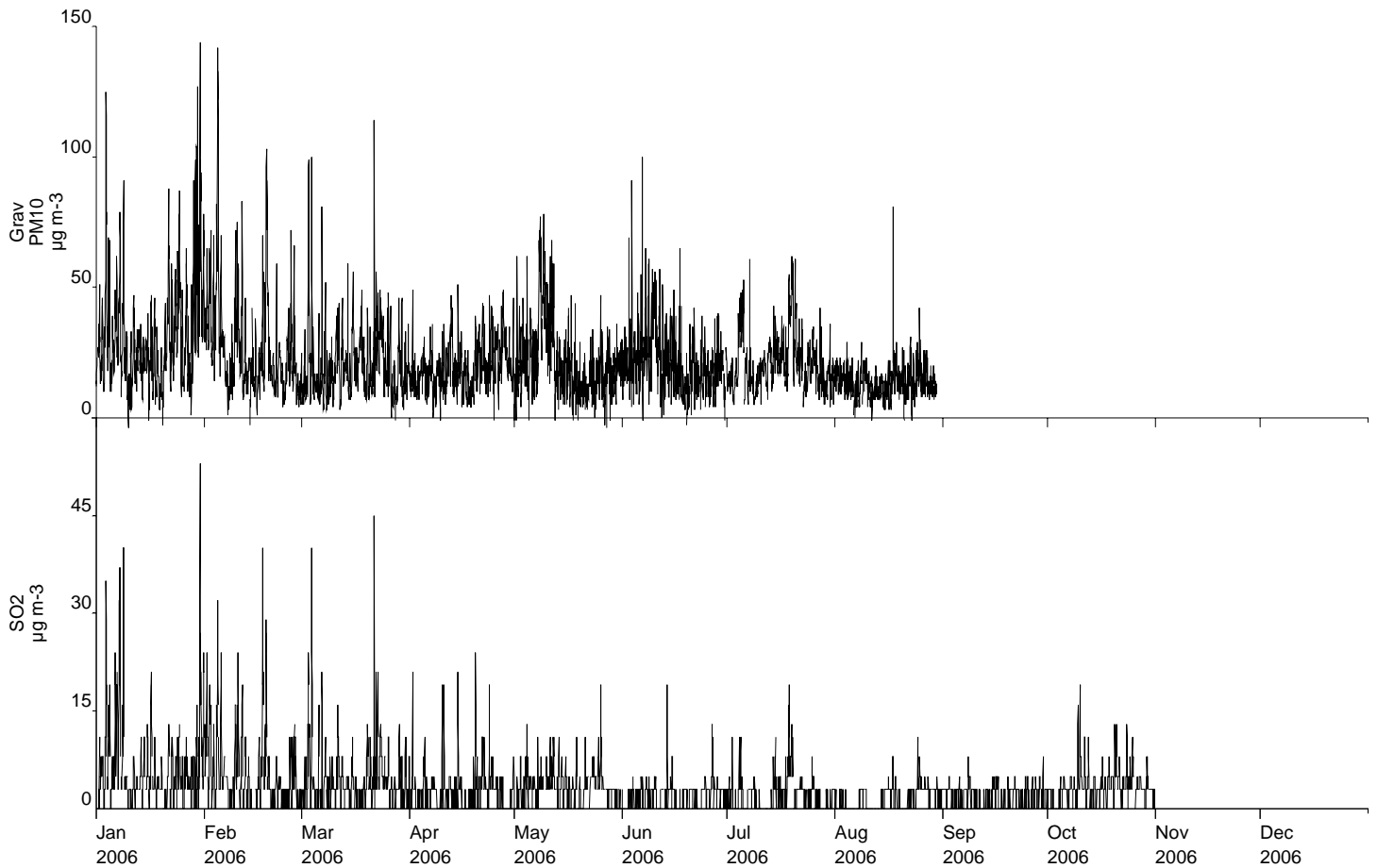
POLLUTANT	PM ₁₀ *	SO ₂
Number Very High	-	0
Number High	-	0
Number Moderate	-	0
Number Low	-	28231
Maximum 15-minute mean	181 µg m ⁻³	80 µg m ⁻³
Maximum hourly mean	144 µg m ⁻³	53 µg m ⁻³
Maximum running 8-hour mean	117 µg m ⁻³	29 µg m ⁻³
Maximum running 24-hour mean	75 µg m ⁻³	17 µg m ⁻³
Maximum daily mean	65 µg m ⁻³	16 µg m ⁻³
Average	22 µg m ⁻³	3 µg m ⁻³
Data capture	64.4 %	78.9 %

* PM₁₀ corrected to 'gravimetric units' using a factor of 1.3. The instrument is a TEOM
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 µg m ⁻³	6	6
PM ₁₀ Particulate Matter (Gravimetric)	Annual mean > 40 µg m ⁻³	0	-
Sulphur Dioxide	15-minute mean > 266 µg m ⁻³	0	0
Sulphur Dioxide	Hourly mean > 350 µg m ⁻³	0	0
Sulphur Dioxide	Daily mean > 125 µg m ⁻³	0	0

Craigavon Lord Lurgan Park Air Monitoring

Hourly Mean Data for 01 January to 31 December 2006



CRAIGAVON CASTLE LANE

01 January to 31 December 2006

These data have been fully ratified by AEA Energy & Environment

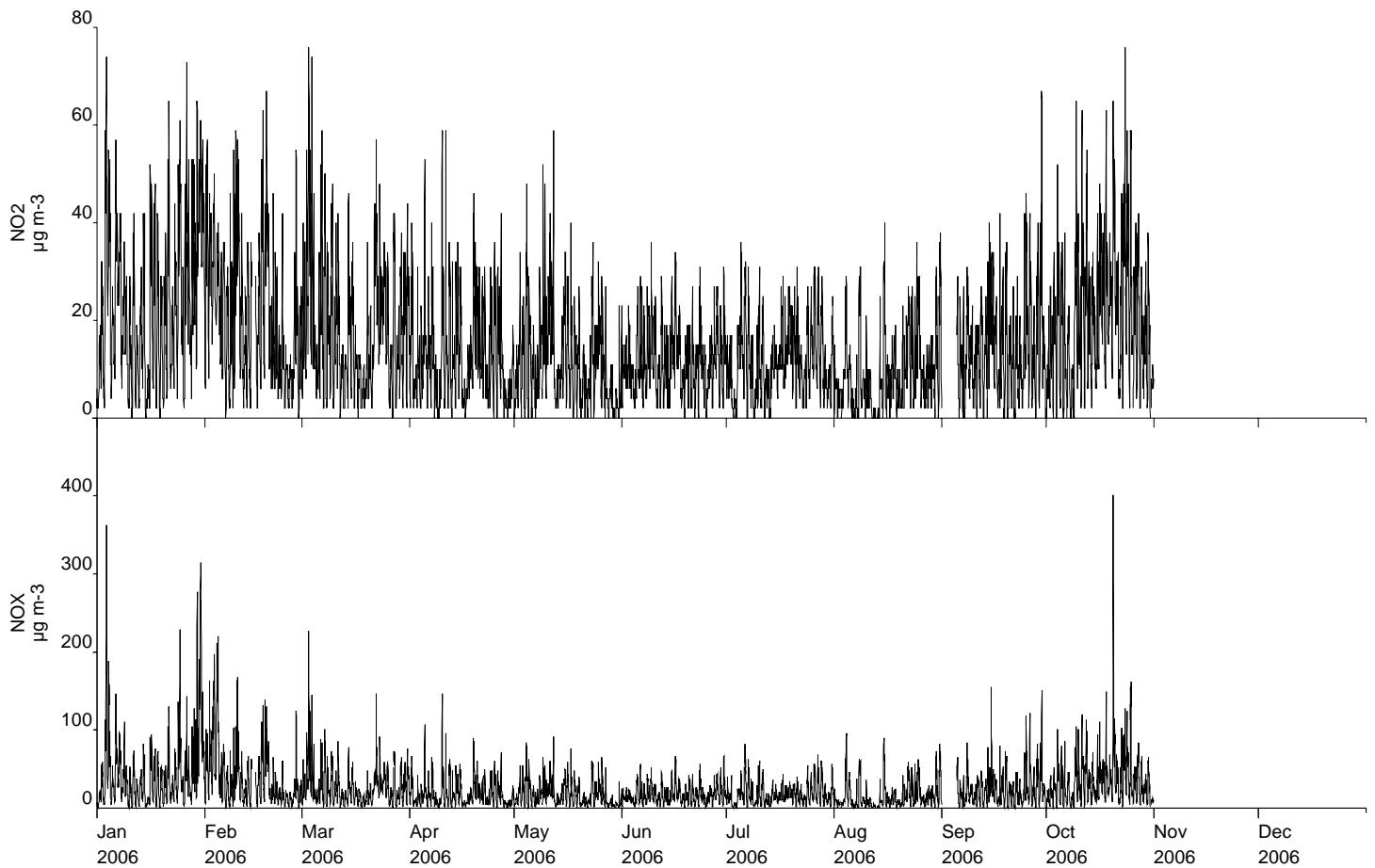
POLLUTANT	NO ₂	NO _x
Number Very High	0	-
Number High	0	-
Number Moderate	0	-
Number Low	7122	-
Maximum 15-minute mean	94 µg m ⁻³	443 µg m ⁻³
Maximum hourly mean	76 µg m ⁻³	401 µg m ⁻³
Maximum running 8-hour mean	63 µg m ⁻³	263 µg m ⁻³
Maximum running 24-hour mean	47 µg m ⁻³	169 µg m ⁻³
Maximum daily mean	45 µg m ⁻³	152 µg m ⁻³
Average	15 µg m ⁻³	25 µg m ⁻³
Data capture	81.3 %	81.3 %

All mass units are at 20°C and 1013mb

NO_x mass units are NO_x as NO₂

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

Craigavon Castle Lane Air Monitoring Hourly Mean Data for 01 January to 31 December 2006



Castle Lane Monitoring Results 2005

CRAIGAVON CASTLE LANE 01 January to 31 December 2005

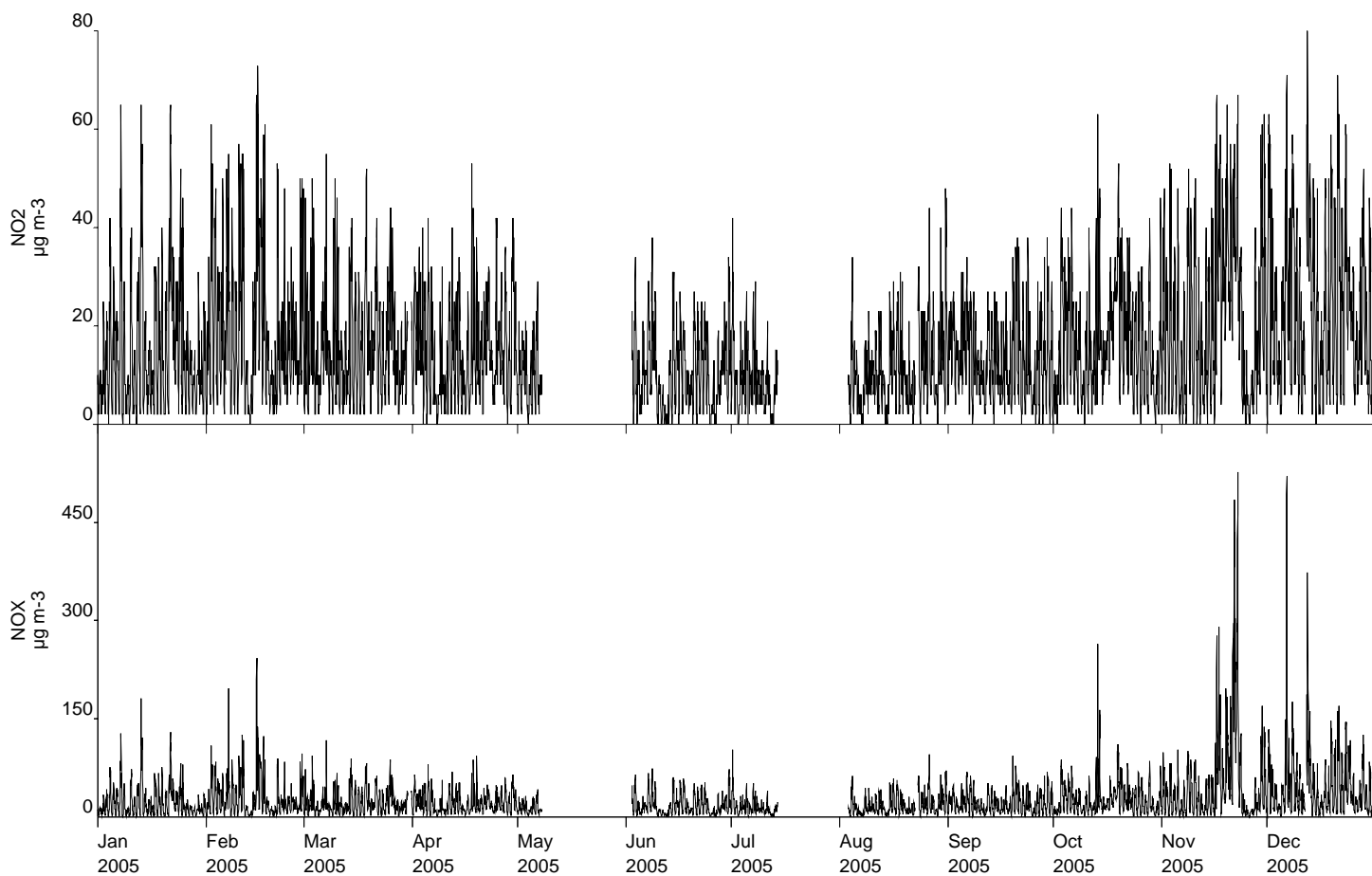
These data are provisional from 01/11/2005 and may be subject to further quality control

POLLUTANT	NO ₂
Number Very High	0
Number High	0
Number Moderate	0
Number Low	7592
Maximum 15-minute mean	92 µg m ⁻³
Maximum hourly mean	80 µg m ⁻³
Maximum running 8-hour mean	61 µg m ⁻³
Maximum running 24-hour mean	49 µg m ⁻³
Maximum daily mean	42 µg m ⁻³
Average	15 µg m ⁻³
Data capture	86.7 %

All mass units are at 20°C and 1013mb
NO_x mass units are NO_x as NO₂

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

**Craigavon Castle Lane Air Monitoring
Hourly Mean Data for 01 January to 31 December
2005**



Lord Lurgan Park Monitoring Results 2005

CRAIGAVON LORD LURGAN PARK 01 January to 31 December 2005

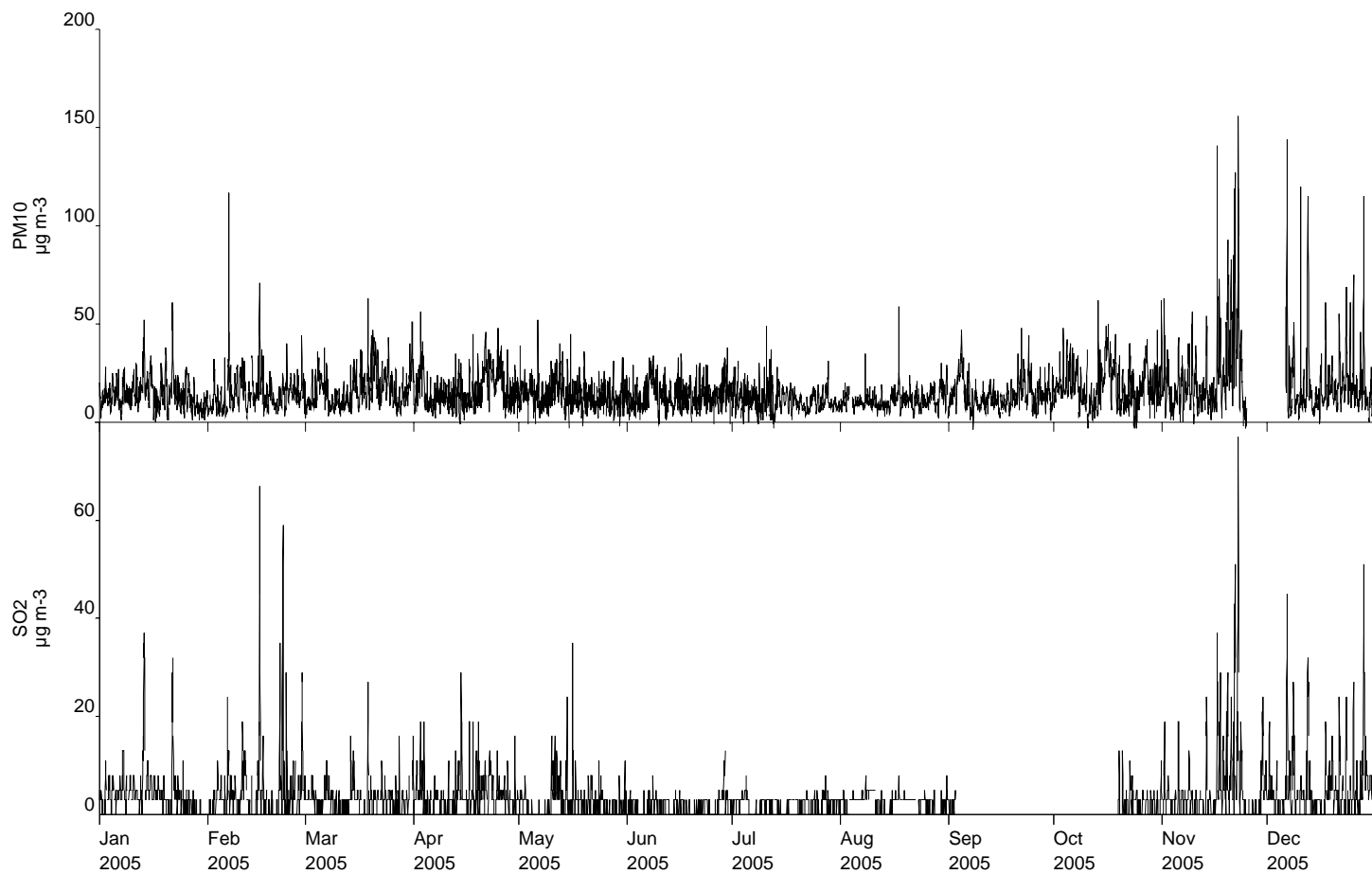
These data are provisional from 01/11/2005 and may be subject to further quality control

POLLUTANT	PM ₁₀ +	SO ₂
Number Very High	0	0
Number High	0	0
Number Moderate	37	0
Number Low	8364	29710
Maximum 15-minute mean	208 µg m ⁻³	106 µg m ⁻³
Maximum hourly mean	156 µg m ⁻³	77 µg m ⁻³
Maximum running 8-hour mean	99 µg m ⁻³	53 µg m ⁻³
Maximum running 24-hour mean	61 µg m ⁻³	25 µg m ⁻³
Maximum daily mean	58 µg m ⁻³	24 µg m ⁻³
Average	15 µg m ⁻³	3 µg m ⁻³
Data capture	94.2 %	83.0 %

+ PM₁₀ instrument is a TEOM
All mass units are at 20°C and 1013mb
NO_x mass units are NO_x as NO₂

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
PM ₁₀ Particulate Matter (Gravimetric)	Daily mean > 50 µg m ⁻³	3	3
PM ₁₀ Particulate Matter (Gravimetric)	Annual mean > 40 µg m ⁻³	0	-
Sulphur Dioxide	15-minute mean > 266 µg m ⁻³	0	0
Sulphur Dioxide	Hourly mean > 350 µg m ⁻³	0	0
Sulphur Dioxide	Daily mean > 125 µg m ⁻³	0	0

Craigavon Lord Lurgan Park Air Monitoring



**Hourly Mean Data for 01 January to 31 December
2005**

Diffusion Tube Monitoring Data

Table 1 - Bias Adjusted NO₂ Diffusion Tube Monitoring Data 2006

	Site 1 µg/m ³	Site 2 µg/m ³	Site 3 µg/m ³	Site 4 µg/m ³	Site 5 µg/m ³	Site 6 µg/m ³	Site 7 µg/m ³	Site 8 µg/m ³
Month								
January	26	NS	NS	16	24	14	14	20
February	18	14	18	19	NS	22	25	11
March	17	7	11	14	9	7	22	8
April	11	16	17	15	15	16	15	16
May	14	3	9	13	14	5	19	9
June	13	6	8	13	7	3	17	7
July	14	6	12	10	7	6	15	7
August	17	5	11	17	6	8	17	7
September	13	5	14	11	7	3	15	NS
October	NS	NS	NS	NS	NS	NS	NS	NS
November	NS	NS	NS	NS	NS	NS	NS	NS
December	NS	NS	NS	NS	NS	NS	NS	NS
MEAN	16	8*	13*	14	11*	9	18	11*
BIAS MEAN	16	8	13	15	11	10	18	11
Estimated Annual Mean		8*	12*		10*			10*

*Calculated using the short term estimation procedure in BOX6.5, Section 6-8 of LAQM TG03

Table 2 - Bias Adjusted NO₂ Diffusion Tube Monitoring Data 2005

	Site 1 µg/m³	Site 2 µg/m³	Site 3 µg/m³	Site 4 µg/m³	Site 5 µg/m³	Site 6 µg/m³	Site 7 µg/m³	Site 8 µg/m³
Month								
January	19	21	15	13	7	19	15	11
February	23	24	21	13	14	21	10	29
March	19	19	10	10	12	11	11	12
April	16	16	13	15	9	8	12	11
May	27	28	26	20	19	29	22	32
June	32	29	NS	16	21	13	17	21
July	6	1	4	3	3	5	3	4
August								
September								
October	14	12	14	10	13	21	13	13
November	17	22	17	14	11	14	11	17
December	20	19	13	18	15	15	16	20

Table 3: Craigavon District Council – Bias Adjusted Nitrogen Dioxide (NO₂) Results (January 2004 - December 2004)

Site No.	1	2	3	4	5	6	7	8
	ug m ⁻³	ug m ⁻³	ug m ⁻³	ug m ⁻³	ug m ⁻³	ug m ⁻³	ug m ⁻³	ug m ⁻³
Month								
Jan-04	37	41	31	23	6	18	21	26
Feb-04	11	13	14	10	9	30	11	19
Mar-04	13	11	9	6	12	15	19	13
Apr-04	11	16	6	5	6	4	6	11
May-04	24	27	18	9	11	15	9	12
Jun-04	17	22	26	24	26	26	25	33
Jul-04	5	11	5	5	5	8	6	8
Aug-04	18	5	14	6	6	16	9	12
Sep-04	23	4	9	8	9	15	13	9
Oct-04	25	22	15	11	14	14	26	14
Nov-04	25	4	13	17	16	19	14	19
Dec-04	26	25	19	13	10	18	16	23
*Mean	20	17	15	11	11	17	15	17

*Mean Monthly Data is corrected for Bias

		Site Ref
1	Town Hall, Union Street	82760
2	West Street (Bakery)	82979
3	Ardboe Drive	82762
4	Ballyhannon Road	82763
5	Ashgrove Community Centre	82764
6	Castlelane Toilets	82765
7	Lord Lurgan Park	82766
8	Cluandara, Derrymacash	82767

Bias Adjustment Factor 2004 – 1.08 (Cm/Dm)

Table 4: Craigavon District Council – Bias Adjusted Nitrogen Dioxide (NO₂) Results (January 2003 - December 2003)

Site No.	1	2	3	4	5	6	7	8
	ug m ⁻³	ug m ⁻³	ug m ⁻³	ug m ⁻³	ug m ⁻³	ug m ⁻³	ug m ⁻³	ug m ⁻³
Month								
Jan-04	37	51	34	14	28	39	27	46
Feb-04	36	55	35	17	36	32	33	25
Mar-04	14	13	42	13	15	27	14	14
Apr-04	7	13	3	4	4	4	4	14
May-04	16	29	6	9	12	16	7	16
Jun-04	16	41	13	4	12	13	8	15
Jul-04	12	NS	5	NS	7	7	3	12
Aug-04	6	12	4	3	0	1	3	6
Sep-04	15	23	11	8	9	24	15	13
Oct-04	15	34	16	11	11	6	18	18
Nov-04	29	17	23	14	22	28	9	20
Dec-04	26	40	27	12	30	23	24	27
*Mean	19	30	18	10	15	18	14	19

*Mean Monthly Data is corrected for Bias

		Site Ref
1	Town Hall, Union Street	82760
2	West Street (Bakery)	82979
3	Ardboe Drive	82762
4	Ballyhannon Road	82763
5	Ashgrove Community Centre	82764
6	Castlelane Toilets	82765
7	Lord Lurgan Park	82766
8	Cluandara, Derrymacash	82767

Bias Adjustment Factor 2003 – 1.05 (Cm/Dm)

NS = No Sample

Table 6 : Craigavon Borough Council - SO₂ Results (January 2004 - December 2004)

Site No.	1		2		3		4		5		6		7		8	
	ug m ⁻³	ppb	ug m ⁻³	ppb	ug m ⁻³	ppb	ug m ⁻³	ppb	ug m ⁻³	ppb	ug m ⁻³	ppb	ug m ⁻³	ppb	ug m ⁻³	ppb
Month																
Jan-03	13	5	12	4	6	2	8	3	13	5	7	3	10	4	7	3
Feb-03	17	6	13	5	29	11	11	4	4	1	7	2	19	7	7	3
Mar-03	4	2	8	3	14	5	8	3	25	9	26	10	9	3	7	3
Apr-03	19	7	10	4	NS	NS	13	5	14	5	8	3	6	2	9	3
May-03	7	2	11	4	NS	NS	NS	NS	9	3	7	3	8	3	8	3
Jun-03	10	4	19	7	10	4	9	3	13	5	15	6	7	3	5	2
Jul-03	8	3	6	2	12	4	8	3	9	4	6	2	11	4	11	4
Aug-03	8	3	7	3	14	5	16	6	7	3	14	5	8	3	10	4
Sep-03	9	3	6	2	12	5	14	5	14	5	14	5	9	3	11	4
Oct-03	10	4	13	5	7	2	NS	NS	17	7	16	6	12	5	14	5
Nov-03	12	4	19	7	NS	NS	11	4	8	3	7	3	22	8	4	1
Dec-03	9	3	5	2	6	2	18	7	12	4	4	2	7	3	7	3
Mean	11	4	11	4	12	4	12	4	12	5	11	4	11	4	8	3

Site Ref

NS = No Sample

1	Lord Lurgan Park	82880
2	Ashgrove Community Centre	82881
3	Corcrair Community Centre	82882
4	Mourneview Community Centre	82883
5	Lake Street	82884
6	Ardboe Drive	82885
7	Castle Lane Toilets	82886
8	Kernan Hill	82887

Table 7 : Craigavon Borough Council - SO₂ Results (January 2003 - December 2003)

Site No.	1		2		3		4		5		6		7		8	
	ug m ⁻³	ppb	ug m ⁻³	ppb	ug m ⁻³	ppb	ug m ⁻³	ppb	ug m ⁻³	ppb	ug m ⁻³	ppb	ug m ⁻³	ppb	ug m ⁻³	ppb
Month																
Jan-03	12	4	6	2	10	4	13	5	13	5	7	3	8	3	7	3
Feb-03	17	6	13	5	29	11	11	4	4	1	7	2	19	7	7	3
Mar-03	4	2	8	3	14	5	8	3	25	9	26	10	9	3	7	3
Apr-03	19	7	10	4	-	-	13	5	14	5	8	3	6	2	9	3
May-03	7	2	11	4	NS	NS	NS	NS	9	3	7	3	8	3	8	3
Jun-03	10	4	19	7	10	4	9	3	13	5	15	6	7	3	5	2
Jul-03	8	3	6	2	12	4	8	3	9	4	6	2	11	4	11	4
Aug-03	8	3	7	3	14	5	16	6	7	3	14	5	8	3	10	4
Sep-03	9	3	6	2	12	5	14	5	14	5	14	5	9	3	11	4
Oct-03	10	4	13	5	7	2	NS	NS	17	7	16	6	12	5	14	5
Nov-03	12	4	19	7	NS	NS	11	4	8	3	7	4	22	8	4	1
Dec-03	9	3	5	2	6	2	18	7	12	4	4	2	7	3	7	3
Mean	10	4	10	4	13	5	12	5	12	5	11	4	11	4	8	3

		Site Ref
1	Lord Lurgan Park	82880
2	Ashgrove Community Centre	82881
3	Corcrair Community Centre	82882
4	Mourneview Community Centre	82883
5	Lake Street	82884
6	Ardboe Drive	82885
7	Castle Lane Toilets	82886
8	Kernan Hill	82887

NS = No Sample

