Craigavon Borough Council

Local Air Quality Progress Report

April 2005

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 Stage 2/3 LAQM Review and Assessment report 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 (AQMAs) to be declared.

Preparation of this Progress Report is the final activity prescribed in the timetable for the First 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 2003/2004.

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. In this context, the development of a local air quality management strategy for the Borough is currently in progress.

Contents

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 (PM_{10}) (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

PM_{10}

Stage 1 of the first round of review and assessment completed in 2002, concluded that PM_{10} emissions were not significantly contentious. However, since new PM_{10} monitoring equipment was installed at Lord Lurgan Park, it was deemed useful to keep updated emissions data for PM_{10}, 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 PM_{10} data remains an essential element in ongoing assessment of local air quality in the area.

Craigavon Borough Council recently submitted its Stage 2/3 review and assessment report. This was accepted and approved by the Environment & Heritage Service following an appraisal by the University of West England (Bristol). Although a Stage 2/3 assessment of PM_{10} emissions was not considered strictly necessary, the data gathered by the automatic monitor was used to assess the overall impact of road traffic pollution as part of the report compiled by Enviros Consulting Limited. The outcome of that review and assessment with regard to PM_{10} emissions, was that there is no significant risk of exceeding the prescribed statutory limit and therefore no requirement to consider the declaration of an AQMA at this time.

SO_2

Stage 1 of the first round of review and assessment completed in 2002, concluded that SO_2 emissions required a further Stage 2/3 assessment on the basis that it was not possible to rule out the risk of exceedences of prescribed standards at that time. This in part was due to the operation of a clinical waste incinerator at Craigavon Area Hospital, which has since been shut down. However, Craigavon Area Hospital, continuous to operate 6 No. boilers, which with the exception of one boiler, are all oil fired and as a consequence, these boilers may contribute to SO_2 levels in the area. Although, it is normal practice for only two of the 6 boilers to be used on a continual basis and the type of oil used in the combustion process has a maximum sulphur content of 1%.

Craigavon Borough Council recently submitted a copy of the Stage 2/3 review and assessment report. This was accepted and approved by the Environment & Heritage Service following an appraisal by the University of West England (Bristol). As part of the Stage 2 Review & Assessment, a comprehensive dispersion model was used to determine the impact of Craigavon Area Hospitals oil fired boiler on the levels of SO_2 in the Craigavon area. The outcome of that review and assessment with regard to SO_2 emissions, was that there is no significant risk of exceeding the prescribed statutory limit and therefore no requirement to consider the declaration of an AQMA at this time.

NO_2

Stage 1 of the first round of review and assessment completed in 2002, concluded that NO_2 emissions required a further Stage 2/3 assessment on the basis that it was not possible to rule out the risk of exceedences of prescribed standards at that time. Following on from the recommendations stated in the Stage 1 Report, Craigavon Borough Council has undertaken monitoring of NO_2 emissions as part of the Stage 2 Review & Assessment process. It was further

recommended that the council assesses the levels of NO_2 in areas where the public may be exposed to such emissions. This included in particular a small housing estate situated close to the M1 motorway at 4 Cluandara, Derrymacash, Craigavon. Other monitoring stations were selected by the council in areas where potential exposure to traffic emissions was liable to be highest. Monitoring of NO_2 emissions was completed using the continuous analyser method at Castle Lane and a number of diffusion tubes placed at specific locations.

Craigavon Borough Council recently submitted a copy of the Stage 2/3 review and assessment report. The report was accepted and approved by the Environment & Heritage Service following an appraisal by the University of West England (Bristol). The outcome of that review and assessment with regard to NO_2 emissions, was that there is no significant risk of exceeding the prescribed statutory limit and therefore no requirement to consider the declaration of an AQMA at this time.

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:

- **PM_{10}** (by Automatic Air Monitoring Equipment)
- **NO_2** (by Automatic Air Monitoring Equipment & Diffusion Tube)
- **SO_2** (by Automatic Air Monitoring Equipment & Diffusion Tube)

Table 2.1 : Air Quality Monitoring In Craigavon

Pollutant	Equipment	Location	Eastings	Northings	Site Ref.
PM_{10}	TEOM series 1400a	Lord Lurgan Park	307980	359301	82880
SO_2	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
NOx & NO_2	Chemiluminesence Real-Time Analyser Model 200A	Castle Lane, Lurgan	308230	358450	82886
NO_2	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
NO_2	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 Stations

PM_{10}

PM_{10} 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. PM_{10} 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 PM_{10} 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/m^3 annual mean and 50µg/m^3 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/m^3 as the annual mean and 50µg/m^3 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 is 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 10µm 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 350μg/m^3, not to be exceeded more than 24 times per year and 125μg/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 μg/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 NO2 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 40μg/m^3 and a 1 hour mean of 200μg/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 NO_2 analyser (Chemiluminesence 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 currently 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. The reports determined that all of the equipment was in good working order and complied with all relevant standards.

2.1.2 NO_2 Diffusion Tube Monitoring Sites

Craigavon Borough Council carries out monitoring of NO_2 by diffusion tubes at eight sites within its District, illustrated in Figure 4 Appendix A. The NO_2 diffusion tubes are prepared and analysed by Lambeth Environmental Laboratories. This laboratory takes part in the NO_2 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 NO_2 Network, but none of the sites were co-located with an automatic NO_2 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.
NO_2	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
NO_2	Diffusion Tube	4 Cluandara, Derrymacash, Craigavon	304402	359301	82767
		Castle Lane Public Toilets	308230	358450	82886
		Ashgrove Community Centre	N/A	N/A	82881
NO_2	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 SO_2 Diffusion Tube Monitoring Sites

Craigavon Borough Council carries out monitoring of SO_2 by diffusion tubes at 8 sites within the Borough.

There is 1 SO_2 diffusion tube co-located with the automatic SO_2 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.
SO_2	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 or discontinued, since the previous Updating and Screening Assessment.

2.3 MONITORING RESULTS AND COMPARISON WITH AQS OBJECTIVES

It has not been possible at this time to generate trend graphs for the monitoring data that has been collected. This is due to the fact that automatic monitoring in the Craigavon Borough Council area only began in October 2003 and consequently there is insufficient data to complete trend data analysis.

2.3.1 PM_{10} (Automatic Monitoring Station)

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

Ratified data capture of 93% for PM_{10} was reported over the period 27th October to 30th April 2004. Data capture during this monitoring period met the review and assessment target of 90% for ratified data sets. Significant periods of lost data across the data set were:

- 10 days of PM10 data lost between 21st and 31st March 2004. The reason for this loss remains unknown.

PM_{10} concentrations were recorded in the DoE Northern Ireland MODERATE band on 39 occasions on 3 days in December 2003. The DoE Northern Ireland objective value of 50 µg/m^3 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 25 µg/m^3 gravimetric equivalent was below the objective value of 40 µg/m^3.

Table 2.3.1 PM_{10} exceedences at Lord Lurgan Park - 27th October 2003 to 30th April 2004

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
PM_{10} Particulate Matter (Gravimetric)	Daily Mean > 50 µg/m3	6	6
PM_{10} Particulate Matter (Gravimetric)	Annual mean > 40 µg/m3	0	-

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

Ratified data capture of 97% for PM_{10} 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.

PM_{10} concentrations were recorded in the DoE Northern Ireland LOW band throughout the period. The DoE Northern Ireland objective value of 50 µg/m^3 based on daily gravimetric equivalent data was not exceeded during the period. The annual mean TEOM concentration of 13 µg/m^3 , when corrected to 17 µg/m^3 gravimetric equivalent was below the objective value of 40 µg/m^3.

Table 2.3.2: PM_{10} 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/m3	0	0
PM_{10} Particulate Matter (Gravimetric)	Annual mean > 40 µg/m3	0	-

2.3.2 SO_2 (Automatic Monitoring Station)

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

Ratified data capture of 95% for SO_2 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.

SO_2 concentrations were recorded in the DoE Northern Ireland LOW band throughout the period. The maximum 15 minute mean of 80 µg/m^3 was below the DoE Northern Ireland 15 minute objective value of 266 µg/m^3. The maximum hourly mean of 67 µg/m^3 was below the objective value of 350 µg/m^3 . The maximum daily mean of 29 µg/m^3 was below the objective of 125 µg/m^3.

Table 2.3.3: SO_2 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 SO_2 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.

SO_2 concentrations were recorded in the DoE Northern Ireland LOW band throughout the period. The maximum 15 minute mean of 74 µg/m^3 was below the objective value of 266 µg/m^3 . The maximum hourly mean of 53 µg/m^3 was below the objective value of 350 µg/m^3. The maximum daily mean of 16 µg/m^3 was below the objective of 125 µg/m^3.

Table 2.3.4: SO_2 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 NO_2 (Automatic Monitoring Station)

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

Ratified data capture of 99% for NO_2 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.

NO_2 concentrations were recorded in the Defra LOW band throughout the period. The maximum hourly mean of 94 µg/m^3 was below the objective value of 200 µg/m^3. The mean daily concentration of 19 µg/m^3 was below the objective of 40 µg/m^3.

Table 2.3.5: NO_2 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 NO_2 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 NOx data deleted between 20th July and 4th August 2004 due to analyser fault.

NO_2 concentrations were recorded in the Defra LOW band throughout the period. The maximum hourly mean concentration of 53 µg/m^3 was below the objective value of 200 µg/m^3. The mean concentration of 11 µg/m^3 was below the objective of 40 µg/m3.

Table 2.3.6: NO_2 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 NO_2 (Diffusion Tube Monitoring)

At he time of preparing this progress report it was not been possible to generate trend graphs for NO_2 diffusion tube monitoring data. This is due to the fact that diffusion tube monitoring in the Craigavon Borough Council area only began in October 2003 and consequently there is insufficient data to complete trend data analysis.

NO_2 diffusion tube monitoring results have been bias corrected for 2003 and 2004.
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. Guidance provided by DEFRA (Review and Assessment: Pollutant-Specific Guidance, LAQM. TG(03), indicates that NO_2 concentrations will further reduce by the target date of 31st December 2005.

Tables 1 & 2 in Appendix B, list the results for NO_2 diffusion tubes during 2003 and 2004.

2.5.1 SO_2 (Diffusion Tube Monitoring)

At the time of preparing this progress report it was not been possible to generate trend graphs for SO_2 diffusion tube monitoring data.. This is due to the fact that diffusion tube monitoring in the Craigavon Borough Council area only began in October 2003 and consequently there is insufficient data to complete trend data analysis.

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 SO_2 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 SO_2 monitoring projects using diffusion tubes.
Tables 3 & 4 in Appendix B, List the results for SO_2 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 >5MW$_{(thermal)}$ 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.

3.2.4Other 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 Stage 2 Report of February 2004, monitoring results indicate that concentrations of the most significant of the prescribed pollutants, NO_2, PM_{10} & SO_2 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 Second 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 NO_2 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 PM_{10}, NO_2 & SO_2. Although results obtained to date would indicate that there is negligible risk of exceeding prescribed standards, it is recommended that this monitoring be continued since it would be relatively inexpensive to do so and this will add to the database of pollutant concentrations in the Borough. 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.

In light of advice that monitoring of SO_2 emissions by diffusion tube is liable to be relatively inaccurate, and the fact that monitored levels by automatic monitor are quite low, it is now recommended that the existing SO_2 diffusion tube monitoring programme within the Borough be discontinued. One tube kept

Craigavon Borough Council is considering the future management of Local Air Quality by developing a Local Air Quality Strategy. The Strategy is currently at the development stage and it is envisaged that this will be launched in Autumn 2005. 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

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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
- NO_2 Diffusion Tube Monitoring

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DATE: January 2005

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FIGURE 2

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

Craigavon Borough Council

KEY

- NO_2 Continuous Monitoring: Castle Lane
- PM_{10} & SO_2 Continuous Monitoring & SO_2 Diffusion Tube Monitoring: Lord Lurgan Park
- 1 NO_2 Diffusion Tube Monitoring: Union Street (5N)
- 2 NO_2 Diffusion Tube Monitoring: Ardboe Drive (7N)

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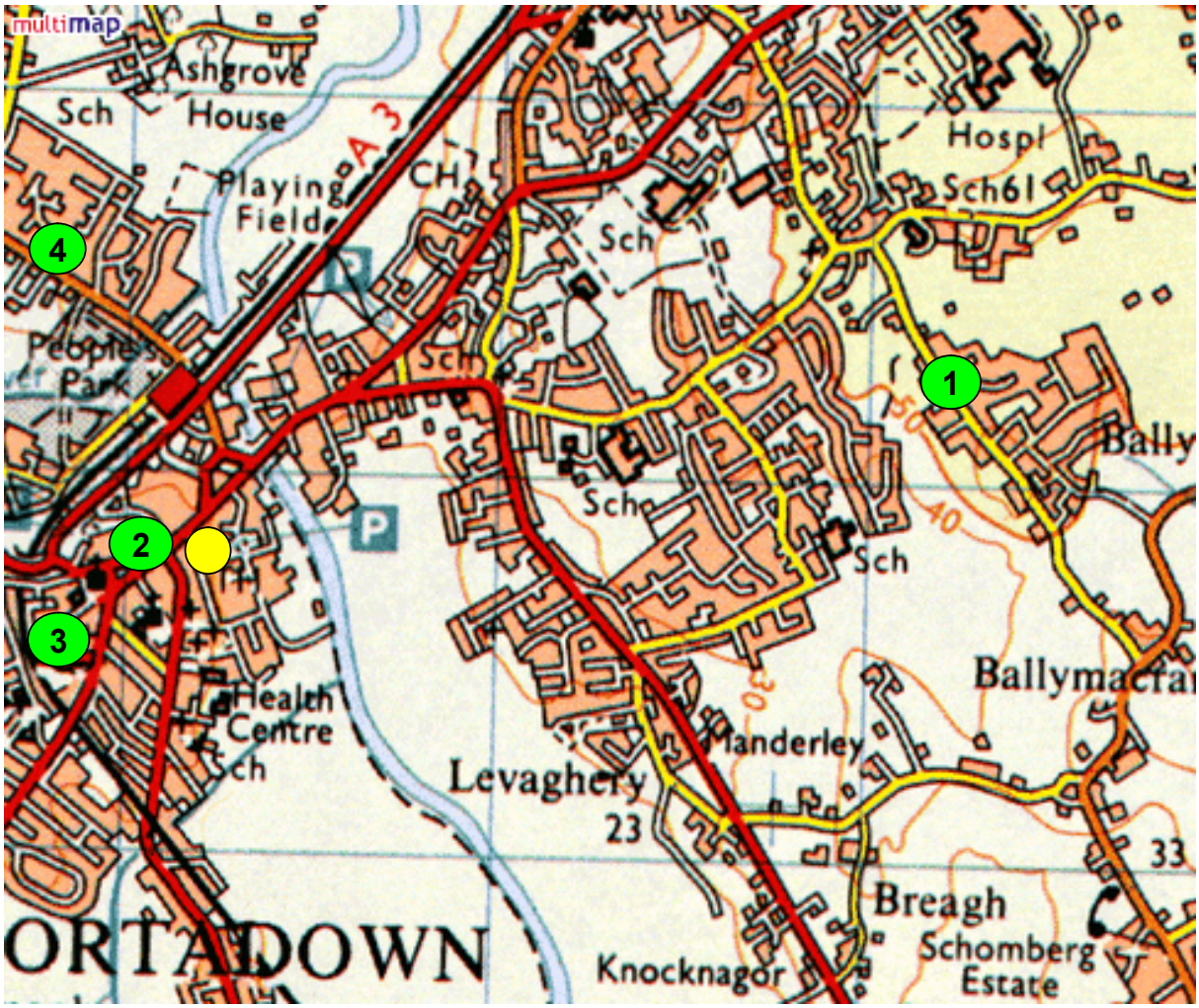
CAN:	CR0120004A
DRAWN:	ELR
DATE:	January 2005

Craigavon Borough Council: Air Quality Progress Report April 2005

FIGURE 3

Monitoring Locations in Lurgan

Craigavon Borough Council



KEY

- 8-port SO_2 bubbler monitor: Edward Street
- 1 NO_2 Diffusion Tube Monitoring: Ballyhannon Road (8N)
- 2 NO_2 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

PM_{10}, SO_2 & NOx DATA

CRAIGAVON BOROUGH COUNCIL
2003 & 2004

Table 1: Craigavon District Council – Bias Adjusted Nitrogen Dioxide ($N0_2$) 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 2: Craigavon District Council – Bias Adjusted Nitrogen Dioxide ($N0_2$) 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 3 : Craigavon Borough Council - $S0_2$ 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

NS = No Sample

		Site Ref
1	Lord Lurgan Park	82880
2	Ashgrove Community Centre	82881
3	Corcrain 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 4 : Craigavon Borough Council - $S0_2$ 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

NS = No Sample

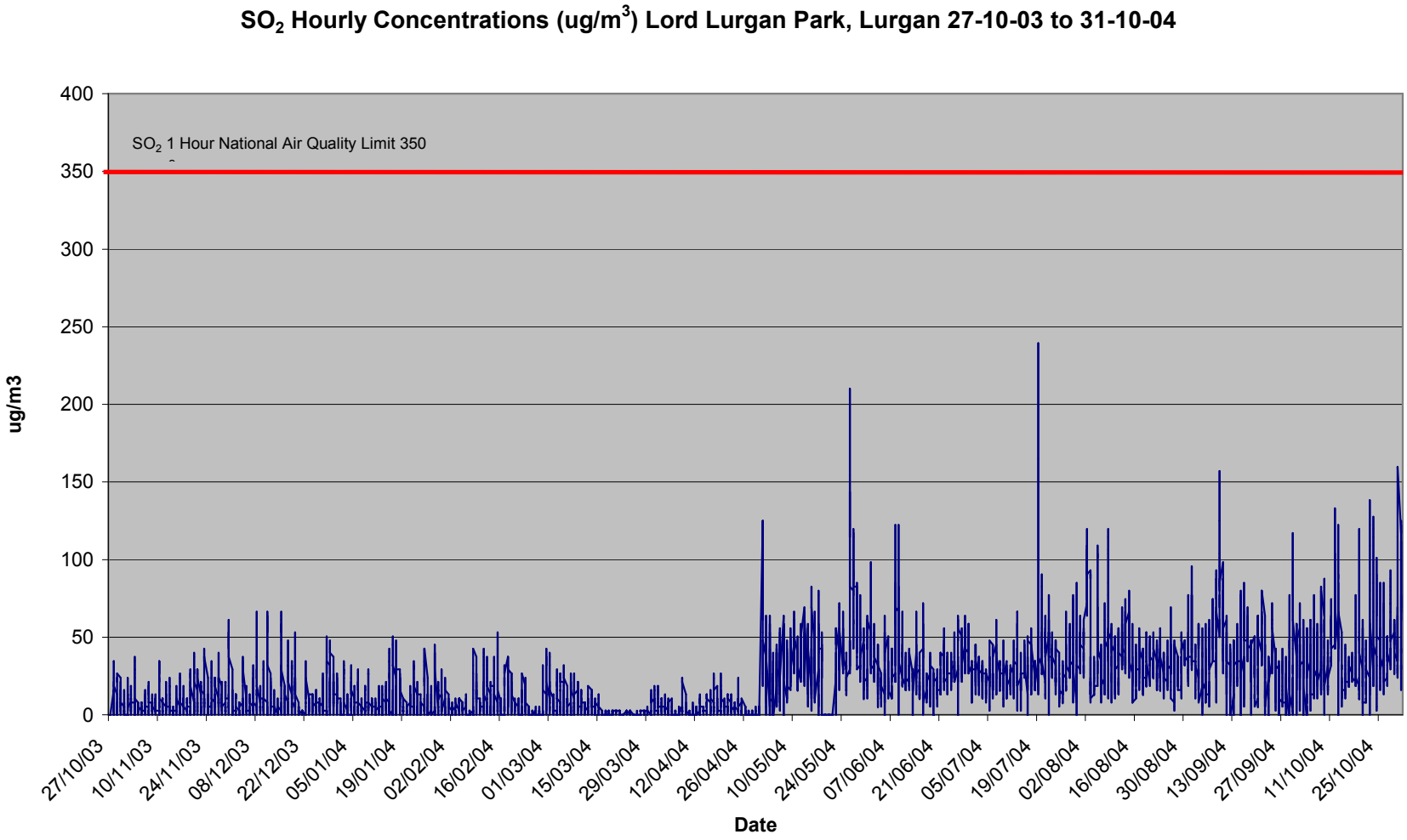
		Site Ref
1	Lord Lurgan Park	82880
2	Ashgrove Community Centre	82881
3	Corcrain Community Centre	82882
4	Mourneview Community Centre	82883
5	Lake Street	82884
6	Ardboe Drive	82885
7	Castle Lane Toilets	82886
8	Kernan Hill	82887

APPENDIX C

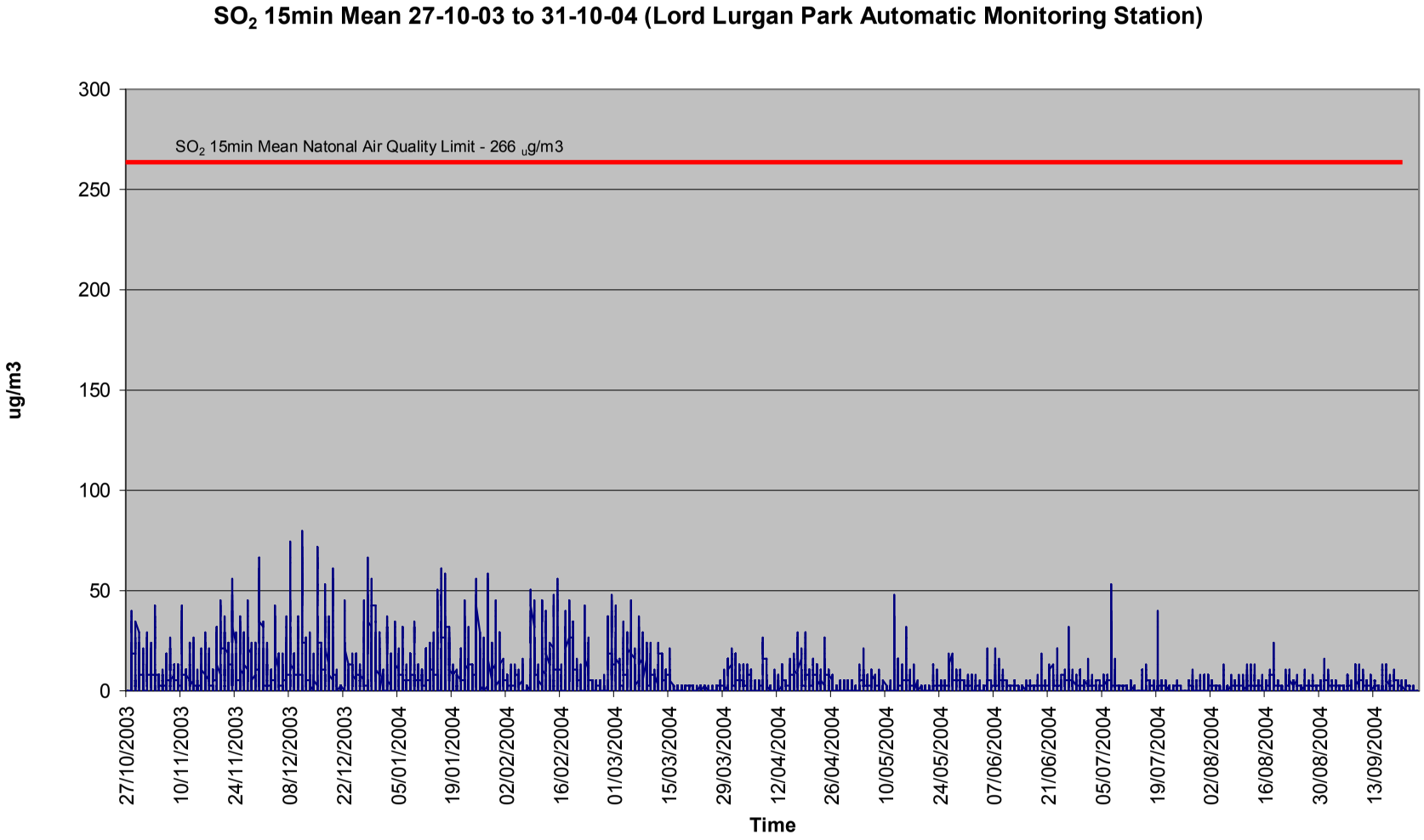
PM_{10}, SO_2 & NOx Graphs

CRAIGAVON BOROUGH COUNCIL
2003 & 2004

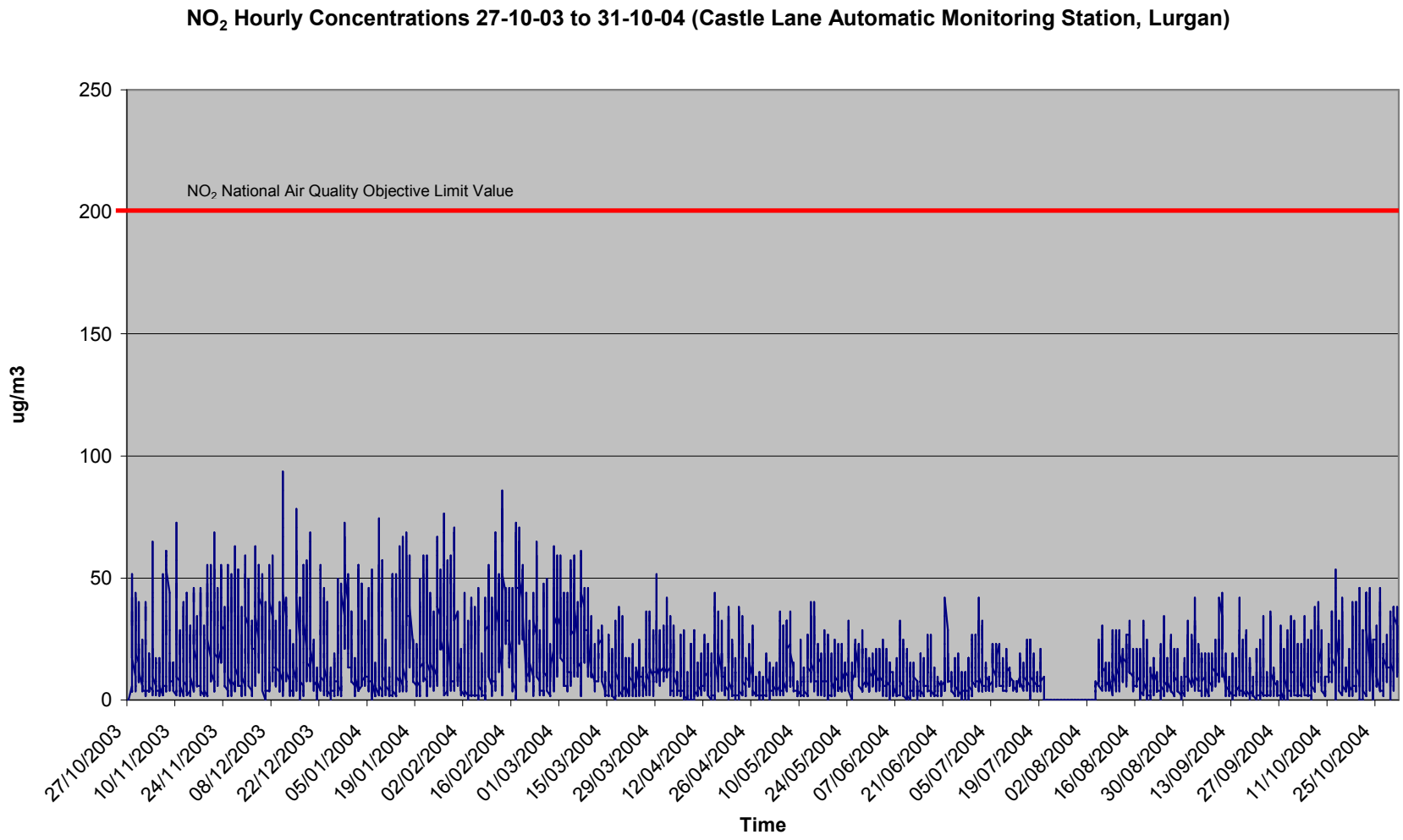
Graph 1


SO2 Hourly Concentrations (ug/m3) Lord Lurgan Park, Lurgan 27-10-03 to 31-10-04
SO2 1 Hour National Air Quality Limit 350
ug/m3
400
350
300
250
200
150
100
50
0
27/10/03
10/11/03
24/11/03
08/12/03
22/12/03
05/01/04
19/01/04
02/02/04
16/02/04
01/03/04
15/03/04
29/03/04
12/04/04
26/04/04
10/05/04
24/05/04
07/06/04
21/06/04
05/07/04
19/07/04
02/08/04
16/08/04
30/08/04
13/09/04
27/09/04
11/10/04
25/10/04
Date

Graph 2


SO2 15min Mean 27-10-03 to 31-10-04 (Lord Lurgan Park Automatic Monitoring Station)
SO2 15min Mean Natonal Air Quality Limit - 266 ug/m3
ug/m3
300
250
200
150
100
50
0
27/10/2003
10/11/2003
24/11/2003
08/12/2003
22/12/2003
05/01/2004
19/01/2004
02/02/2004
16/02/2004
01/03/2004
15/03/2004
29/03/2004
12/04/2004
26/04/2004
10/05/2004
24/05/2004
07/06/2004
21/06/2004
05/07/2004
19/07/2004
02/08/2004
16/08/2004
30/08/2004
13/09/2004
Time

Graph 3


NO2 Hourly Concentrations 27-10-03 to 31-10-04 (Castle Lane Automatic Monitoring Station, Lurgan)
NO2 National Air Quality Objective Limit Value
250
200
150
100
50
0
ug/m3
27/10/2003
10/11/2003
24/11/2003
08/12/2003
22/12/2003
05/01/2004
19/01/2004
02/02/2004
16/02/2004
01/03/2004
15/03/2004
29/03/2004
12/04/2004
26/04/2004
10/05/2004
24/05/2004
07/06/2004
21/06/2004
05/07/2004
19/07/2004
02/08/2004
16/08/2004
30/08/2004
13/09/2004
27/09/2004
11/10/2004
25/10/2004
Time