Armagh City and District Council

Updating and Screening Assessment of Local Air Quality

April 2006

Executive Summary

In 1995 the Environment Act provided for a national air quality strategy requiring local authorities to carry out reviews and assessments of the air quality in their area for seven specific pollutants. These are; carbon monoxide (CO), benzene, 1,3-butadiene, nitrogen dioxide (NO_2), lead, sulphur dioxide (SO_2) and PM_{10} (Particles under 10μm in diameter).

This document is an Updating and Screening Assessment of air quality across Armagh City and District Council district. The Council has previously completed a two stage Review and Assessment of Air Quality from 2001 to 2005, and has declared no AQMA's to date.

The first review and assessment procedure was divided into four stages and progression to each stage was dependent upon the air quality in each local authority area. Authorities were required to progress to the next stage only if there was a likelihood of exceeding the air quality standards and objectives.

In Armagh City and District Council's area, the second stage review and assessment concluded that there was not a likelihood of exceedences of the annual Particulate Matter (PM_{10}), Nitrogen Dioxide (NO_2) or Sulphur Dioxide (SO_2).

In this, the second round of review and assessment, local authorities are required to carry out an Updating and Screening Assessment (USA) by the end of April 2006. The USA is intended to identify significant changes that may have occurred since the first round of Review and Assessment, which might lead to a risk of the air quality objectives being exceeded. These changes might include new monitoring data, revised objectives or new or increased emission sources. All seven pollutants are covered by the assessment and there are revised objectives for carbon monoxide and benzene.

This report has concluded that Armagh City and District Council is not required to proceed to a more detailed assessment for any of the prescribed pollutants.
Armagh City and District Council will continue to uphold the good air quality in the Borough by adopting the recommendations outlined in its recently published Local Air Quality Strategy 2006- 2010.

Armagh City and District Council regrets that during the formulation of this report, data from the automatic air quality monitoring stations at Lonsdale Road and Dobbin Street can not be provided, due to technical problems associated with the downloading of information from the computers memory. The Council hope to have this problem rectified in the near future and if necessary will provide data as an addendum to compliment this report.

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1.0 INTRODUCTION

1.0 This document is an Updating and Screening Assessment of air quality across the Armagh City and District Council district, which follows on from the Reviews and Assessments of Air Quality carried out by Armagh City and District Council from 2000 to 2005.

1.01 Background

In 1995 the Environment Act provided for a national air quality strategy requiring local authorities to carry out reviews and assessments of the air quality in their area for seven specific pollutants which are; carbon monoxide (CO), benzene, 1,3-butadiene, nitrogen dioxide (NO_2), lead, sulphur dioxide (SO_2) and PM_{10} (Particles under 10µm in diameter). Guidance on how to carry out the reviews and assessments was published by the Department of Environment, Food and Regions Affairs (DEFRA). The review and assessment procedure was divided into four stages. The first was an initial desk-top study to identify significant sources of pollution in areas where there are relative "receptors". Where potential exceedences were identified the second stage was to include simple monitoring and modelling of the identified pollutants to identify whether there were likely to be exceedences of the air quality standards. Where such exceedences were thought likely, a stage three study required more detailed and complex modelling and monitoring of the relevant pollutants. Following the third stage, Local Authorities were expected to come to a conclusion about whether the objectives would be achieved. If they were to be failed, then Air Quality Management Areas would have to be declared. Stage four studies were carried out where further investigation was required following the declaration of Air Quality Management Areas.

In Armagh City and District Council's area, the first stage of the review and assessment process was published in 2000 and identified three pollutants (PM_{10}, NO_2 and SO_2) with potential to result in an exceedence of the air quality standards, and thus a stage two study was carried out to assess them in more detail. The third stage report was appraised by the University of West England (UWE) on behalf of the Department of Environment's Environment and Heritage Service (EHS), and accepted with the condition that a supplementary document highlighting the impact of SO_2 emissions from domestic coal burning in Armagh and PM_{10} emissions from road traffic should be submitted. The conclusions reached in the Stage 2/3 Review and Assessment and the subsequent supplementary document, were that no further detailed assessments were 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 Updating and Screening Assessment is the first activity prescribed in the timetable for the Second Round of reviews and assessments as set out in LAQM Policy Guidance LAQM.PGNI(03).This report has been produced in accordance with guidance detailed in Progress Report Guidance

LAQM.PRGNI(04), and with the help of checklists published by DEFRA which were accessed via their website (www.defra.gov.uk) This report summarises the findings of the LAQM activities undertaken by the Council including the currently available air quality monitoring results for 2005.

1.02 Updating and Screening Assessment

To keep air quality on the agenda for all local authorities, and ensure that standards are maintained, new guidance – Local Air Quality Management Technical Guidance (03) (LAQM TG(03)) - has been issued by DEFRA which requires all local authorities in Northern Ireland to carry out an Updating and Screening Assessment (USA) by the end of April 2006. The USA is intended to identify significant changes that may have occurred since the last Review and Assessment, which might lead to a risk of the air quality objectives being exceeded. These might include new monitoring data, revised objectives or new or increased emission. All seven pollutants should be covered and the assessment is to be based on the use of the checklists provided in LAQM TG(03), on Defra's website, (www,defra.gov.uk) and on the Local Air Quality Management web site at *www.airquality.co.uk/archive/laqm/laqm.php* , which gives support with a package of tools and Helpdesk services. These will be used to identify significant changes requiring further consideration. Where such changes are identified, screening or other tools should be applied to determine whether or not there is sufficient risk of exceedence of the objective. Finally, a conclusion should be reached as to whether a detailed assessment is required for each or any pollutant and this must be carried out by the end of April 2007. Defra has published a number of Updating and Screening Assessment checklists to be used in the compilation of this report. The checklists help to ensure that all sources of pollution are identified and that new sources that were not applicable in the first round of review and assessment are now considered for evaluation at this stage. A copy of the checklist is available in Appendix 8 at the back of this report.

The guidance also sets out a timetable for future reviews and assessments up to 2010 (LAQM TG(03)).

1.03 The UK Air Quality Strategy

The Air Quality Strategy provides a co-ordinated and proactive approach to the regulation of ambient air quality by setting standards and objectives for pollutants of greatest concern and introducing a system of Local Air Quality Management(LAQM).These have been made statute under EPA and associated regulations.

The main aim of the Strategy is to ensure

"that ambient air quality in public places poses no significant risk to health and quality of life."

Public places are those locations in the external environment where members of the public are likely to be regularly present and exposed to a specified pollutant over the averaging period indicated for the relevant objective.

The eight pollutants identified occur widely throughout the country and are known to pose a risk to human health as well as cause damage to crops, vegetation, eco systems, buildings and materials. They arise mainly from transport and industry.

The standards set are based purely on medical evidence of the effects of a pollutant on human health on the advice of the Expert Panel on Air Quality Standards (EPAQS). They are the atmospheric concentrations which are taken to indicate a certain level of environmental quality.

The objectives are the targets to be met to achieve the standards except where the objective derives from an Air Quality Daughter Directive limit value based on World Health Organisation guidelines. For some pollutants the strategy allows for stricter national objectives.

Table 1 overleaf indicates the seven pollutants addressed by the Air Quality Strategy for LAQM.

The eighth pollutant, Ozone, will not be the subject of LAQM. Ozone is transboundary in nature in that ozone precursors emitted in one area lead to ozone formation in another. Reduction in levels can only be effectively addressed by international action.

1.04 Local Air Quality Management (LAQM)

LAQM places a responsibility for air pollution control at local authority level. Local authorities are required to carry out a review and assessment of ambient air quality throughout their area in relation to each of the specified pollutants. They must consider present and likely future pollutant levels and assess whether the relevant objective can be achieved by the designated deadline. Where the review and assessment indicates that objectives are not likely to be met in any location the local authority must designate the area as an Air Quality Management Area (AQMA).

Table 1

Pollutants identified in the Air Quality Strategy for Local Air Quality Management

Pollutant		**Objective**	
	Concentration	**Measured as**	**To be achieved by**
Benzene	16.25ug/m^3 (5 ppb)	running annual mean	31.12.2003
1,3 Butadiene	2.25 ug/m^3 (1 ppb)	running annual mean	31.12.2003
Carbon monoxide	11.6 mg/m^3 (10 ppm)	running 8-hour mean	31.12.2003
Lead	0.5 ug/m^3 0.25 ug/m^3	annual mean annual mean	31.12.2004 31.12.2008
Nitrogen dioxide	200 ug/m^3 (105 ppb) not to be exceeded more than 18 times a year	1 hour mean	31.12.2005
	40 ug/m^3 (21 ppb)	annual mean	31.12.2005
Particles (PM_{10})	50 ug/m^3 (gravimetric) not to be exceeded more than 35 times a year	24 hour mean	31.12.2004
	40 ug/m^3 (gravimetric)	annual mean	31.12.2004
Sulphur dioxide	350 ug/m^3 (132 ppb) not to be exceeded more than 24 times a year	1 hour mean	31.12.2004
	125 ug/m^3 (47 ppb) not to be exceeded more than 3 times a year	24 hour mean	31.12.2004
	266 ug/m^3 (100 ppb) not to be exceeded more than 35 times a year	15 minute mean	31.12.2005

1.05 Review and Assessment of Air Quality

Review and assessment of air quality is a 3 stage process.

Stage 1 - is an initial screening of all pollution sources within the local authority area and a collection of all relevant existing data.

Stage 2 - involves a further screening of locations identified by the first stage as potential areas of concern. These are likely to be areas where the highest concentrations of pollutants are likely to occur.

Stage 3 - requires a detailed and accurate assessment of a pollutant (by estimation or monitoring) where previous stages have revealed a significant risk of an air quality objective not being met.

An AQMA will only be declared where a third stage review and assessment has indicated that air quality objectives are unlikely to be met by the relevant deadline. Having designated an AQMA the local authority must draw up an action plan to address areas where an air pollution problem has been identified.

As well as enabling local authorities to fulfil statutory obligations under EPA the review and assessment provides a benchmark against which to measure future improvements in local ambient air quality. It creates public awareness of air quality issues and is one of the performance indicators in relation to Best Value.

All local authorities are encouraged by Government to prepare a local air quality strategy irrespective of the necessity for an action plan in relation to AQMAs. They should aim for an integrated approach to local air quality management taking into account domestic, commercial and industrial requirements as well as local environmental needs. The active support of public, private and voluntary sectors should be encouraged in the pursuit of better air quality.

Armagh City and District Council has recently launched its Local Air Quality Management Strategy 2006 – 2010. (see Appendix 9)

1.06 The Northern Ireland Perspective

NI maintains its own legislative framework separate from that of the remainder of the UK. The approach to air quality control has historically been reactive and fragmented with legislation designed to deal mainly with pollution incidents and complaints. The burning of solid fuel has traditionally been the main source of air pollution. In view of this, regulation and monitoring has been limited to sulphur dioxide and smoke in the few larger urban areas. The current trend is that improvements resulting from the creation of Smoke Control Areas under the Clean Air Order are now being offset by an increasing contribution to air pollution from road traffic and industrial emissions. Many urban areas experience

occasional periods of high pollution levels mainly from sulphur dioxide, particulates and nitrogen dioxide. Belfast has had the highest recorded levels of sulphur dioxide and particulates in the UK and NAQS objectives for nitrogen dioxide have been exceeded in a number of towns. In recognition of this, monitoring of ambient air quality has expanded with many District councils voluntarily contributing to work carried out by the DOE (NI).

1.07 Armagh City and District

Armagh District covers approximately 671 square kilometres in the north west of County Armagh and has a population of around 54,876 (2004). It is a predominantly rural area with a largely agricultural economic base. The main centres of population are Armagh City, the focus of administration and commercial activity in the District, and the smaller settlements of Keady, Tandragee, Markethill and Richill.

The District is dissected by two major traffic routes. The A3 from Belfast to Monaghan (Rep of Ireland) and the A28 runs from Newry to Augher through a traditionally rural route..The A29 from Coleraine terminates in Armagh and feeds daily traffic into Armagh via Armagh and Moy. All of these roads feed directly into Armagh City and have increased the level of traffic congestion in the city in recent years. Its is envisaged that a by-pass road will be required in the near future to help divert traffic away from the city centre

Domestic fuel usage throughout the District has historically been based on solid fuel but, as with the province generally, the use of coal is declining.

1.08 Consultation.

The first stage review and assessment has been carried out in consultation with neighbouring authorities, the Environment and Heritage service, the Roads Service and the Northern Ireland Housing Executive. The council will continue to consult at all stages of the review and assessment procedure. At the last stage a full consultation will be carried out with all relevant agencies, businesses and the local community.

2.0 SOURCES OF POLLUTION IN ARMAGH.

2.01 Transport Sources.

The only transport related source of pollution in Armagh District is road traffic. Road traffic emissions are a major contributor of most of the specified pollutants, particularly NO_2 and PM_{10}. The main problems occur in busy urban areas. The significant traffic routes in Armagh are the A3 Belfast to Monaghan single carriageway and the A29 single carriageway from Coleraine to Armagh. These roads are prone to congestion during the morning and evening rush hour as they dissect through the centre of the city. A recent study completed by the Council has indicated a trend for traffic congestion to be associated with the school and work runs. The Councils newly launched 'Local Air Quality Management Strategy 2006 – 2010' aims to tackle the air quality problems associated with the over use of automobiles on the school and work run.

Table 2 below shows current and predicted traffic flows for these traffic routes.

Statistics are from automatic monitoring carried out by the Roads Service, an agency of the D.O.E. (N.I.).

Table 2

Location	2004	2006*
A3 Portadown - Armagh at Stonebridge	13,140	13,402[a]
A3 Armagh – Middleton (at Milford)	6,480	6,610[a]
A27 Tandragee – Portadown (south of B78)	8,340	8,507[a]
A29 Armagh – Keady	5,660	5,745[b]
A28 Armagh – Newry (at Markethill).	8,970	9,105[b]

Annual average Daily Traffic flows – average vehicle counts per day.

[a] Predicted traffic flows based on 2% annual increase for A-roads.

[b] Predicted traffic flows based on 1.5% annual increase for other A-roads

2.02 Industrial Sources

In Armagh District there are currently no Part A and 36 Part B/C processes/activities under Industrial Pollution Control/Pollution Prevention & Control Legislation. Details of those subject to control since the Round 1 Stage 1 Review & Assessment are listed in Appendix 3.

2.03 Sources Outside the District

Armagh has 4 neighbouring local authority areas (Appendix 1). All have been consulted and information has been provided on prescribed processes in each area. Consideration has been given to any such process falling within 15 km of Armagh District in relation to their potential to affect pollutant objectives being achieved in this area.

2.04 Other Sources

Some sources may be insignificant when viewed separately but may be sufficiently numerous that the combined effect of emissions make a significant contribution to air pollution. These are regarded collectively as an 'area source'. In Armagh District, domestic emissions will be considered as a potential area source.

2.05 Proposed Development

Armagh City and District Council are not aware of any proposed developments which may have a significant impact on air quality within the Borough.

3.0 REVIEW AND ASSESSMENT OF BENZENE

3.1 Introduction

The Government and the Devolved Administrations have adopted a running annual mean of 3.25 µg/m3 has been adopted as an additional objective, to be achieved by the end of 2010.

Box 3.1: Checklist for benzene		
Reference no	**. Source, location or data that need to be assessed**	
A	Monitoring data	3.03
B	Very busy roads or junctions in built-up areas	3.04
C	Industrial sources	3.05
D	Petrol stations	3.06
E	Major fuel storage depots (petroleum only)	3.07

3.2 Result of first round of review and assessment of air quality

The first round of review and assessment of air quality for Armagh City and District Council was taken only as far as stage one for benzene. At this time the government stated that existing national policies, particularly with regard to improvements in vehicle technology such as greater use of catalytic converters, were expected to deliver the national air quality objective by the end of 2005. The stage one report stated that there were no sources of benzene emissions or any major roads likely to lead to an exceedence of the air quality standards in Armagh City and District.

3.3 Monitoring data

Armagh City and District Council has carried out no monitoring of benzene.

3.4 Very busy roads or junctions in built-up areas

The guidance LAQM TG(03) states that EU legislation and national policy measures have led to a reduction in the benzene content of petrol from 5% to 1%. Benzene has the same criteria for busy roads as carbon monoxide. Again there are no heavily trafficked roads across the District which are likely to lead to an exceedence of the air quality objective for benzene.

3.5 Industrial sources

There are no industrial sources of benzene emissions in Armagh City and District, or in adjacent local authorities, which are likely to lead to an exceedence of the air quality objective.

3.6 Petrol stations

The main sources of benzene emissions in the UK are from petrol-engined vehicles, petrol refining and refuelling of vehicles at petrol stations forecourts. LAQM TG(03) states that petrol stations with a throughput of less than 2000m^3 are unlikely to have a significant effect on benzene emissions. The majority of petrol stations in the Armagh City and District Council area have a throughput of more than 2000m^3 per year. LAQM TG(03) states that only petrol stations with a throughput of petrol of more than 2000m^3 per year which are close to a busy road with daily flows of more than 30,000 vehicles and with relevant receptors within 10m of the pumps should be considered. Armagh City and District has no petrol stations that meet all of these criteria.

3.7 Major fuel storage depots (petroleum only)

There are no petroleum storage depots in the Armagh City and District Council area or in adjacent local authorities.

3.8 Conclusion for benzene

On the basis of the above information Armagh City and District Council is confident that the risk of the 2010 objective for benzene being exceeded in the District is negligible. It will therefore not be necessary to proceed to a Stage 2 review and assessment for benzene.

4.0: REVIEW AND ASSESSMENT OF 1,3-BUTADIENE

4.1 Introduction

The Government and the Devolved Administrations have adopted a maximum running annual mean concentration of 2.25 µg/m3 as an air quality standard for 1,3-butadiene. The objective is for the standard to be achieved by the end of 2003.

1,3 – butadiene is a hydrocarbon compound. It is, like benzene, a human carcinogen for which there is no absolutely safe level of exposure. It has been linked to increased risk of cancers of the lymphoid system and blood forming tissues, lymphomas and leukaemia.

The main source of 1,3 – butadiene is the combustion of petrol and diesel fuels. It is also an important industrial chemical used mainly in the production of synthetic rubber for tyres. Motor vehicle exhaust emissions are, however, the single dominant atmospheric source. The use of catalytic converters on vehicles reduces emissions but their effectiveness is diminished by poor vehicle maintenance.

Box 4.1: Checklist for 1,3-butadiene		
Reference no	**Source, location or data that need to be assessed**	
A	Monitoring data	4.03
B	New industrial sources	4.04
C	Existing industrial sources with significantly increased emissions	4.05

4.2 Result of first round of review and assessment of air quality for 1,3-butadiene

The first round of review and assessment of air quality was taken only as far as stage one for benzene in Armagh City and District. At this time the government stated that existing national policies were expected to deliver the national air quality objective by the end of 2005. The stage one report concluded that there were no industrial sources of benzene emissions or any major roads likely to lead to an exceedence of the air quality standard for 1,3-butadiene in Armagh City and District, and concluded that it was likely that the air quality objective for 1,3-butadiene would be met.

4.3 Monitoring data

Armagh City and District Council has carried out no monitoring of 1,3-butadiene as it was thought unlikely that concentrations would exceed those found at the first stage.

4.4 New industrial sources

There have been no new industrial sources of 1,3-butadiene in Armagh City and District, or in adjacent local authorities, since the first review and assessment.

4.5 Existing industrial sources with significantly increased emissions

There are no existing industrial sources of 1,3-butadiene in Armagh City and District, or in adjacent local authorities.

4.6 Conclusion for 1,3,butadiene

Armagh City and District Council has considered all relevant background and industrial criteria and found that there is very little likelihood of exceedence of the air quality objective for 1,3-butadiene in 2006

5.0 REVIEW AND ASSESSMENT OF CARBON MONOXIDE

5.1 Introduction

The Government and the Devolved Administrations have adopted an 8-hour running mean concentration level of 10mg/m3 as a maximum daily running 8-hour mean concentration, to be achieved by the end of 2003, bringing it into line with the second Air Quality Daughter Directive limit value.

Box 2.1: Checklist for carbon monoxide		
Reference no	**Source, location or data to be assessed**	
A	Monitoring data	2.03
B	Very busy roads	2.04

5.2 Result of first round of review and assessment of air quality

Armagh City and District Council's first round of review and assessment of air quality concluded that there were no sites at risk of failing the CO objective at stage 1. The guidance indicated that existing national policies were expected to deliver the national air quality objective by the end of the year 2003 with the possible exception of the near vicinity of heavily trafficked roads or in the vicinity of certain stationary sources. All industrial sources thought to have the potential to lead to an exceedence of the air quality standard were considered and the conclusion was that the risk of the CO air quality objective being exceeded by the end of 2003 in localities was negligible. Therefore, Armagh City and District Council was not required to proceed any further and undertake a second stage review and assessment of CO.

5.3 Monitoring Data

Armagh City and District Council has not carried out any monitoring for CO.

5.4 Very busy roads

Technical Guidance LAQM TG(03) states that for the assessment of CO, "*very busy roads and junctions in areas where the 2003 background is expected to be above 1 mg/m3*" should be identified. The criteria for very busy roads are given as single carriageway roads where the daily average flows exceed 80,000 vehicles per day or dual carriageway roads where the daily average flows exceed 120,000 vehicles per day. Armagh City and District Council has no areas where the 2003 background is expected to be above 1 mg/m3 or any roads that meet the daily vehicle flows as shown below.

- **Single carriageway roads AADT greater than 80,000- nil.**
- **Dual carriageway roads AADT greater than 120,000- nil**
- **Motorways- nil**
- **Junctions where combined flow is equal to a) or b) above- nil**

5.5 Conclusion for carbon monoxide

Armagh City and District Council has considered all relevant background, industrial and traffic criteria and found that there is very little likelihood of exceedence of the air quality standard for carbon monoxide in 2006

6.0 REVIEW AND ASSESSMENT FOR LEAD

6.1 Introduction

The Government and the Devolved Administrations have adopted an annual mean concentration of 0.5 µg/m3 as the air quality standard for lead, with an objective for the standard to be achieved by the end of 2004. In addition, a lower air quality objective of 0.25 µg/m3 to be achieved by the end of 2008 has also been set.

Box 5.1: Checklist for lead		
Reference no	**Source, location or data that needs to be assessed**	
A	Monitoring data outside an AQMA	6.3
B	New industrial sources	6.4
C	Industrial sources with substantially increased emissions	6.5

6.2 Result of first round of review and assessment of air quality for lead

The first round of review and assessment of air quality was taken only as far as stage one for lead. The report concluded that there were no significant industrial sources. It was not proposed therefore to carry out a second stage review for lead.

6.3 Monitoring data outside an AQMA

No monitoring for lead has been carried out and there are no AQMAs in, or adjacent to, Armagh City and District Council's area.

6.4 New industrial sources

There are no new industrial sources of lead in Armagh City and District, or in adjacent local authorities, since the last review and assessment.

6.5 Industrial sources with substantially increased emissions

There are no existing industrial sources of lead in Armagh City and District, or in adjacent local authorities.

6.6 Conclusion for lead

Armagh City and District Council has considered all relevant background and industrial criteria and found that there is very little likelihood of exceedence of either of the air quality objectives for lead in 2006 or 2008

7.0 REVIEW AND ASSESSMENT FOR NITROGEN DIOXIDE

7.1 Introduction

The Government and the Devolved Administrations have adopted two Air Quality Objectives for nitrogen dioxide, as an annual mean concentration of 40 µg/m3 and a1-hour mean concentration of 200 µg/m3 not to be exceeded more than 18 times per year. The objectives are to be achieved by the end of 2005. The first Air Quality Daughter Directive also sets limit values for nitrogen dioxide to be achieved by 2010, of 200 µg/m3 as a 1-hour limit not to be exceeded more than 18 times per year and an annual mean limit value of 40 µg/m3.

Box 6.1: Checklist for nitrogen dioxide		
Reference no	**Source, location or data that need to be assessed**	
A	Monitoring data outside an AQMA	7.3
B	Monitoring data within an AQMA	7.4
C	Narrow congested streets with residential properties close to the kerb	7.5
D	Junctions	7.6
E	Busy streets where people may spend 1-hour or more close to traffic	7.7
F	Roads with high flow of buses and/or HGVs	7.8
G	New roads constructed or proposed since first round of review and assessment	7.9
H	Roads close to the objective during the first round of review and assessment	7.10
I	Roads with significantly changed traffic flows	7.11
J	Bus stations	7.12
K	New industrial sources	7.13
L	Industrial sources with substantially increased emissions	7.14
M	Aircraft	7.15

7.2 Result of first round of review and assessment of air quality for Nitrogen Dioxide.

In Armagh City District Council's area, the stage 2/3 review and assessment concluded that there was no likelihood of exceedence of the annual Nitrogen Dioxide objective. However, Armagh City and District Council continues to monitor nitrogen dioxide levels within the City of Armagh using diffusion tubes and a real-time air quality monitoring station.

7.3 Monitoring data outside an AQMA

Armagh City and District Council has not been required to declare any AQMA's at this time.

7.4 Monitoring data within an AQMA

Armagh City and District Council has not been required to declare any AQMA's at this time.

7.5 Narrow congested streets with residential properties close to the kerb

There are no locations within Armagh City and District which come into this category.

7.6 Junctions

No Junctions within the Armagh District Council area have been identified that have a significant impact on air quality at any sensitive receptor locations.

7.7 Busy streets where people may spend 1- hour or more close to traffic

There are no locations within Armagh City and District which come into this category.

7.8 Roads with high flow of buses and/or HDVs

LAQM TG(03) states that an unusually high proportion of HGVs can be taken to be greater than 25%. There are no such roads within the Armagh City and District Council area. This conclusion is supported by the most recent traffic census completed by DRD Roads Service ; *Traffic and Travel Information 2004.*

7.9 New roads constructed or proposed since first round of review and assessment

Since the first round of review and assessment, no new roads have been constructed which might impact on air quality.

7.10 Roads close to the objective during the first round of review and assessment

Armagh City and District Council took a very conservative approach towards the examination of roads close to the objective during the first round of review and assessment. The stage 2/3 report concluded that one road was identified as close to the objective limit which was Lonsdale Road. No other roads were seen as close to the objective.

7.11 Roads with significantly changed traffic flows

LAQM TG(03) defines "significantly changed" traffic flows as increasing by 25% since the first round of reviews and assessments. There are no roads that meet this criterion in the Armagh City and District.

7.12 Bus stations

LAQM TG(03) states that only bus stations with more than 1000 movements per day should be considered. There are no such bus stations in the Armagh City and District.

7.13 New industrial sources

There have been no significant new industrial sources since round one of review and assessment, either within Armagh City and District Council's area or within neighbouring authorities with the capacity to influence air quality in the District.

7.14 Industrial sources with substantially increased emissions

There have been no substantially increased industrial sources of NO_2 in Armagh City and District Councils area or any adjacent local authority areas, with the potential to influence the Districts air quality, since the first round of reviews and assessments.

7.15 Aircraft

There are no airports in the Armagh & South Tyrone District Council area meeting the criteria.

7.16 Conclusion for nitrogen dioxide

On the basis of the above information Armagh City and District Council is confident that the risk of the 2005 objectives for nitrogen dioxide being exceeded in the District is negligible for all sources except road traffic. A 2nd stage review and assessment will be required in relation to the A1 dual carriageway.

8.0 REVIEW AND ASSESSMENT FOR PM_{10}

8.1 Information

The Government and the Devolved Administrations have adopted two Air Quality Objectives for fine particles (PM10), which are equivalent to the EU Stage 1 limit values in the first Air Quality Daughter Directive. The objectives are 40 µg/m^3 as the annual mean, and 50 µg/m^3 as the fixed 24-hour mean to be exceeded on no more than 18 days per year, to be achieved by the end of 2005. The objectives are based upon measurements carried out using the European gravimetric transfer reference sampler or equivalent.

Box 8.1: Checklist for PM10		
Reference no	**Source, location or data that need to be assessed**	
A	Monitoring data outside an AQMA	8.3
B	Monitoring data within an AQMA	8.4
C	Busy roads and junctions in Scotland	8.5
D	Junctions	8.6
E	Roads with high flow of buses and/or HGVs	8.7
F	New roads constructed or proposed since first round of review and assessment	8.8
G	Roads close to the objective during the first round of review and assessment	8.9
H	Roads with significantly changed traffic flow	8.10
I	New industrial sources	8.11
J	Industrial sources with substantially increased emissions	8.12
K	Areas with domestic solid fuel burning	8.13
L	Quarries, landfill sites, opencast coal, handling of dusty cargoes at ports etc	8.14
M	Aircraft	8.15

8.2 Result of first round of review and assessment of air quality for PM10

PM_{10} was one of the three pollutants taken forward in the Armagh City and District Council area to a second stage review and assessment. However, the second stage review and assessment of the Council's area indicated that the risk of the PM_{10} air quality objective being exceeded by the end of 2004 was negligible.

8.3 Monitoring data outside an AQMA

Armagh City and District has no AQMA's declared for $PM_{10.}$

8.4 Monitoring data within an AQMA

Armagh City and District has no AQMAs declared for PM_{10}.

8.5 Busy roads and junctions in Scotland

At the time of writing, no part of the Armagh City and District lies within Scotland.

8.6 Junctions

No Junctions within the Armagh Council area have been identified that have a significant impact on air quality at any sensitive receptor locations.

8.7 Roads with high flow of buses and/or HGVs

LAQM TG(03) states that an unusually high proportion of HGVs can be taken to be greater than 25%. There are no such roads in Armagh City and District Council with particularly high flows of buses or HGVs.

8.8 New roads constructed or proposed since first round of review and assessment

Since the first round of review and assessment, no new roads have been constructed which might impact on air quality.

8.9 Roads close to the objective during the first round of review and assessment

Since the first round of review and assessment, no new roads have been constructed which might impact on air quality.

8.10 Roads with significantly changed traffic flow

LAQM TG(03) defines "significantly changed" traffic flows as increasing by 25% since the first round of reviews and assessments. There are no roads that meet this criterion in the Armagh City and District.

8.11 New industrial sources

There have been no significant new industrial sources of PM_{10} in Armagh City and District Council's area or any adjacent local authority areas since the first round of reviews and assessments.

8.12 Industrial sources with substantially increased emissions

There have been no substantially increased industrial sources of PM_{10} in Armagh City and District Council's district or any adjacent local authority areas since the first round of reviews and assessments.

8.13 Areas with domestic solid fuel burning

Domestic coal burning was not considered likely to lead to an exceedence of the air quality objective for PM_{10} in the first round of reviews and assessments.

Levels of coal burning have not increased since Round 1 of the review and assessment.

8.14 Quarries, landfill sites, opencast coal, handling of dusty cargoes at ports etc

There are a number of quarries and landfill sites in the Armagh City and District area. None of these have been the subject of dust complaints in recent years and are not thought to be significant sources of PM_{10} at relevant receptors.

8.15 Aircraft

There are no airfields in the Armagh City and District area meeting the criteria.

8.16 Conclusion for PM_{10}

Armagh City and District Council has considered all relevant background, industrial and traffic criteria and found that there is little likelihood of exceedence of either of the air quality objectives for PM10 in 2006

9.0 REVIEW AND ASSESSMENT FOR SULPHUR DIOXIDE

9.1 Introduction

The Government and the Devolved Administrations have adopted a 15-minute mean of 266 µg/m3 as an air quality standard for sulphur dioxide, with an objective for the standard not to be exceeded more than 35 times in a year by the end of 2005. Additional objectives have also been set which are equivalent to the EU limit values specified in the First Air Quality Daughter Directive. These are for a 1-hour mean objective of 350 µg/m3, to be exceeded no more than 24 times per year, and a 24-hour objective of 125 µg/m3, to be exceeded no more than 3 times per year, to be achieved by the end of 2004.

Box 9.1: Checklist for sulphur dioxide		
Reference no	**Source, location or data that need to be assessed**	
A	Monitoring data outside an AQMA	7.03
B	Monitoring data within an AQMA	7.04
C	New industrial sources	7.05
D	Industrial sources with substantially increased emissions	7.06
E	Areas of domestic coal burning	7.07
F	Small boilers (5MW(thermal) burning coal or oil	7.08
G	Shipping	7.09
H	Railway Locomotives	7.10

9.2 Result of first round of review and assessment of air quality for sulphur dioxide

The first stage review and assessment for SO_2 indicated that the risk of the air quality objective being exceeded by the end of 2005 was negligible. Details of large industrial processes were collated for the first stage review and assessment of SO_2.

9.3 Monitoring data outside an AQMA

Armagh City and District Council has no AQMA's declared at this time.

9.4 Monitoring data within an AQMA

Armagh City and District Council has no AQMA's declared at this time.

9.5 New industrial sources

There are no significant new industrial sources within Armagh City and District, or in neighbouring authorities with the potential to influence the District's air quality.

9.6 Industrial sources with substantially increased emissions

There are no significantly altered industrial sources within Armagh City and District, or in neighbouring authorities with the potential to influence the District's air quality.

9.7 Areas of domestic coal burning

Domestic coal burning was not considered likely to lead to an exceedence of the air quality objective for SO_2 in the first round of reviews and assessments. Levels of coal burning in the Armagh have not increased, also there are no areas where coal smoke is particularly noticeable. It is not likely that such activity would lead to an exceedence of any of the 2004 and 2005 air quality objectives for SO_2.

9.8 Small boilers (5MW(thermal) burning coal or oil)

There have been no changes to the existing coal and oil burning appliances in the Armagh City and District since the first round of reviews and assessments and thus the air quality standard for SO_2 is unlikely to be exceeded.

9.9 Shipping

There is no shipping in the Armagh City and District.

9.10 Railway Locomotives

There are no significant rail networks operating through the entire Armagh City and District .

9.11 Conclusion for sulphur dioxide

Armagh City District Council considers that there is unlikely to be an exceedence of the 15 minute objective in 2005, or 1 hour or 24 hour objective for sulphur dioxide in 2006.

SUMMARY

This review and assessment was carried out in accordance with technical guidance on Local Air Quality Management issued by the Department of Environment, Transport and Regions using information available from Local Government and other bodies. On the basis of this information it is the opinion of Armagh City and District Council that a 2nd stage and review and assessment is not required for any of the seven pollutants specified in the National Air Quality Strategy. Therefore it is not deemed necessary for Armagh City and District Council to proceed to further stage of assessment for any of the pollutants at this time.

REFERENCES

1 The Air Quality Strategy for England, Scotland, Wales and Northern Ireland DETR 2000

2 Review and Assessment: Pollutant Specific Guidance LAQM.TG (03) DETR 2000

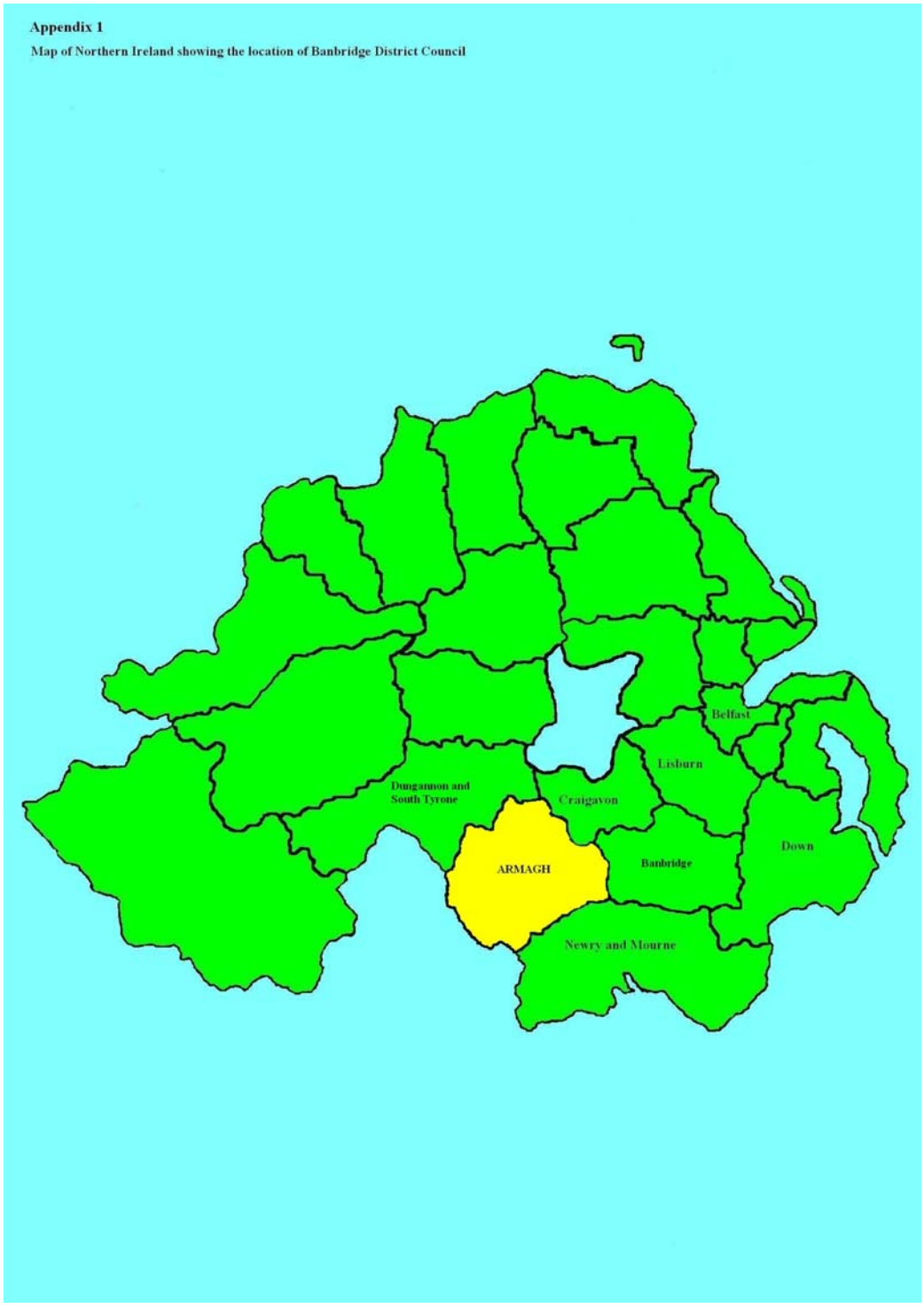
3 Air Quality in Northern Ireland by Pollution Control Group on behalf of the Chief Environmental Health Officers Group for Northern Ireland

4 National Air Quality Information Archive (http://www.airquality.co.uk/archive/laqm/laqm)

5 Expert Panel on Air Quality Standards. DETR & DOE(NI)

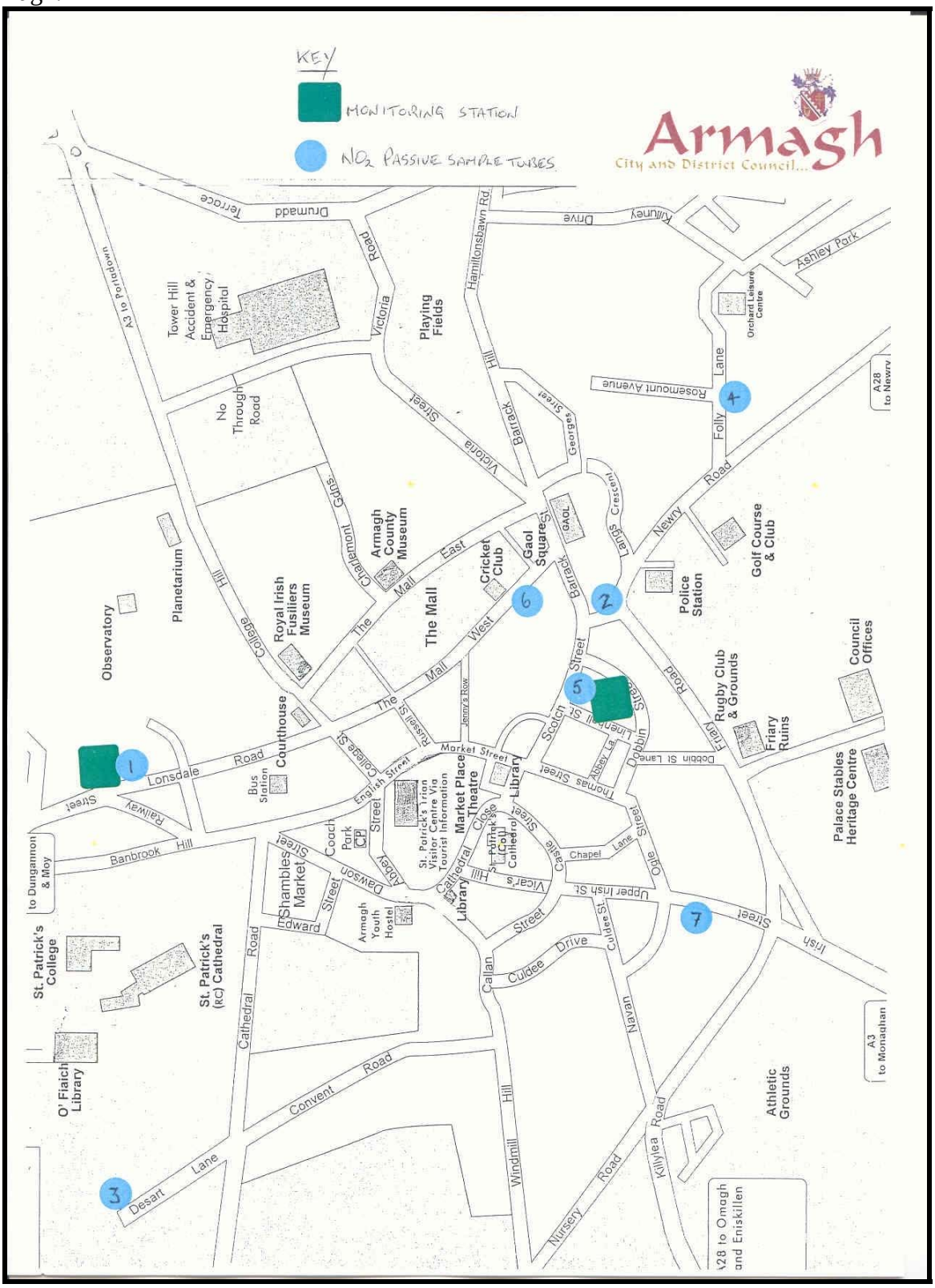
APPENDIX 1

Map of NI showing location of Armagh District



APPENDIX 2

Map showing main traffic routes and NOx Diffusion Tube Monitoring Locations in Armagh.



APPENDIX 3

Part B/C Processes in Craigavon Borough Prescribed for Authorisation since the First Round of Review and Assessment

Name	Address	Authorisation No.	Process/Activity
W J Crozier Outlack Quarry	19 Outlack Rd Armagh	0007/98A	Quarry
Loughran Rock Industries	55 Friary Rd Cladybeg Mowhan	0116/00B	Quarry
Francis McCone and Sons Ltd	Cashel Quarry, Cashel, Tassagh	018/00B	Quarry
Leer Quarries Ltd	34 Lagan Rd Keady BT60 3ES	0122/00B	Quarry
Collen Bros – Glebe Quarry	Glebe Hill Rd Tandragee	0123/00B	Quarry & Bulk Cement
Armagh Asphalt Ltd	55 Friary Rd Cladybeg	0124/00B	Coating Plant
DJ McGee	20 Clontycarty Lane Armagh	0130/00B	Coating
Clady Quarry s	59 Clady Rd Armagh BT60 2HA	0177/02B	Mobile Crusher
Douglas Acheson Ltd	Navan Quarry	0064/99B	Quarry
Norman Emerson & Sons	Lisbane	0014/99B	Quarry & Bulk Cement
Grange Limestone Mills	88 Saltersgrange Rd Armagh BT61 8EU	0018/99B	Quarry
Cootes Concrete Products Ltd	56 Redrock Rd Collone Armagh	0026/99B	Quarry& Bulk Cement
Tynan Quarry	Killylea Rd Armagh	0065/99B	Quarry
Armagh City Quarry	Annacramp Loughgall Rd Armagh	0066/99B	Quarry
John Finaly (Concrete) Pipes - Armagh Concrete	Outlack Road Lisnadil Armagh	069/99B	Bulk Cement
Clady Quarry s	59 Clady Rd Armagh BT60 2HA	0071/99BB	Quarry
Ballindarragh Poultry Farm	15 Ballindarragh Rd Markethill	P0008/03A	Poultry Farm
Brendan Daly	Battleford Rd Armagh	P0017/03A	Poultry Farm
Mark & Lynn Lewis	204 Markethill Rd Ahorey Portadown BT62 3SN	P0033/03A	Poultry Farm

JMW Farms	35 Tonnagh Hill Rd Killylea Armagh BT60 4PZ	P0106/05A	Piggery
King Bros	87 KillycoppleRd Collone BT60 2AL	0219/06B	Quarry
K Hughes	Drumrusk 130 Carrickaness Rd Benburb	ARM/MS/01/99/A	Mushroom Substrate
Reen Compost Ltd	19 Mullanary Rd, Middletown	ARM/MS/02/99	Mushroom Substrate
Tandragee Compost	25 Cabragh Rd Tandragee	ARM/MS/04/99	Mushroom Substrate
Mackle Petfoods	40 Corrigan Hill Rd Moy	ARM/PF/01/1999	Pet Food Manufacturer
North Armagh Feeds	8 Sturgeons Hill Portadown	ARM/AF/01/99	Animal Feed
Masons Animal Feeds	122 Marlacoo Rd Portadown BT62 3TB	ARM/AF/03/1999	Animal Feed
Robert Clarke (Keady) Ltd	Darkley Mills 105 Darkley BT60 3AY	ARM/AF/04/1999	Animal Feed
Landvale Development Ltd T/A David Cherry & Co	12 Derryhirk Rd Tullyroan Dungannon	ARM/CP/01	Bulk Cement
R E Woolsey	72 Ahorey Rd Portadown BT62 3ST	ARM/CP/02	Bulk Cement
Hughes Precast Products Ltd	338 Monaghan Rd Middletown BT60 4JO	ARM/CP/00/03	Bulk Cement
Wm Smith	62 Annaghreagh Rd Richill Armagh BT61 9JT	ARM/CP/01/2002	Respraying Road Vehicles
Gribbem Motors	159 Keady Rs Armagh BT60 3AE	ARM/CP/02/2003	Respraying Road Vehicles
NC Engineering	Killyrudden Td Hamiltonsbawn BT61 9SF	ARM/CP/03/2004	Coating of Metals
Redrock Engineering	Redrock Collone Armagh	Draft authorization sent out will be issued with 1 month	Coating of Metals
G &J Derry s	Teaguy Rd Annaghmore Portadown	Authorisation in draft will prob be issued with next 3-4 months	Coating of Timber and Waste Wood Incinerator

APPENDIX 4

MONTH	CODE	NO_2 DIFFUSION TUBE RESULTS 2005 ug/m^3								
		SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8	BIAS*
JANUARY	AMAG/04A/NA8	36.2	24.3	14.1	19.4	18.1	54.9	32.5	36.7	0.74
FEBRUARY	AMAG/04A/NA9	39	48.8	18.8	23.5	22.2	67.9	39.1	44.6	0.74
MARCH	AMAG/04A/NA10	33.7	40.3	14.4	21.9	21	62.8	33.6	37.2	0.73
APRIL	AMAG/04A/NA11	NR	36.9	14.8	15.6	19.4	66.6	0.5	35	0.71
MAY	AMAG/04A/NA12	26.7	40.2	11.9	15	<0.6	52.3	32.2	38	0.71
JUNE	AMAG/04A/NA13	26.4	38.5	9.8	12.7	15.3	53.6	37.4	32.3	0.7
JULY	AMAG/04A/NA14	26.5	34.9	8.7	11.8	11.7	42.8	31.7	30.9	0.71
AUGUST	AMAG/04A/NA15	33.3	.5.5	9.6	16.4	16.1	46.8	37.6	33.1	0.71
SEPTEMBER	AMAG/04A/NA16	39.3	42.6	11.4	18.7	20.1	54.4	41.1	33.6	0.72
OCTOBER	AMAG/04A/NA17									
NOVEMBER	AMAG/04A/NA18	44.5	44	13.3	24.7	23.1	69.8	39.7	35.3	0.69
DECEMBER	AMAG/04A/NA19	48.7	47	17.2	26.2	27.2	73.3	44.4	41.9	0.69
MEAN	MEAN	35.43	39.75	13.1	18.72	19.4	58.7	33.6	36.24	0.71

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MONTH	CODE	NO_2 DIFFUSION TUBE RESULTS 2004 ug/m^3								
		SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8	BIAS*
JANUARY	NO3B/AMAG/M7	44.6	34.8	16.8	24.5	24.6	67.7	39.1	20.3	0.75
FEBRUARY	NO3B/AMAG/M8	39.5	44.2	18.9	27	18.9	69.2	35.6	NR	0.75
MARCH	NO3B/AMAG/M9	36.6	41.3	14.9	31.6	21.5	67.1	35.7	31.3	0.75
APRIL	NO3B/AMAG/M10	33	42	12	17.6	19.6	56.6	30.5	NR	0.75
MAY	N03B/AMAG/M11	30	41	12.5	18.2	16.8	NR	35.6	40.1	0.75
JUNE	NO3B/AMAG/M12	20.5	28.3	8.8	10.3	8	34.3	17.5	21.3	0.73
JULY	AMAG/04A/NA2	17.5	29.2	7.4	13.5	10.9	39.9	29	26.1	0.73
AUGUST	AMAG/04A/NA3	20.8	35.2	11.3	14.5	12.7	34.4	30	24.8	0.73
SEPTEMBER	AMAG/04A/NA4	28.1	34.2	10.3	14.2	15.9	54.9	32.1	32.7	0.73
OCTOBER	AMAG/04A/NA5	37.2	44.4	17.9	23.8	1.5	55	39.5	41.8	0.75
NOVEMBER	AMAG/04A/NA6	40.3	43.4	13.6	23	22.4	55.3	41.9	46.1	0.75
DECEMBER	AMAG/04A/NA7	39.6	39.1	15.3	19.5	22.7	68.8	34.3	31	0.75
MEAN		32.3	38.1	13.3	19.8	16.3	54.8	33.4	31.6	

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MONTH	CODE	NO_2 DIFFUSION TUBE RESULTS 2003 ug/m^3								
		SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8	*BIAS
JANUARY		51	36	32	25	23	44	49	57	
FEBRUARY		35	39	30	26	23	30	30	25	
MARCH		15	23	18	10	12	21	27	28	
APRIL		9	23	NR	11	11	26	16	27	
MAY		17	39	11	15	6	33	37	32	
JUNE		32	40	13	3	17	25	26	27	
JULY	NO3B/AMAG/M1	25.4	36.9	10.3	14.1	14.7	47.4	27.4	31.5	0.75
AUGUST	NO3B/AMAG/M2	24.9	38.9	12.1	14.8	17.8	46.1	33.3	41.8	0.75
SEPTEMBER	NO3B/AMAG/M3	35.1	41.9	13.2	21.7	19.9	63	38.1	33.1	0.75
OCTOBER	NO3B/AMAG/M4	37.6	39	19.8	27.6	26.9	67.1	27.3	49.5	0.75
NOVEMBER	NO3B/AMAG/M5	36.4	45.9	19.8	21.3	23.6	72.6	30.5	30.1	0.75
DECEMBER	NO3B/AMAG/M6	53.5	53.2	27.7	34.7	37.6	77.8	49.1	40.7	0.75
MEAN		31.0	38.0	17.7	18.7	19.4	46.1	32.6	35.2	

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MONTH	NO_2 DIFFUSION TUBE RESULTS 2002 ug/m^3 (ratified*)							
	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8
JANUARY	46	41	NR	17	38	26	38	27
FEBRUARY	45	36	14	19	20	38	34	32
MARCH	35	40	15	18	22	37	34	31
APRIL	31	43	15	17	19	42	31	32
MAY	25	37	12	14	16	37	24	31
JUNE	31	39	12	15	18	40	34	33
JULY	29	21	17	27	11	19	27	27
AUGUST	17	12	15	18	14	34	28	27
SEPTEMBER	29	36	13	NR	23	8	32	38
OCTOBER	48	46	33	21	24	36	44	NR
NOVEMBER	19	44	6	13	17	23	33	11
DECEMBER	46	50	23	29	32	45	31	6
MEAN	33.42	37.1	15.9	18.91	21.17	32.1	32.5	26.82

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MONTH	NO_2 DIFFUSION TUBE RESULTS 2001 ug/m^3 (ratified*)							
	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6	SITE 7	SITE 8
JANUARY	50	50.7	27.2	30.7	32.9	37.1	42.2	35.5
FEBRUARY	51.5	43.5	20.4	25.8	31.4	43.1	38	37.1
MARCH	32.4	41.8	21	23.7	13.6	37.1	34.5	27.4
APRIL	35.7	39.8	14.8	19.2	9.1	36.7	29.9	37.7
MAY	31.8	45.5	16.8	20.3	7.8	35.2	34.2	39.7
JUNE	28.1	35	11.3	13.1	6.6	30.3	29.6	30.2
JULY	25.9	29.9	9	12	14	24	25	24.4
AUGUST	28.4	34.5	11.7	14.8	16.7	28.2	30.6	28.3
SEPTEMBER	NR	32.5	13.2	17.6	16.5	32.1	30.6	34.5
OCTOBER	45.5	36.4	14.9	16.6	19.5	35.8	29.6	26.3
NOVEMBER	42.1	46.7	16.8	22.8	27.2	42.1	36.3	37.4
DECEMBER	41.9	43.9	21.4	27.7	34.2	42.4	37.5	37
AVERAGE	37.57	40	16.54	20.36	19	34.64	33.17	32.96

***Lambeth Laboratories**