COOKSTOWN DISTRICT COUNCIL

REVIEW AND ASSESSMENT OF AIR QUALITY

PROGRESS REPORT 2007

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1 INTRODUCTION

The Local Air Quality Management (LAQM) System was introduced by The Environment (Northern Ireland) Order 2002 and subsequent Regulations. Under this legislation District Councils are required to review the present quality of air and the likely future quality of air and assess whether the nationally prescribed objectives are likely to be achieved.

This Progress Report is a requirement of Government guidance issued in 2003 (LAQM. PGNI(03)) which sets out the timescales for submission of the various reports on air quality. This report has been prepared in accordance with EHS guidance LAQM.PRGNI(04).

2 PURPOSE OF THE PROGRESS REPORT

Progress Reports have been introduced into the LAQM system following a detailed evaluation of the review and assessment process. Following consultation, the Government concluded that it was too "stop-start" and that gaps of several years might occur between air quality reviews. Updating and Screening Assessments are now required at intervals of three years whilst Progress Reports are required in years when Updating and Screening Assessments or Detailed Assessments are not being carried out. The detailed timetable is at Appendix 1.

Progress Reports are designed to ensure continuity in the LAQM process and are intended to assist district councils by –

- Helping to retain a profile for LAQM within the Council, including the retention of staff with knowledge of air quality issues.
- Providing a means for communicating air quality information for Council members and the public.
- Maximising the usefulness and interpretation of the monitoring effort being carried out by the District Council.
- Maximising the value of the investment in monitoring equipment.
- Making the next round of review and assessment that much easier, as there will be a readily available up to date source of information.
- Helping District Councils respond to requests for up-to-date information on air quality.
- Providing information to assist in other policy areas, such as transport and land use planning.
- Providing a ready source of information on air quality for developers carrying out environmental assessments for new schemes.
- Demonstrating progress with implementation of air quality Action Plans and/or air quality strategies.
- 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.

3 SUMMARY OF FINDINGS FROM PREVIOUS REVIEW AND ASSESSMENT WORK

The cornerstone of the LAQM process is the Review and Assessment of Air Quality. This is a statutorily required process whereby local air quality monitoring and modelling results are compared to the national air quality standards and objectives (see Appendix 2). Where objectives are breached or are predicted to be breached, an Air Quality Management Area (AQMA) is declared. An Action Plan must then be produced stating how the district council will drive air quality towards the objective.

The first round review and assessment of air quality was completed in 2004. It involved a 3-stage approach, the findings of which are contained in two reports:

(1) 1st Stage Review and Assessment Report – August 2001

Table 1.1

SUMMARY OF FIRST STAGE REVIEW AND ASSESSMENT IN COOKSTOWN

Pollutant	Significant Sources	Recommendations
Carbon Monoxide	No significant Sources	No further assessment
Benzene	No significant Sources	No further assessment
1 – 3 Butadiene	No significant Sources	No further assessment
Lead	No significant sources	No further assessment
Nitrogen Dioxide	• Four single carriageway road junctions exceeding average threshold • Two dual carriageway junctions exceeding 10,000 vpd and sensitive properties within 10 metres • Three dual carriageway sections exceeding 10,000 vehicles per day and sensitive properties within 10m • One Part A process in Cookstown	Proceed to 2nd stage
Sulphur Dioxide	• One Part A process • One Thermal combustion system • At least 2 1x1km grid squares with potentially more than 300 houses burning coal	Proceed to 2nd stage
PM_{10}	• At least 16 sections of single carriageway roads and 7 road junctions exceeding 5000 vpd and with sensitive properties within 2m (single carriageway) or 10m (dual carriageway) • Four dual carriageway sections exceeds 5000 vpd with sensitive properties within 10 metres • One significant Part A process	Proceed to 2nd stage

(2) $2^{nd}/3^{rd}$ Stage Review and Assessment Report – August 2004.

Conclusions and Recommendations of the $2^{nd}/3^{rd}$ Stage Report are given below.

- Air quality objectives for SO_2 and PM_{10} are likely to be met and therefore there is no need to designate an air quality management area for these pollutants.

- Existing monitoring of the SO_2 and PM_{10} will continue using real-time analysers, in order to provide data to verify the detailed dispersion modelling predictions resulting in the above conclusions.

- Air quality objectives for NO_2 are expected to be met at locations of relevant public exposure i.e. building facades of residential properties, despite exceedances of the annual mean objective at three kerbside sites. An air quality management area for NO_2 is therefore not being designated for this pollutant.

- Predicted concentrations of NO_2 at a number of building facades of residential properties are close, but not exceeding air quality objectives. Further monitoring of NO_2 will be carried out using diffusion tubes. These will be located on the facades of residential properties closest to the kerbside sites where exceedances of the NO_2 annual mean objective have been identified.

(3) Update And Screening Assessment Report – August 2006

Summary findings of the First Stage Review and Assessment are given in Table 1.3

Table 1.3

UPDATING AND SCREENING ASSESSMENT – AUGUST 2006

SUMMARY FINDINGS OF UPDATE AND SCREENING ASSESSMENT IN COOKSTOWN

Pollutant	Conclusion	Recommendation
Carbon Monoxide	The objective for CO is unlikely to be exceeded at any location in the Cookstown area.	There is no need to undertake a detailed assessment for Carbon Monoxide.
Benzene	The objective for Benzene is unlikely to be exceeded at any location in the Cookstown area.	There is no need to undertake a detailed assessment for Benezene.
1 – 3 Butadiene	The objective for 1-3 Butadiene is unlikely to be exceeded at any location in the Cookstown area.	There is no need to undertake a detailed assessment for 1-3 Butadiene.
Lead	The objective for lead is unlikely to be exceeded at any location in the Cookstown area.	There is no need to undertake a detailed assessment for Lead.
Nitrogen Dioxide	The assessment indicated that the conclusion drawn from the 1st round of review and assessment remains valid, and has indicated that the annual menu and hourly objective for Nitrogen Dioxide are unlikely to be exceeded.	There is no need to undertake a detailed assessment for Nitrogen Dioxide.
Particulate Matter PM_{10}	The assessment has indicated that both the daily and the annual mean for particulate matter are unlikely to be exceeded at any location in Cookstown area.	There is no need to undertake a detailed assessment for PM_{10}
Sulphur Dioxide SO_2	The assessment has indicated that both the annual mean and hourly objective 15 minute mean for Sulphur Dioxide are unlikely to be exceeded at any location in the Cookstown area.	There is no need to undertake a detailed assessment for Sulphur Dioxide.

4 NEW LOCAL MONITORING RESULTS

4.0 Based on the conclusions and recommendations of previous reports, Cookstown has routinely monitored levels of three pollutants which were identified, as being most likely to exceed air quality objectives. Monitoring has shown that it is unlikely that Cookstown will exceed any of these objectives, but it is anticipated that monitoring of these pollutants will continue in order to analyse any upwards or downwards trends in the levels of these pollutants. These pollutants are Nitrogen Dioxide, Sulphur Dioxide and $PM_{10.}$

4.1 Nitrogen Dioxide

Background Information

Nitric Oxide (NO) is mainly derived from road transport emissions, and other combustion processes such as the electricity supply industry. NO is not considered to be harmful to health. However, once released to the atmosphere, NO is usually very rapidly oxidised to Nitrogen Dioxide (NO_2), which is harmful to health. NO_2 and NO are both oxides of nitrogen and together are referred to as nitrogen oxides (no_x).

Nitrogen dioxide can irritate the lungs, and lower resistance to respiratory infections such as influenza. Continued or frequent exposure to concentrations that are typically much higher than those found in ambient air may cause increased incidence of acute respiratory illness in children.

Primary emissions of nitrogen oxides area major contributor to the formation of acid rain; this can be transported over long distances, with important consequences for terrestrial and aquatic ecosystems, as well as the man made built environment.

In addition, NO_x emissions together with reactive Volatile Organic Compounds (VOC's), area the major precursors to the photochemical production of Ozone (O_3), and other oxidants in the atmosphere.

Air Quality Objectives

The Government and the Devolved Administrations have adopted two Air Quality Objectives for nitrogen dioxide, as an annual mean concentration of 40 $\mu g/m^3$, and a 1-hour mean concentration of 200 $\mu g/m^3$ 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, which have been transported into UK legislation. The Directive includes a 1-hour limit value of 200 $\mu g/m^3$, not to be exceeded more than 18 times per year, and an annual mean limit value to 40 $\mu g/m^3$ both to be achieved by 1 January 2010.

Monitoring for Nitrogen Dioxide in Cookstown

Nitrogen dioxide (NO_2) and nitric oxide (NO) are both oxides of nitrogen, and are collectively referred to as nitrogen oxides (NOx). All combustion processes produce NOx emissions, largely in the form of NO, which is then converted to NO_2 mainly as a result of reactions with ozone in the atmosphere. Exposure to high concentrations of nitrogen dioxide is reported to sensitise asthmatics to allergens such as irritant chemicals, house dust mites and pollen.

The principal source of NOx emissions is road transport, which is accounted for 49% of total UK emissions in 2000. The contribution of road transport to NOx emissions has declined significantly in recent years as a result of various national policy measures, and further reductions are expected up until 2010 and beyond.

The Council is currently monitoring nitrogen dioxide at 5 sites around the district using passive diffusion tubes.

Diffusion tubes represent a simple and cost-effective method of monitoring air quality in an area, to give a good general indication of average pollution concentrations. They are particularly useful for assessment against annual mean objectives.

Monitoring sites are chosen to provide data on locations that appear to be representative of likely residential exposure and, where possible, are close to the nearest receptor to the busy road or road junction of interest. The sites are subject to periodic review and where sufficient data has been gathered, some of the diffusion tubes are relocated to new locations.

The diffusion tube analysis for the Council is carried out by Lambeth Scientific Services and their method of preparation is 50% TEA in acetone. The tubes are exposed for a month at a time before being sent for laboratory analysis. Results obtained from diffusion tubes need to be corrected for possible over or under reading. A number of studies are carried out each year on NO_2 tubes prepared and analysed by Lambeth Scientific Services to determine bias adjustment. The most studies (nine) were carried out in 2005 giving a bias of 1.217 compared to concentrations obtained from co-located automatic analysers. A bias factor of 1.217 has therefore been applied to the measured result to take account of the variance.

Location of NO_2 Diffusion Tubes

It was identified in the Stage 2/3 Report that there was a need to carry out further sampling of NO_2 at the building facades of residential properties, closest to the kerbside sites were exceedences of the NO_2 annual mean had occurred.

This led to the relocation of three of the previous sites in August 2005, to locations as close as possible to building facades of residential properties. A brief description of the location of each of the sites is given below. A map showing their location is provided in Appendix 3

Site 1 – High Street, Moneymore (Z1)

Grid reference : H 857 834

This site is on the main A29 route at the junction of Desertmartin Road, High Street and Smith Street. Traffic at this junction is controlled by a mini roundabout, resulting in traffic conditions which are often slow moving, particularly at peak times.

Site 2 – William Street, Cookstown – (Z2)

Grid Reference H 811 785

This tube is located on a lamppost in a kerbside location outside the closest receptor to a busy junction controlled by traffic lights, identified in the 1st Stage Review and Assessment Report.

Site 3 – James Street, Cookstown (Z3)

Grid Reference : H 811 783

This tube is located on a lamppost in a kerbside location outside the closest receptor to a main junction with Molesworth Street controlled by traffic lights identified in the 1st Stage Review and Assessment Report.

Site 4 – Church Street, Cookstown (Z4)

Grid Reference : H 811 773

This tube is located on a building façade close to the nearest receptor to the junction of Church Street/Cemetery Road, Cookstown. The site was chosed as this junction was predicted as having one of the highest traffic flows in the Cookstown District in the 1st Stage Report.

Site 5 – Killymoon Street, Cookstown (Z5)

Grid Reference : H 812 769

This tube is located on a lamppost on Killymoon Street at the Killymoon Street/Caste Road junction. Traffic at this junction is controlled by traffic lights. The street is part of the A29 which is a main traffic route passing through Cookstown Town Centre.

4.2 Nitrogen Dioxide Monitoring Results for 2006

Location	Tube No.	Measured Annual Mean Concentration ug/m^3	Corrected for Lab Bias (Correction Factor 1.217)
High Street, Moneymore	Z1	34.5	41.9
William Street, Cookstown	Z2	27.75	33.8
James Street, Cookstown	Z3	28.11	34.2
Church Street, Cookstown	Z4	29	35.3
Killymoon Street, Cookstown	Z5	29.2	35.5

4.3 Annual Mean Concentration Trends

The Nitrogen dioxide results are all less than the air quality objective annual mean of 40µg/m^3 except for the tube Z1 located at the High Street, Moneymore which shows a measured annual mean concentration of 41.9µg/m^3.

There are probably several reasons why this would have occurred.

1) The figure for the December exposure for tube Z1 was unusually high. (uncorrected value 62µg/m^3 . This figure is significantly higher than any other readings throughout the year and significantly distorted the final result. When checked, there were no significant causal factors to which this aberration could be attributed eg Road works. Samples collected since have also shown significantly lower levels. As such, this result will have to be considered something of a one off anomaly.

2) One of the sampling periods was missing for this site due to theft of the tube during exposure. This period coincided with one of the lower levels experienced at the other 4 locations.

3) The result is also probably not indicative of exposure level as it is located close to a Guest House, and not a residential property. It may be that this location needs to be considered further, with a view to relocation closer to a residential property.

Given these results, this Department will need to monitor these figures closely to determine if the NO_2 results will continue to rise. Given the questions posed by the large correction bias for the results of the NO_2 tubes, it may be worth considering a real time analyser if the results continue to rise.

4.4 Sulphur Dioxide

Background Information

Sulphur dioxide (SO_2) is produced when a material or fuel containing sulphur is burned. Globally, much of the sulphur dioxide in the atmosphere comes from natural sources but, in the UK, the major source is power stations burning fossil fuels – principally coal and heavy oils. Widespread domestic use of coal can also lead to height local concentrations of SO_2 in some parts of the world such as China.

Even moderate concentrations of SO_2 may result in a decline in lung function in asthmatics. Tightness in the chest and coughing occur at high levels, and lung function of asthmatics may be impaired to the extent that medical help is required. Sulphur dioxide pollution is considered more harmful when particle and other pollution concentrations are high. This is a good example of combined or synergistic effects of air pollutants.

Air Quality Objectives

The Government and Devolved Administrations have adopted a 15-minute mean of 266µg/m^3, 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 Aid Quality Daughter Directive. These are for a 1-hour mean objective of 350µg/m^3 to be exceeded no more than 24 times per year and a 24-hour objective of 125µg/m^3, to be exceeded no more than 3 times per year, to be achieved by the end of 2004.

Local Continuous Monitoring of Sulphur Dioxide

Real time monitoring equipment, namely a Monitor Europe ML 9805 B Sulphur Dioxide analyzer was installed within the Gortalowry House complex, Church Street, Cookstown in December 2003. Prior to installation advice was sought on the suitability of the location from NETCEN, AEA Technologies air quality consultants. The site is within the 1 x 1 km grid square identified in the Stage 1 Risk and Assessment Report as having the highest proportion of coal burning properties within the Cookstown District. Since January 2005 the Date Management and QAQC has been managed by NETCEN. The location of the real time monitor can be seen in the map included in Appendix 3 of this report.

AUTOMATIC MONITORING RESULTS FOR 2006

SO_2 Continuous Monitoring Results for 2006

Max. 15 Min. Mean µg/m^3	48
No. of 15 Min. Means >266 µg/m^3	0
Max. 1 Hour Mean µg/m^3	35
No. of 1 Hour Means >350 µg/m^3	0
Max. 24 Hour Mean µg/m^3	11
Max. 24 hour Means >125 µg/m^3	0
Annual Mean SO_2	2
Type of Monitor	UV Florescence
Data Ratified? Y / N	Y
QAQC Carried Out By	National Physics Laboratory
Data Capture SO_2 (%)	96.2

4.5 Fine Particles (PM_{10})

Background Information

Fine Particles are composed of a wide range of materials arising from a variety of natural and man-made sources including:

- Combustion sources (mainly road traffic);
- Secondary particles, mainly sulphate and nitrate formed by chemical reactions in the atmosphere, and often transported over national or continental distances;
- Coarse particles and material from construction work;
- Suspended soils and dusts (e.g. from the Sahara), sea salt, volcanic emissions and biological particles (such as pollen);

Particles are measured in a number of different size fractions according to their mean aerodynamic diameter. Most monitoring is currently focussed on $PM_{10,}$ but the finer fractions such as $PM_{2.5}$ and PM_1 are becoming of increasing interest in terms of health effects. Fine particles can be carried deep into the lungs where they can cause inflammation and a worsening of the condition of people with heart and lung diseases. In addition, they may carry surface-absorbed carcinogenic compounds into the lungs,

Particles also have a range of important non-biological impacts including:

- Soiling of man-made materials and buildings, resultant loss of amenity;
- Reducing visibility (fine particles – aerosol)
- Effects on heterogeneous atmospheric chemistry;

Air Quality Objectives

The Government and the Devolved Administrations have adopted two Air Quality Objectives for fine particles (PM_{10}) 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 35 days per year, to be achieved by the end of 2004. The objectives are based upon measurements carried out using the European gravimetric transfer reference sampler or equivalent.

The EU has also set indicative limit values for PM_{10} which are to be achieved by 1st January 2010. These Stage 2 limit values are considerably more stringent and are 20 µg/m^3 as the annual mean and 50 µg/m^3 as the 24-hour mean to be exceeded on no more than 7 days per year. The Government, the Welsh Assembly Government and the Department of Environment in Northern Ireland introduced provisional objectives to be achieved by the end of 2010, that are broadly in line with the Stage 2 limit values, although these objectives have not been brought into Regulation for the purpose of Local Air Quality Management at this time. The provisional objectives for NI are:

- A 24-hour mean of 50 µg/m^3 not to be exceeded more than 7 times per year and an annual mean of 20 µg/m^3, to be achieved by the end of 2010.

Local Continuous Monitoring of PM_{10} Uing Real time Automatic Analyser

Real time monitoring equipment, namely a TEOM Series 1400a Ambient Particulate (PM_{10}). Monitor was installed in a secure location at Gortalowry House, Church street, Cookstown in December 2003. Prior to siting, advice was sought on the suitability of the location from NETCEN, AEA Air Quality Consultants. The site is within the 1 x 1 km grid square identified in the Stage 1 Risk and Assessment Report as having the highest concentration of coal burning properties in the Cookstown District. Since January 2005 the Data Management and QAQC has been managed by NETCEN.

PM_{10} Continuous Monitoring Results for 2006

Data Converted to Gravimetric Equivalent Using a Conversion Factor for 1.3

Data Capture PM ($_{10}$) (%)	99.2%
Max. 24 Hour Mean PM_{10}	67
No. of 24 Hour Means >50 µg/m^3	6
Annual Mean PM_{10}	22
Type of Monitor	TEOM

It is anticipated that the above results will continue to be used to verify the detailed dispersion modelling undertaken by AEA Technologies (Netcen) in 2003 which predicted no exceedences of SO_2 and PM_{10} objectives.

5 NEW LOCAL DEVELOPMENTS

5.1 New Local Developments

A Progress Report should address any local developments that may affect air quality, including:

- New industrial processes included in the list in Appendix 2 of TG (03) i.e. Part A or B or C processes.

- New developments with an impact on air quality, especially those that will significantly change traffic flows. This need only include developments that have been granted planning permission. Examples of new local developments to include in progress reports are given in Table 5.1 below.

- New landfill sites, quarries etc that have been granted planning permission and which have nearby relevant exposure (see Box 8.4 in TG (03) page 8-33).

Recent changes in the Cookstown District Council area are logged below so that they can be considered more thoroughly during the next full round of review and assessment. For the purposes of this report, any changes since the completion of the 1st Stage Review and Assessment Report in August 2001 have been considered.

Table 5.1

EXAMPLES OF NEW LOCAL DEVELOPMENTS TO INCLUDE IN PROGRESS REPORT

Development	Source of Information
New Part A Process	EHS IPRI
New Part B Process	EHS IPRI
New Part C Process	District Councils
New Retail Development	DoE Planning Service
New Road Scheme	DRD Roads Service
New Mineral Development	DoE Planning Service
New Landfill Development	DoE Planning Service
Mixed Use Development (Residential/Commercial)	DoE Planning Service

(a) New Industrial Processes

No industrial processes likely to release significant quantities of substances of specified substances to air were authorised for operation during the period specified in paragraph 5.1 above. A current list of authorised/permitted industrial processes in the Cookstown District is given in Appendix 4.

(b) New Developments

(i) New Retail Developments

None identified

(ii) New Road Schemes

None identified

(iii) New Mineral Developments

Location	Description	Relevant Pollutants	Source of information	Comments
55-57 Blackrock Road, Dunnamore	Restoration of former sand and gravel pit	NO2/PM10	I/2006/0295/F	Potential for increased traffic, and emissions from plant and machinery
Lands SE 38 Cavanoneill Road, Pomeroy	Proposal for sand and gravel extraction	NO2/PM10	I/2006/0420/F	

(iv) New Landfill Developments

None identified

(v) Mixed Use Developments (commercial/residential)

None identified

5.2 Proposed Developments

It is recommended that progress reports should log planning applications for new developments to give a picture of areas where changes may take place and where combined impacts from several developments may become important. The list of proposed developments given below are grouped into those applications for which an air quality assessment was provided or requested and those with a lower risk of impacting on air quality.

(a) Applications for which an air quality assessment was provided or requested.

None identified

(b) Planning Applications with a lower risk of impacting on air quality (ie. air quality assessments not requested or provided) although locations near to existing busy roads or sensitive locations.

Location	Description	Relevant Pollutants	Source of Information	Comments
29- 45 Burn Road, Cookstown	Construction of 4 retail units	NO2/PM10	I/2005/1511/F	Potential for increased traffic on Burn Road/ Orritor Road areas.
22a- 32 Molesworth Street, Cookstown	Mixed use development,car park, retail units and offices	NO2/PM10	I/2005/1403/F	Potential for increased traffic on Molesworth St./ James Street areas.
Creagh Concrete Ltd, Kilmascally Road, Ardboe	Extension to existing concrete storage yard.	NO2/PM10	I/2006/0963/F	Potential for increased traffic and particulates
Adj 47 Orritor Road, Cookstown	Retail unit with garden centre.	NO2/PM10	I/2006/0509/F	Potential for increased traffic to Orritor Road area.

6. CONCLUSIONS AND RECOMMENDATIONS

Monitoring data gathered in 2006 shows that the Cookstown District Council area generally has good air quality.

- Diffusion tube monitoring of Nitrogen Dioxide in the area have indicated that the air quality standard was exceeded at one of the five sites. It is likely that this result was due to sample or laboratory error for one month which showed on unusually high NO_2 concentration. It is however recommended that monitoring continues to identify any trends in pollutant concentrations in the district.

- Automatic monitoring of Sulphur Dioxide and PM_{10} in the area has indicated that the air quality standard for both these pollutants has not been exceeded. It is however recommended that monitoring continues to identify any trends in pollutant concentrations in the district.

- A number of new and proposed developments have been identified within the district. Their effect on the local air quality will continue to be monitored during the regular reviews and assessment reports.

Appendix 1

Appendix 1 Timetable for Progress Reports within Review and Assessment System

LAQM Activity	Completion Date	Which Authorities ?
Progress Report	April 2005	All District Councils
Updating and screening assessment	April 2006	All District Councils
Detailed assessment	April 2007	Those District Councils which have identified the need for one in their April 2006 updating and screening assessment
Progress Report	April 2007	Those District Councils which identified that there was no need for a detailed assessment in their April 2006 updating and screening assessment
Progress Report	April 2008	All District Councils
Updating and screening assessment	April 2009	All District Councils
Detailed assessment	April 2010	Those District Councils which have identified the need for one in their April 2009 updating and screening assessment
Progress report	April 2010	Those District Councils which have identified that there was no need for a detailed assessment in their April 2009 updating and screening assessment

Appendix 2

Proposed Objectives included in the Air Quality Regulations (NI) 2003 for the purpose of Local Air Quality Management.

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 μgm^{-3}	Running annual mean	31.12.2003
	3.25 μgm^{-3}	Running annual mean	31.12.2010
1,3 Butadiene	2.25 μgm^{-3}	Running annual mean	31.12.2003
Carbon Monoxide	10.0 mgm^{3}	Maximum daily running 8-hour mean	31.12.2003
Lead	0.5 μgm^{-3}	Annual mean	31.12.2003
	0.25 mgm3	Annual mean	31.12.2008
Nitrogen Dioxide[1]	200 μgm^{-3} no to be exceeded more than 18 times a year	1 hour mean	31.12.2005
	40 μgm^{-3}	annual mean	31.12.2005
Particles (PM_{10})[2] **Gravimetric**[3]	50 μgm^{-3} not to be exceeded more than 35 times a year	24 hour mean	31.12.2004
	40 μgm^{-3}	annual mean	31.12.2004
Sulphur Dioxide	350 μgm^{-3} not to be exceeded more than 24 times per year	1 hour mean	31.12.2004
	125 μgm^{-3} not to be exceeded more than 3 times per year	24 hour mean	31.12.2004
	266 μgm^{-3} not to be exceeded more than 35 times per year	15 minute mean	31.12.2005

Notes

1. The objectives for nitrogen dioxide are provisional.
2. There are likely to be new particles objectives for 2010, not in regulation at present, expected after the review of the EU's first Air Quality Daughter Directive (2004).
3. Measured using the European gravimetric transfer standard or equivalent.

APPENDIX 3

Map showing location of NO_2 Diffusion Tubes

And

Local Air Quality Monitoring Station

Appendix 4

4.1 – Part A/Part B Processes in Cookstown

PROCESS	NAME & ADDRESS
Quarry & Roadstone Coating	Corvanaghan Quarry Corvanaghan Road COOKSTOWN
Quarry & Roadstone Coating	Northstone NI Ltd – previously Farrens Ltd, 31 Magherafelt Road, Moneymore
Roadstone Coating	MP Colemans Brigh Quarry, Brigh Road Stewartstown
Quarry & Cement Manufacturer	Lafarge Cement Ltd – previously Blue Circle 29 Sandholes Road Cookstown
Quarry Process (Quarry)	Milburn Concrete c/o 231 Orritor Road Cookstown
Intensive Poultry	A Purvis 50 Ballynafeagh Road Stewartstown
Intensive Poultry	H Sinnamon 33 Lurganeden Road Pomeroy
Intensive Poultry	D Nugent 127 Limehill Road Pomeroy
Intensive Poultry	N Hammond 7 Annaghone Road Stewartstown
Intensive Poultry	V Johnston 20 Aghaford Road Pomeroy
Intensive Poultry	S Mullin 20 Cavanoneill Road Kildress Cookstown
Intensive Poultry	D & G Rafferty 110 Limehill Road Dungannon
Intensive Poultry	P Swaile 10 Ballynakilly Road Sandholes Cookstown

4.2 Part C Processes in Cookstown

Process	Name & Address	BEN	1-3 BUT	LEAD	CO	SO_2	NO_2	PM_{10}
Coal Process	Lissan Coal Co. 16 Churchtown Road Cookstown							X
Petrol Stations	1. Safeway Petrol Station Sweep Road Cookstown 2. Milburn Service Station 2 Lissan Road Cookstown 3. A29 Service Station Dungannon Road Cookstown 4. Crossroads Fuels 33 Drumenny Road Coagh							
Bulk Cement	1. R J Donaghy & Sons 71B Lissan Road Cookstown 2. Creagh Concrete 93 Kilmascally Road Ardboe 3. R S Concrete 20 Ballynasollus Road Tulnacross Cookstown 4. Titan Precast Ltd Titan Business Park 14 Sandholes Road Cookstown							
Animal Feed	T Hutchinson & Sons 4 Ballygillen Road Cookstown							
Timber Processes	1. Trade Mouldings Cookstown Business Park Sandholes Road Cookstown 2. CNC Components (UK Ltd) 45 Ruskey Road Coagh, Cookstown 3. Northern Mouldings Ltd 69 Drum Road Cookstown 4. BA Kitchen Components Ltd Derryloran Ind. Estate Sandholes Road Cookstown							