2009 Air Quality Updating and Screening Assessment for *Dungannon and South Tyrone Borough Council*

In fulfillment of Part IV of the Environment Act 1995
Local Air Quality Management

April 2009

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Report Reference number	
Date	April 2009

Executive Summary

Monitoring at five locations within Dungannon and South Tyrone Borough Council's area has demonstrated that there one site where NO_2 levels exceed the objective limit of 40ug/m^3. This is at Church Street in Dungannon, where an AQMA has already been declared. Based on the results for 2008, the council will not be revoking the current AQMA. No other pollutants were assessed to have an impact on air quality within the borough at this time and therefore no further AQMA's or detailed assessments are required.

Dungannon and South Tyrone Borough Council has not seen any significant changes from any pollution sources since the last round of review and assessment and no other sources of pollution have been identified. Therefore the likely impact from such sources is negligible.

Dungannon and South Tyrone Borough Council has not identified the requirement for any proposed actions at this time as a result of information identified in this Updating and Screening Assessment.
The next course of action to be taken by the council is to complete and submit a Draft Action Plan for the current AQMA on Church Street and then a Progress Report in 2010.

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1 Introduction

1.1 Description of Local Authority Area

Dungannon and South Tyrone Borough is located in the geographical heartland of Northern Ireland, a beautiful rural, historic area served by the main motorway network in Northern Ireland, with major road links to the business capital of Belfast, South towards Armagh City and Dublin; and west to Donegal and Sligo. The borough does not have a high level of heavy industry. The majority of the local work force is employed in the delivery of services such as local government, education authority, health and social services, minor retail, agriculture and food processing. Although there are a number of quarries provided graded stone & gravel as well as road-stone coating, the greatest contribution to air quality pollution is from road traffic. Particularly in the town centre where the road network is quickly reaching it's maximum capacity due to the increase in car ownership. Given the size of the rural hinterland surrounding the town of Dungannon, public transport resources are stretched and the reliance on the motor car is greatly exacerbated. Dungannon is regarded as a "route hub" to the border from Mid-Ulster travelling to Belfast, North-West Northern Ireland the Republic Of Ireland; and is main through-route between mid-Ulster and the south east of Northern Ireland and hence probably has a traffic flow higher than that which could be created by local traffic alone. Particulate Matter (PM10) and NO2 would be considered as the pollutants most at risk of breaching the objective limits in Dungannon as a result of road traffic. Dungannon already has declared an AQMA in January 2008 for NO2 on Church Street.

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

1.2 Purpose of Report

This report fulfils the requirements of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents. The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where exceedences are considered likely, the local authority must then declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM **in Northern Ireland** are set out in the Air Quality Regulations (Northern Ireland) 2003, Statutory Rules of Northern Ireland 2003, no. 342, and are shown in Table 1.1. This table shows the objectives in units of micrograms per cubic metre $\mu g/m^3$ (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedences in each year that are permitted (where applicable).

Table 1.1 Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in Northern Ireland.

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene			
	16.25 $\mu g/m^3$	Running annual mean	31.12.2003
	3.25 $\mu g/m^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu g/m^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu g/m^3$	Annual mean	31.12.2004
	0.25 $\mu g/m^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu g/m^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu g/m^3$	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 $\mu g/m^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu g/m^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu g/m^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu g/m^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu g/m^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

Table 1.4- Summary of Previous Review and Assessment Report completed by Craigavon Borough Council

Report Type	Date	Exceedences	Detailed Assessment Required	AQMA's Declared
Initial Review and Assessment	Jan 2001	None	Yes	None
Reappraisal of Traffic Pollution Modelling	Jan 2004	None	No	None
Report of the Second and Third Stage R&A of Local Air Quality	Aug 2004	None	No	None
Progress Report	June 2005	None	Yes	None
Review and Assessment: Supplementary Report on NO2 concentrations in Church Street Dungannon	June 2005	None	No	None
Updating and Screening Assessment	June 2006	Yes	Yes	None
Further Assessment of NO2 levels in Church Street	September 2007	Yes	No	Yes
Progress Report	June 2008	Yes	No	Already declared

2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

2.1.1 Automatic Monitoring Sites

Dungannon and South Tyrone Borough Council carries out automatic monitoring of air pollution at one location within the borough at Lambfields. The pollutants monitored are PM10 and SO2.
The Council will be discontinue operating this site during 2009 as the results gathered over the years of its operation demonstrate that the objective limits have not been breached and are unlikely to be breached in the future.

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA ?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Worst-case Location ?
Lambfields	Urban background	Irish Grid Ref (802,635)	PM10 & SO_2	N	Y (30m)	20m	Y

2.1.2 Non-Automatic Monitoring

During 2008 Craigavon Borough Council carried out monitoring of NO_2 by diffusion tubes at five sites within the Borough. The NO_2 diffusion tubes were prepared and analysed by Gradko Environmental. The tubes are prepared by coating the grids in a 20% v/v solution of the absorbent, triethanolamine (TEA) in water. Analysis is carried out using a colorimetric technique.

None of the sites were co-located with an automatic NO_2 analyser. Details are given in Table 2.2.

Table 2.2 Details of Non- Automatic Monitoring Sites

Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA ?	Relevant Exposure? *(Y/N with distance (m) to relevant exposure)*	Distance to kerb of nearest road *(N/A if not applicable)*	Worst-case Location ?
Market Square	Roadside	-	NO_2	N	Y	<2m	N
Howard Primary School	Urban Background	-	NO_2	N	Y	<2m	Y
Ardgannon	Urban Background	-	NO_2	N	Y(<10)	1m	Y
11 Bushvale	Urban Background	-	NO_2	N	Y(6)	1m	Y
Church Street	Roadside	-	NO_2	Y	Y(<1m)	1m	Y

The bias factor being used to adjust the diffusion tube results is taken from the Review and Assessment website http://www.uwe.ac.uk/aqm/review/R&Asupport/diffusiontube050509.xls. The factor was generated using the spreadsheet and drop down menus from the site available for 2008. The council could have used a bias factor generated by co-location studies being carried out by two neighbouring councils. However, since those councils both use laboratories and diffusion tube suppliers it was deemed more prudent to use the bias factor from the Review and Assessment website.

Details of Gradko Environmental's WASP performance can be seen in Appendix B.

2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

Only one of the diffusion tube sites monitored in Dungannon recorded an NO_2 result above the objective limit of 40µg/m^3 during 2008. This was in Church Street in Dungannon town centre.

Dungannon and South Tyrone Borough Council does not monitor NO2 pollution using automatic monitoring equipment.

Details of Gradko Environmental' WASP can be found in Appendix B.

Automatic Monitoring Data

Dungannon and South Tyrone Borough Council does not have any NO2 automatic monitoring sites within the Borough.

Diffusion Tube Monitoring Data

Craigavon Borough Council monitors NO2 pollution using diffusion tubes at 8 sites through the borough. These sites are located in Lurgan, Portadown and Craigavon. All of the tubes are positioned in accordance with the practical guidelines published by AEA Energy and Environment in a report to Defra and the Devolved Administrations.

Table 2.4a Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Data Capture 2008 %	Annual mean concentrations 2008 (µg/m^3) Adjusted for bias
Site 1	Market Square	N	100	24
Site 2	Howard Primary School	N	89	22
Site 3	Ardgannon	N	100	14
Site 4	11 Bushvale	N	100	12
Site 5	Church Street	Y	100	40

Church Street is a triplicate diffusion tube monitoring site which is located within the current AQMA. The result obtained at this site is an average of the triplicate tubes.

Table 2.4b Results of Nitrogen Dioxide Diffusion Tubes

Site ID	Location	Within AQMA?	Annual mean concentrations ($\mu g/m^3$) Adjusted for bias		
			2006 *	2007 *	2008
Site 1	Market Street	N	22	23	24
Site 2	Howard Primary School	N	20	18	22
Site 3	Ardgannon	N	13	11	14
Site 4	11 Bushvale	N	13	9	12
Site 5	Church Street	N	40	42	40

2.2.2 PM_{10}

Produced by AEA on behalf of Dungannon & South Tyrone Borough Council

DUNGANNON LAMBFIELDS
01 January to 31 December 2008

These data have been fully ratified by AEA

POLLUTANT	PM_{10}*+
Number Very High	0
Number High	0
Number Moderate	0
Number Low	8554
Maximum 15-minute mean	408 $\mu g\ m^{-3}$
Maximum hourly mean	182 $\mu g\ m^{-3}$
Maximum running 8-hour mean	123 $\mu g\ m^{-3}$
Maximum running 24-hour mean	60 $\mu g\ m^{-3}$
Maximum daily mean	59 $\mu g\ m^{-3}$
Average	20 $\mu g\ m^{-3}$
Data capture	97.5 %

* PM_{10} Indicative Gravimetric Equivalent μgm^{-3}
+ PM_{10} as measured by a TEOM using a factor of 1.3 for Indicative Gravimetric Equivalence
All mass units are at 20'C and 1013mb

Pollutant	Air Quality Regulations (Northern Ireland) 2003	Exceedences	Days
PM_{10} Particulate Matter (Gravimetric)	Daily mean > 50 μgm^{-3}	5	5
PM_{10} Particulate Matter (Gravimetric)	Annual mean > 40 μgm^{-3}	0	-

Table 2.5a Results of PM_{10} Automatic Monitoring: Comparison with Annual Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2008 %	Annual mean concentrations ($\mu g/m^3$)		
				2006 *	2007 *	2008
1	Lambfields	N	98	**20**	**19**	**20**

Table 2.5b Results of PM_{10} Automatic Monitoring: Comparison with 24-hour Mean Objective

Site ID	Location	Within AQMA?	Data Capture 2008 %	Number of Exceedences of daily mean objective (50 µg/m^3) *If data capture < 90%, include the 90th %ile of daily means in brackets.*		
				2006*	2007*	2008
1	Lambfields	N	98	4	0	5

2.2.3 Sulphur Dioxide

Produced by AEA on behalf of Dungannon & South Tyrone Borough Council

DUNGANNON LAMBFIELDS
01 January to 31 December 2008

These data have been fully ratified by AEA

POLLUTANT	SO_2
Number Very High	0
Number High	0
Number Moderate	0
Number Low	29795
Maximum 15-minute mean	160 µg m^{-3}
Maximum hourly mean	53 µg m^{-3}
Maximum running 8-hour mean	25 µg m^{-3}
Maximum running 24-hour mean	15 µg m^{-3}
Maximum daily mean	13 µg m^{-3}
Average	3 µg m^{-3}
Data capture	86.7 %

* PM_{10} Indicative Gravimetric Equivalent µgm^{-3}
+ PM_{10} as measured by a TEOM using a factor of 1.3 for Indicative Gravimetric Equivalence
All mass units are at 20'C and 1013mb

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

2.2.4 Benzene

N/A

2.2.5 Other pollutants monitored

N/A

3 Road Traffic Sources

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Dungannon and South Tyrone Borough Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic

Dungannon and South Tyrone Borough Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

3.3 Roads with a High Flow of Buses and/or HGVs.

Dungannon and South Tyrone Borough Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

3.4 Junctions

Dungannon and South Tyrone Borough Council confirms that there are no new/newly identified busy junctions/busy roads.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

3.5 New Roads Constructed or Proposed Since the Last Round of Review and Assessment

Dungannon and South Tyrone Borough Council confirms that there are no new/proposed roads.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

3.6 Roads with Significantly Changed Traffic Flows

Dungannon and South Tyrone Borough Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

3.7 Bus and Coach Stations

Dungannon and South Tyrone Borough Council confirms that there are no relevant bus stations in the District.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

4 Other Transport Sources

4.1 Airports

Dungannon and South Tyrone Borough Council confirms that there are no airports in the District.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

4.2 Railways (Diesel and Steam Trains)

There are no train stations or railway tracks within the entire Dungannon and South Tyrone Borough Council area.

4.2.1 Stationary Trains

Dungannon and South Tyrone Borough Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

4.2.2 Moving Trains

Dungannon and South Tyrone Borough Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30m.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

4.3 Ports (Shipping)

There are no ports within the Dungannon and South Tyrone Borough Council area.

Dungannon and South Tyrone Borough Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

5 Industrial Sources

5.1 Industrial Installations

5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

Dungannon and South Tyrone Borough Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been Introduced

Dungannon and South Tyrone Borough Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment

Dungannon and South Tyrone Borough Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

5.2 Major Fuel (Petrol) Storage Depots

Delete whichever is not applicable:

There are no major fuel (petrol) storage depots within the Local Authority area.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

5.3 Petrol Stations

Dungannon and South Tyrone Borough Council confirms that there are no petrol stations meeting the specified criteria**.**

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

5.4 Poultry Farms

Dungannon and South Tyrone Borough Council confirms that there are no poultry farms meeting the specified criteria.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

6 Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

Dungannon and South Tyrone Borough Council confirms that there are no biomass combustion plant in the District.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

6.2 Biomass Combustion – Combined Impacts

Dungannon and South Tyrone Borough Council confirms that there are no biomass combustion plant in the District.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

6.3 Domestic Solid-Fuel Burning

Dungannon and South Tyrone Borough Council confirms that there are no areas of significant domestic fuel use in the District.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

7 Fugitive or Uncontrolled Sources

Dungannon and South Tyrone Borough Council confirms that there are no potential sources of fugitive particulate matter emissions in the District.

DELETE BOX IF NOT APPLICABLE. OTHERWISE ADD LOCAL AUTHORITY NAME AND LEAVE IN.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

Monitoring at five locations within Dungannon and South Tyrone Borough Council's area has demonstrated that there one site where NO_2 levels exceed the objective limit of 40ug/m^3. This is at Church Street in Dungannon, where an AQMA has already been declared. Based on the results for 2008, the council will not be revoking the current AQMA. No other pollutants were assessed to have an impact on air quality within the borough at this time and therefore no further AQMA's or detailed assessments are required.

8.2 Conclusions from Assessment of Sources

Dungannon and South Tyrone Borough Council has not seen any significant changes from any pollution sources since the last round of review and assessment and no other sources of pollution have been identified. Therefore the likely impact from such sources is negligible.

8.3 Proposed Actions

Dungannon and South Tyrone Borough Council has not identified the requirement for any proposed actions at this time as a result of information identified in this Updating and Screening Assessment. The next course of action to be taken by the council is to complete and submit a Draft Action Plan for the current AQMA on Church Street and then a Progress Report in 2010.

9 References

Local Air Quality Management Technical Guidance 2009 (Defra)

Local Air Quality Management Policy Guidance 2009 (Defra)

Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance for Laboratories and Users – AEA Energy & Environment (Report to Defra and Devolved Administrations).

Appendices

Appendix A: QA/QC Data

Appendix B: DMRB Calculations

Appendix C: Diffusion Tube Monitoring Maps

Appendix A: QA:QC Data

Diffusion Tube Bias Adjustment Factors

The NO_2 diffusion tubes were prepared and analysed by Gradko International from the beginning of June 2007. This laboratory takes part in the NO_2 Network QA/QC Field Intercomparison survey. Gradko Internationals diffusion tubes are prepared by coating the grids in 20% TEA in water.

Factor from Local Co-location Studies (if available)

Dungannon and South Tyrone Borough Council did not use a Bias Factor from a local Co-location study. Dungannon does not have an automatic NO2 analyser in the district to carry out a co-location assessment. Also, although a co-location factor may be available from two other neighbouring councils (Armagh & Newry), both of these councils use a different diffusion tube supplier and analysing laboratory to Banbridge.

Discussion of Choice of Factor to Use

Dungannon and South Tyrone Borough Council used the Bias Factor from the UWE Air Quality Website. This was calculated by using the matrix available on the site by selecting the appropriate laboratory, year of monitoring and significant methodology.

PM Monitoring Adjustment

N/A

Short-term to Long-term Data adjustment

N/A

QA/QC of automatic monitoring

N/A

QA/QC of diffusion tube monitoring

See Appendix B for Gradko Environmental' WASP data

Appendix B: Gradko Environmental WASP data

Information provided by Gerry Stutchbury at Gradko. Internal analysis procedures are assessed by U.K.A.S. on an annual basis for compliance to ISO17025

WASP results for 01.08 to 01.09 were as follows :

Jan08 Round 100 : Ref Value : 1.36ugNO2 Measured Value : 1.34 ugNO2 Z score -0.1 Satisfactory
1.47ugNO2 Measured Value : 1.50 ugNO2 Z score 0.2 Satisfactory

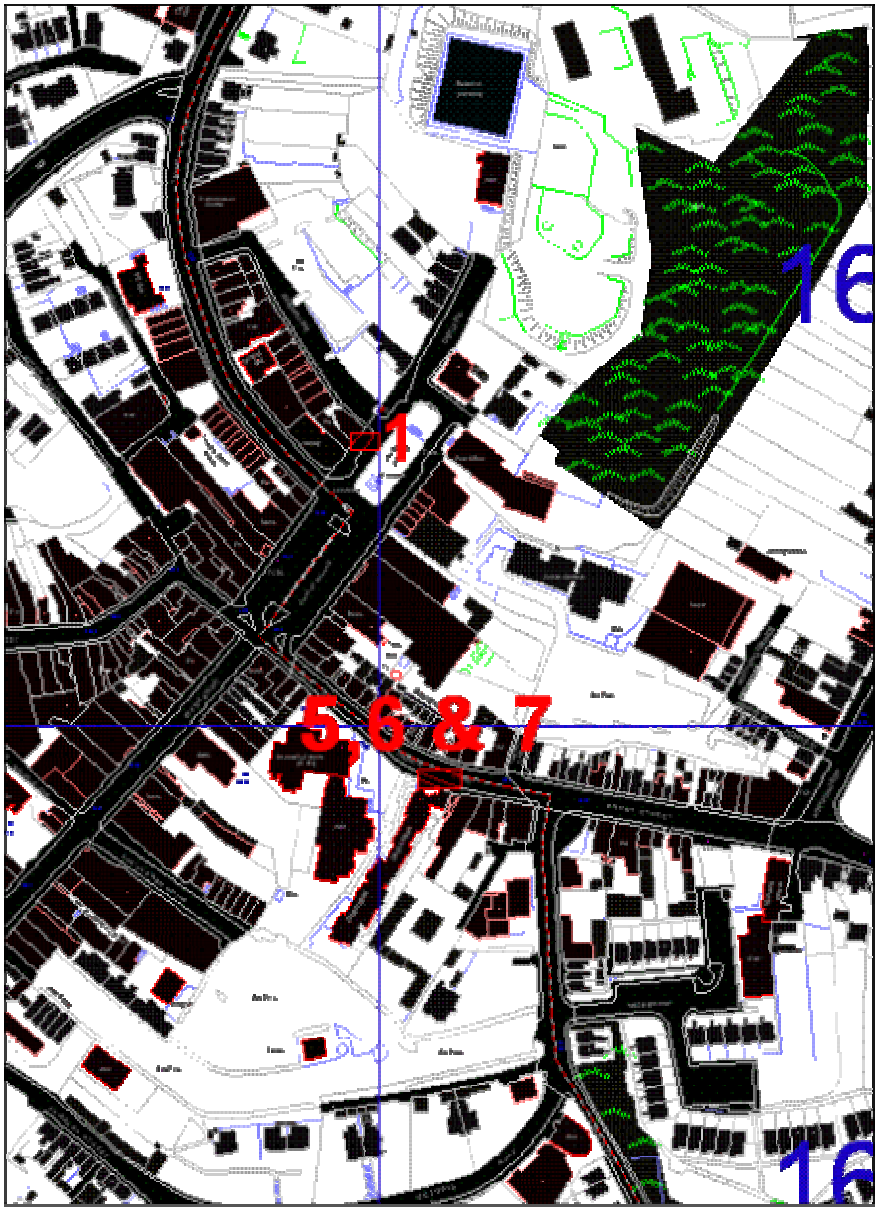
March08 Round 101 Ref Value : 0.92ug NO2 Measured Value : 0.95ugNO2 Z Score 0.2 Satisfactory
Ref Value : 1.86ugNO2 Measured Value : 1.85ugNO2 Z Score 0 Satisfactory

July 08 Round 102 Ref Value : 1.37ugNO2 Measured Value : 1.42ugNO2 Z Score 0.3 Satisfactory
Ref value : 2.28ugNO2 Measured Value : 2.21ugNO2 Z score -0.2 Satisfactory

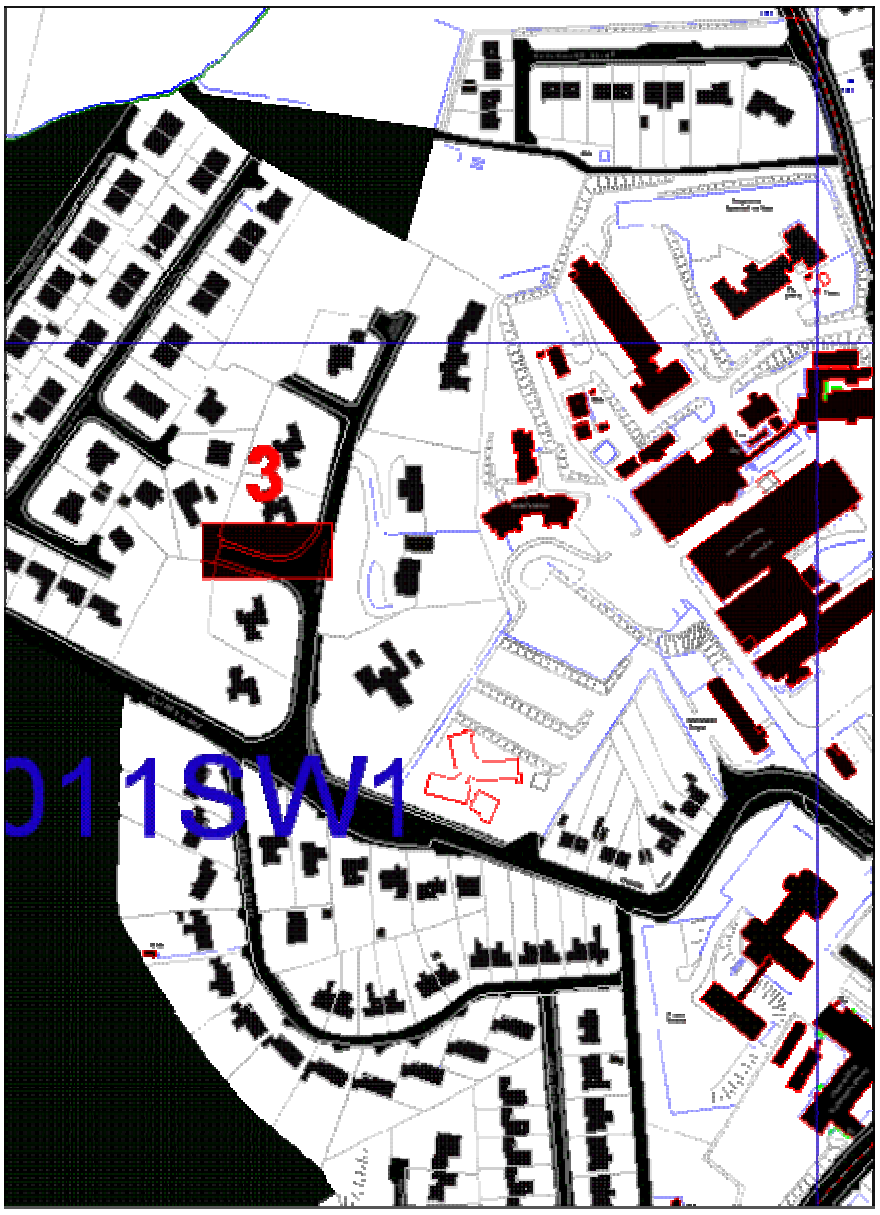
Jan09 Round 104 Ref Value : 2.02ugNO2 Measured Value : 1.85ugNO2 Z Score -0.7 Satisfactory
Ref Value : 1.22ug NO2 Measured Value : 1.21ugNO2 Z Score - 0.1 Satisfactory

APPENDIX C

Map of Diffusion Tube, PM10 and SO2 Monitoring locations

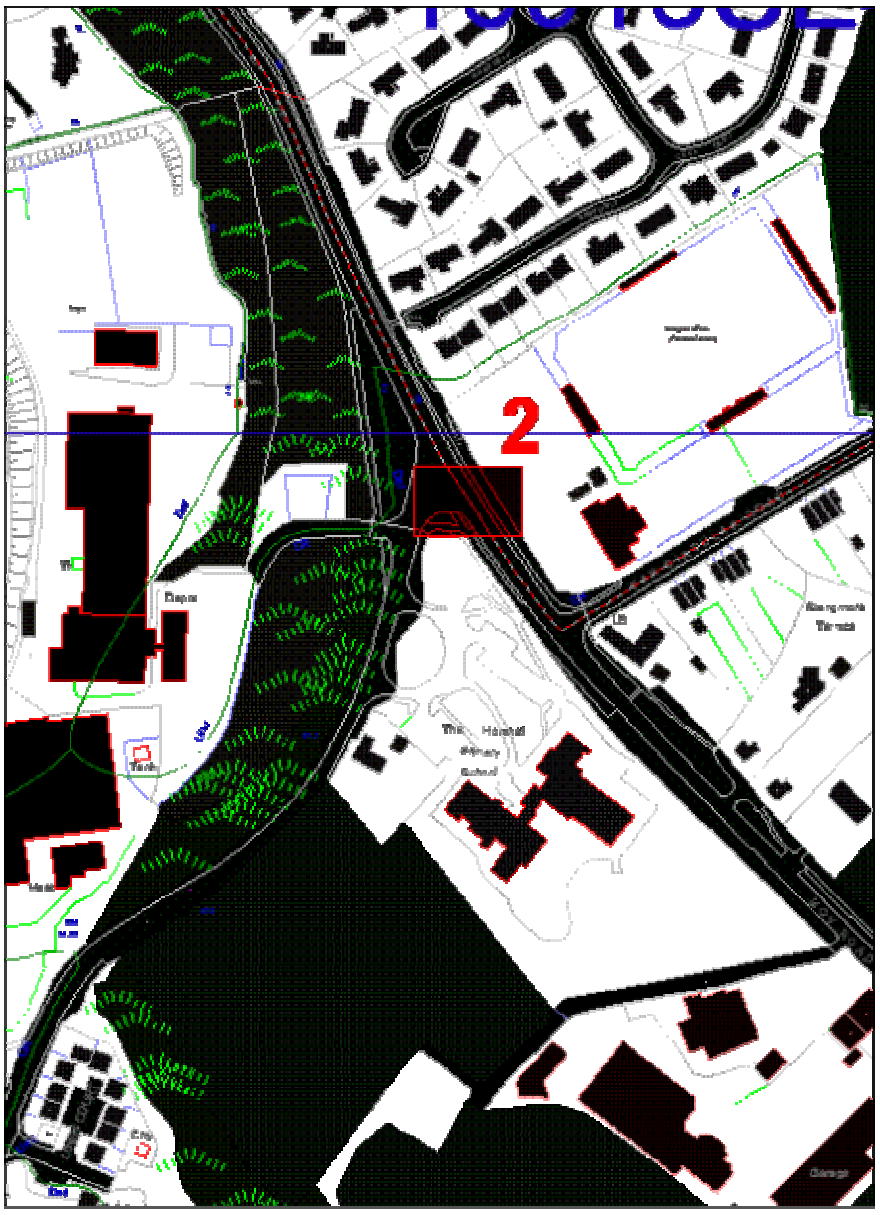


Market Square(1) and Church St (5,6&7 Triplicate)

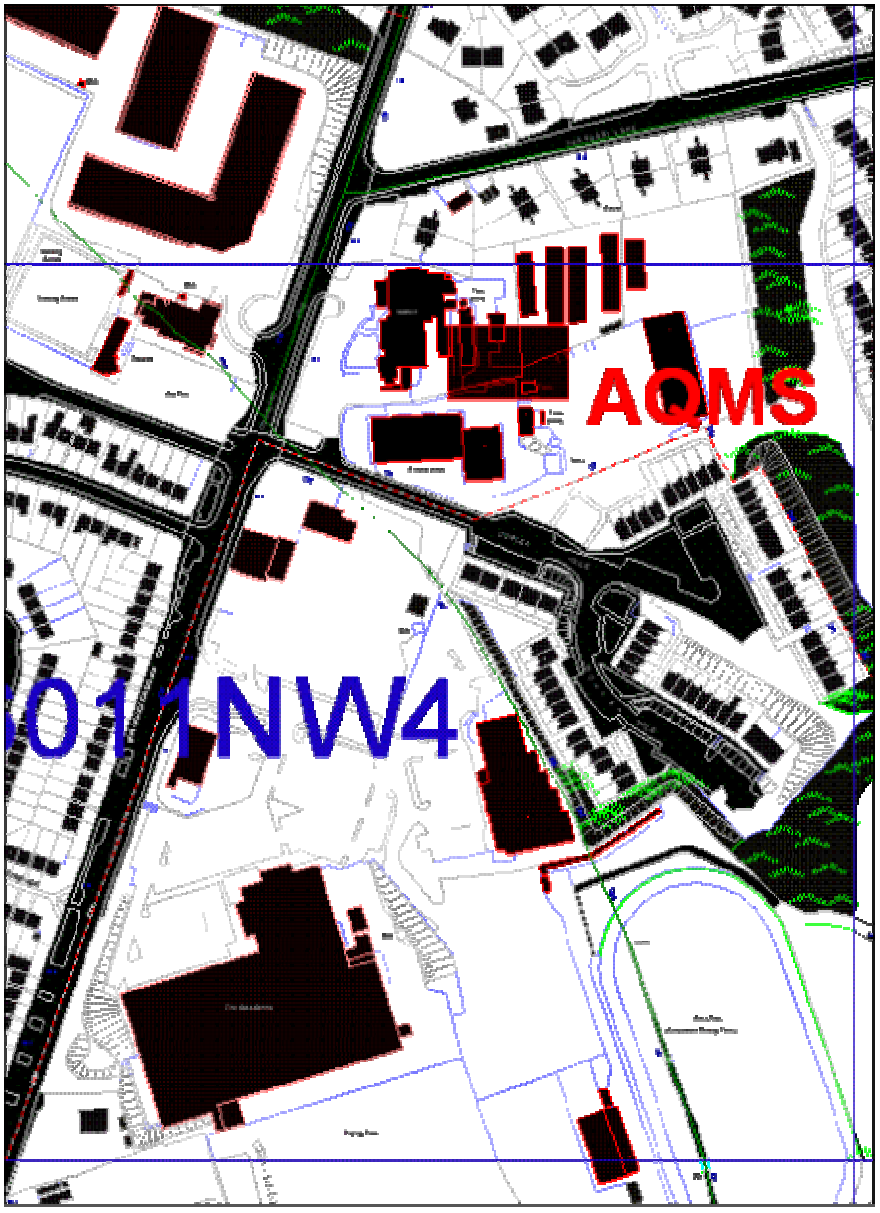

3
011SW1
scale 1 2500
DUNGANNON
& SOUTH TYRONE
Borough Council

Ardgannon(3)

11 Bushvale (4)



Howard Primary School (2)



Lambfields PM10 & SO2 monitoring Site (2)