



2012 Air Quality Updating and
Screening Assessment for
North Lanarkshire Council

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



Local Authority Officer	Fiona Maguire
Department	Environmental Health
Address	453 Main Street Coatbridge Scotland ML5 3RS
Telephone	01236 638622
e-mail	maguiref@northlan.gov.uk
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North Lanarkshire Council accepts full ownership of this report and all conclusions herein.

Executive Summary

The Updating and Screening Assessment report summarises monitoring data from 2011 and considers any new or modified emission sources which may have an adverse effect on local air quality.

The report findings are as follows:

- Measured PM₁₀ concentrations in the Chapelhall and Motherwell AQMAs remain above objective levels and as such the AQMA designations remain valide. Exceedences of the NO₂ annual mean objective were also measured in both areas.
- Measured PM₁₀ concentrations in Coatbridge indicate that the concentrations in Whifflett have fallen below objective levels, however both PM₁₀ and NO₂ concentrations at Shawhead, and NO₂ concentrations at Kirkshaws are in excess of objective levels. Amendment of the Whifflett AQMA boundaries may, therefore be required.
- Since the opening of the A80 Moodiesburn Bypass ambient PM₁₀ and NO₂ concentrations have fallen below NAQS objective levels. The AQMA can, therefore be revoked.
- Measured PM₁₀ concentrations in Croy have fallen below objective levels, reflecting the mothballing of the quarry site. No immediate revocation is proposed at this stage.
- Measured NO₂ concentrations at Bank Street and Sunnyside Street remain above objective levels. Further automatic monitoring is proposed at this location in a more representative location.
- Potential exceedence of NO₂ (and PM₁₀) objectives has been identified in the A73 corridor in Airdrie. A Detailed Assessment is proposed.

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Appendices

Appendix 1	Add titles of any appendices
Appendix 2	Add titles of any appendices

1 Introduction

1.1 Description of Local Authority Area

North Lanarkshire is located in the central belt of Scotland and is Scotland's fourth largest (by population) local authority. Due to its geographic location many of Scotland's trunk roads pass through it, including the M8/A8, M74, M73 and M80/A80. There is substantial cross-boundary travel with neighbouring local authorities (particularly Glasgow, South Lanarkshire, Falkirk and West Lothian) for employment, education and leisure activities.

North Lanarkshire can be divided into three general areas; the North, the Rural East and the Urban West. These areas are presented in Figures 1, 2 and 3. The north covers the A80 corridor, the Kelvin Valley and Kilsyth Hills. The M80/A80 is the main route in this area connecting Glasgow to Stirling and the north of Scotland. The main centre of population in the north is Cumbernauld, whilst there are several large villages on the M80/A80 corridor closer to the Glasgow boundary. Croy and Kilsyth lie to the north of Cumbernauld at the foot of the Kilsyth Hills.

The eastern area of North Lanarkshire is mainly rural and is transected by the M8 motorway. There are a number of small towns and villages in this area including Caldercruix, Shotts and Harthill.

The western area of North Lanarkshire is a more densely populated urbanised area and can be considered as two areas, north and south of the M8 motorway. To the south of the motorway are the towns of Bellshill, Motherwell and Wishaw, as well as a number of satellite villages to each town. The Ravenscraig regeneration area is situated between Motherwell and Wishaw. To the north of the motorway are the towns of Coatbridge and Airdrie. The M73 and M74 motorways form the western and southern boundaries between North Lanarkshire, Glasgow and South Lanarkshire.

North Lanarkshire has traditionally been associated with heavy industry, particularly the urbanised western area. The level of heavy industry has declined over the last

two decades, with the economy of North Lanarkshire now a mixture of commerce and light industry, focussed around the western urban area and Cumbernauld.

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.

The objective of this Updating and Screening Assessment is to identify any matters that have changed which may lead to risk of an air quality objective being exceeded. A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment. The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM in **Scotland** are set out in the Air Quality (Scotland) Regulations 2000 (Scottish SI 2000 No 97), the Air Quality (Scotland) (Amendment) Regulations 2002 (Scottish SI 2002 No 297), and are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre $\mu\text{g}/\text{m}^3$ (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 LAQM in Scotland

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	3.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
Particles (PM₁₀) (gravimetric)	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 7 times a year	24-hour mean	31.12.2010
	18 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2010
Sulphur dioxide	350 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

A brief summary of all previous reviews and assessments of local air quality since 2006 in North Lanarkshire are presented in Table 1.2 and described further in the following texts.

Table 1.2: Summary of previous reviews and assessments

Review / Assessment	Year	Outcome
Updating & Screening Assessment	2006	Potential exceedences of NAQS NO ₂ and PM ₁₀ objectives identified at various locations.
Compilation of emissions inventory	2007	Recommended: Whifflet, Coatbridge AQMA for PM ₁₀ should be maintained and that AQMA for NO ₂ be declared with the same boundaries. AQMA boundary for PM ₁₀ at Chapelhall should be maintained and consideration should be given to extending the AQMA to along Lauchope Street, and Main Street beyond the Main Street and Bellside Road junction. AQMA boundary for PM ₁₀ in Motherwell should be maintained the Council should consider extending the boundary of the AQMA to include the south of the town centre.
LAQM Action Plan	2007	Identified and appraised a number of potential measures that could be undertaken to improve air quality both across the North Lanarkshire area and in the areas contained by each AQMA.
Progress Report	2007	Five locations were identified where potential exceedences of the NAQS 2010 PM ₁₀ annual mean objective may occur. Recommended that monitoring data from a full year at Croy should be analysed prior to deciding if a Detailed Assessment is required at this location
Further Assessment – Harthill	2008	Concluded that there was a risk of exceeding the 2010 PM ₁₀ annual mean objective at Harthill and that the boundary of the proposed AQMA was valid and should remain unchanged.
Progress Report	2008	Potential exceedences of NAQS NO ₂ and PM ₁₀ objectives identified at various locations. Report recommended that the Council consider declaring an AQMA at Moodiesburn and locations within 100m of the M8.
Detailed assessment of PM ₁₀ emissions – Croy	2008	Concluded that it was likely that the PM ₁₀ objectives will be exceeded across the village and that there may be grounds to declare an AQMA for PM ₁₀ in Croy. Also recommended a number of steps that could be taken to improve the understanding of PM ₁₀ concentrations around Croy

Review / Assessment	Year	Outcome
Detailed assessment of NO ₂ and PM ₁₀ emissions at Moodiesburn	2008	The study indicated that the annual mean air quality objectives for NO ₂ and PM ₁₀ are likely to be exceeded at residential properties located close to the A80 and recommended further monitoring of NO ₂ and PM ₁₀
Updating and Screening Assessment	2009	It was proposed to undertake a Detailed Assessment of NO ₂ concentration at Auchenkilns and a Detailed Assessment of NO ₂ concentration at New Edinburgh Road along with further monitoring using diffusion tubes.
Progress Report	2010	It was proposed that a Detailed Assessment be conducted to support the decision process with respect to potentially revoking the existing AQMA.
Progress Report	2011	<p>Measured concentrations at diffusion tubes 107,108,109 and 119 continue to exceed the annual mean objective; these tubes are located at receptors close to the A8.</p> <p>Measured concentrations at diffusion tubes 138 and 139 were above the annual mean NO₂ objective and are located within the Chapelhall AQMA for the annual mean PM₁₀ objective. It is the intention of the Council to continue monitoring and give consideration to amend this AQMA to include the annual mean NO₂ objective.</p> <p>Measured Concentrations at diffusion tubes 110 and 112 are located at receptors close to the M74 and New Edinburgh Road and indicate that the annual mean objective may be exceeded at receptors close to the M74. The Council intend to proceed to a Detailed Assessment for NO₂ and PM₁₀ at this location.</p> <p>Measured concentrations at diffusion tube 117 were above the annual mean objective. This tube is located within the Motherwell AQMA for PM₁₀. However this is the only diffusion tube within the AQMA that was above the NO₂ annual mean objective. The Council intend to continue monitoring at this location.</p>

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Review / Assessment	Year	Outcome
Further Assessment Harthill	2011	Assessment concluded that PM ₁₀ concentrations within the AQMA have reduced over over preceding years. It was concluded that concentrations are below NAQS objectives and thus revocation of AQMA was recommended.
Further assessment of NO ₂ and PM ₁₀ emissions at Moodiesburn	2012	The study indicated that the annual mean air quality objectives for NO ₂ and PM ₁₀ have reduced since introduction of A80 Moddiesburn Bypass. Recommended revocation of AQMA.

Figure 1.1 Map of Whifflett AQMA Boundary

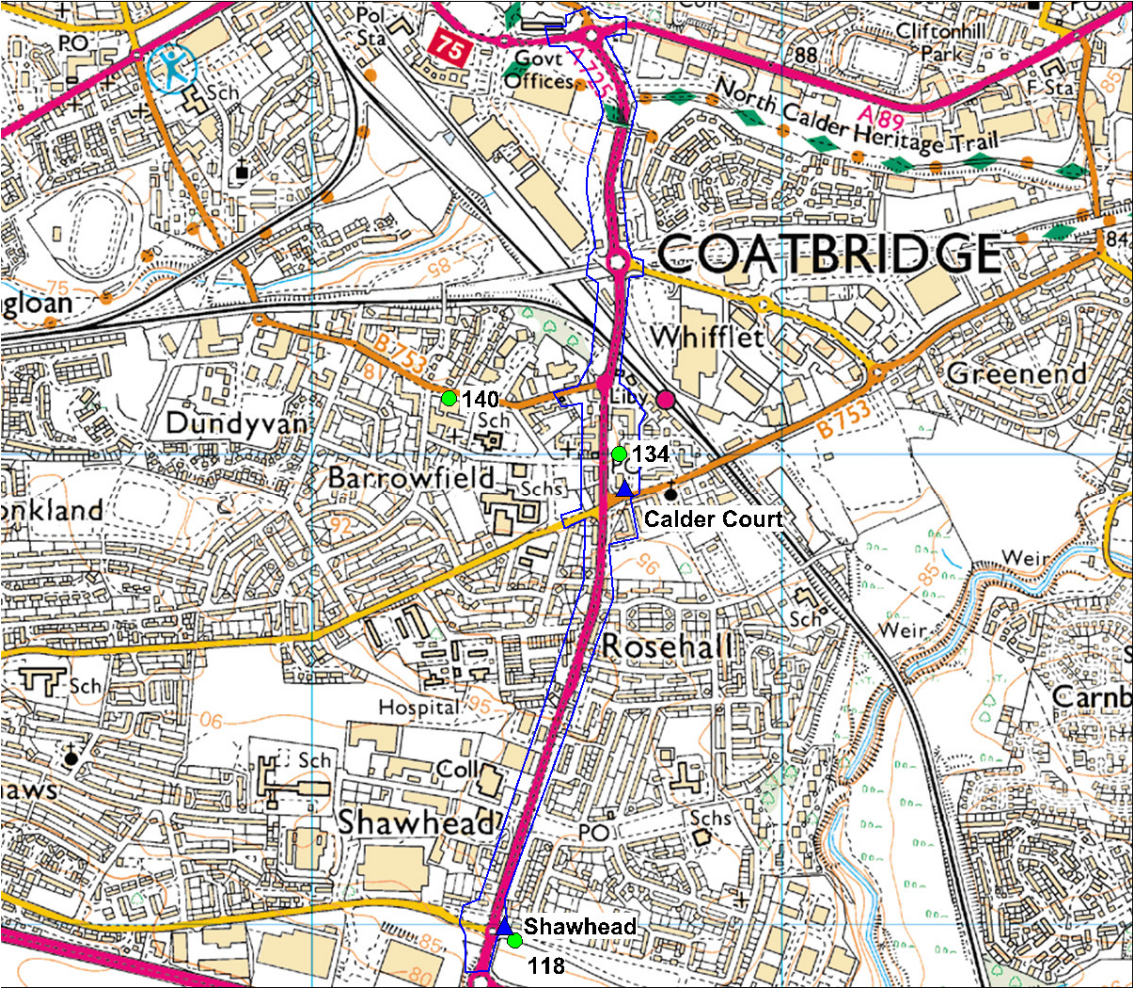


Figure 1.2 Map of Motherwell AQMA Boundary

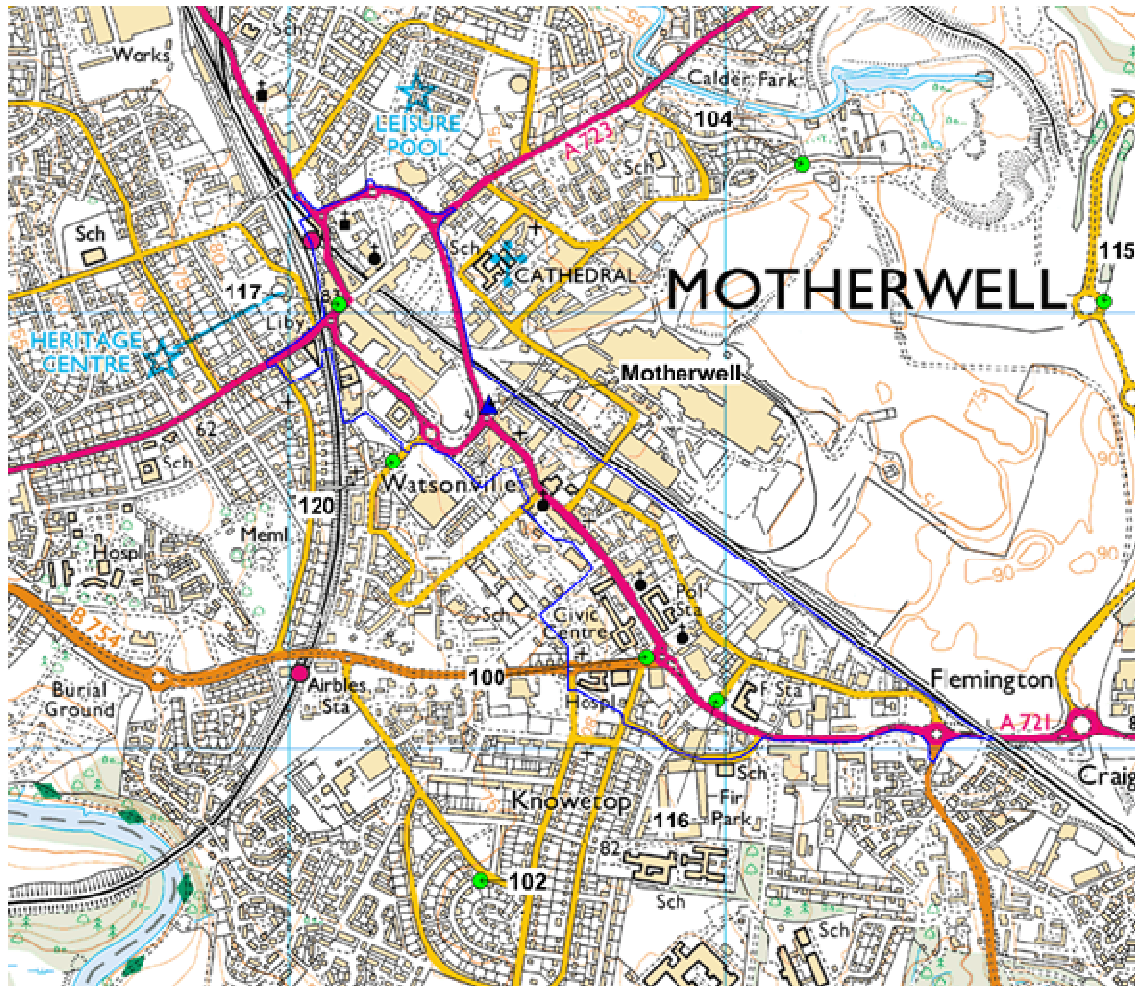
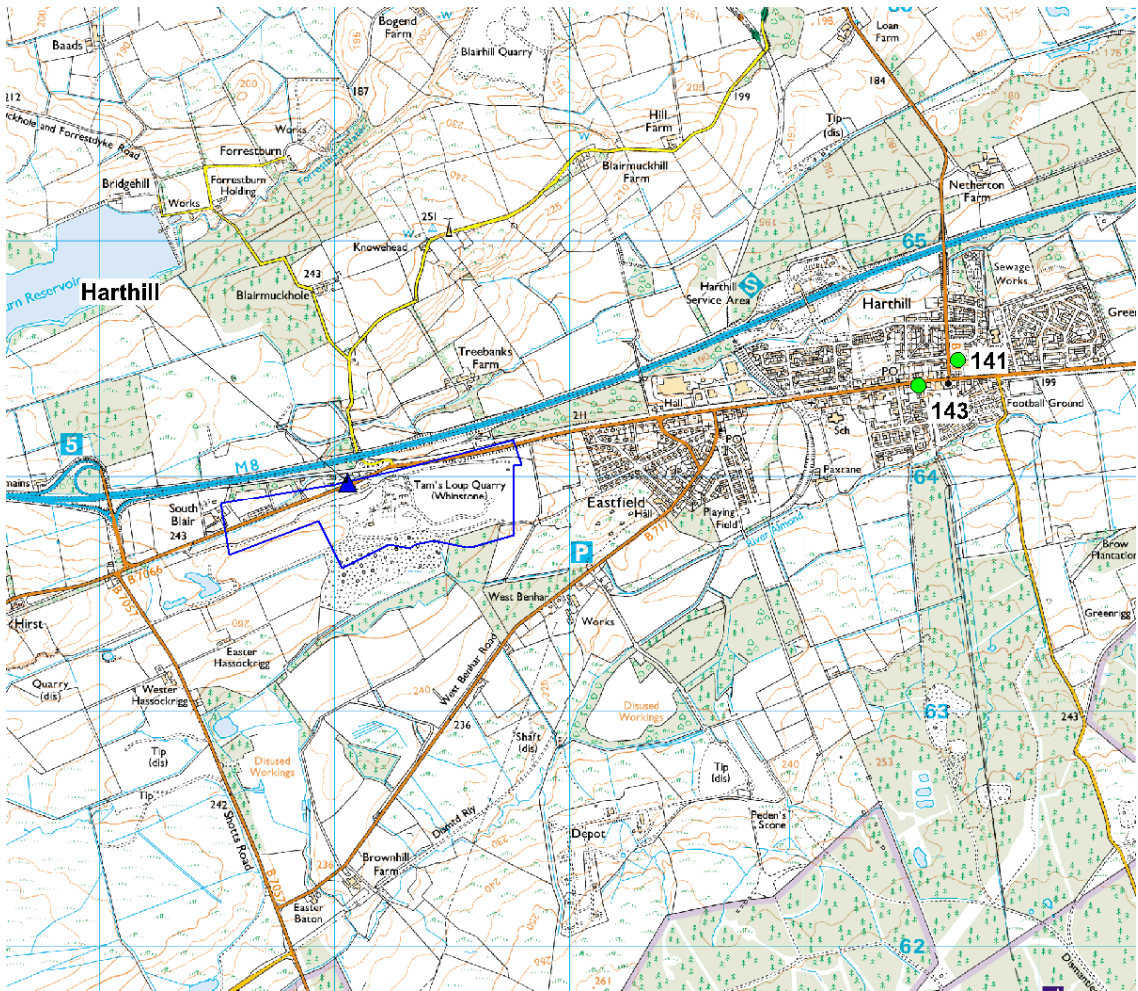


Figure 1.3 Map of Chapelhall AQMA Boundary



Figure 1.4 Map of Harthill AQMA Boundary



2 New Monitoring Data

2.1 Summary of Monitoring Undertaken

During 2011 the Council monitored ambient PM₁₀ and NO₂ concentrations at several locations throughout the Council area using both automatic and passive sampling methods.

All automatic monitoring NO₂ and PM₁₀ data have been fully ratified by AEA Technology on behalf of the Scottish Government. Diffusion tube data have been corrected using the Glasgow Scientific Services laboratory bias correction factor. Details of the quality control and data correction processes carried out are reported in Appendix A.

The monitoring site locations are annotated on Figures 2 to 8.

2.1.1 Automatic Monitoring Sites

North Lanarkshire Council currently conduct automatic monitoring at seven locations. An inventory of the monitoring sites and the pollutants measured are presented in Table 2.1. Maps annotating the locations of the automatic sites are included in Appendix B.

The automatic monitoring results for NO₂ and PM₁₀ are presented in Tables 2.3, 2.4, 2.7 & 2.8.

Table 2.1 Details of Automatic Monitoring Sites

Site Name	Site Type	X OS GridRef	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
Calder Court	Urban background	273667	663931	PM10	Yes (PM10)	TEOM	N (20m)	30m	No
Chapelhall	Roadside	278174	663124	NO2, PM10	Yes (PM10)	Chemiluminescence, TEOM	Y (20m)	5m	No
Croy	Special – By Quarry	272775	675738	NO2, PM10, SO2	Yes (PM10)	Chemiluminescence, TEOM	Y(30m)	10m	No
Motherwell	Roadside	275458	656792	PM10	Yes (PM10)	TEOM	Y(20m)	10m	No
Moodiesburn	Roadside	269921	670389	NO2, PM10	Yes (PM10)	Chemiluminescence, BAM	N (50m)	5m	No
Shawhead	Roadside	273411	662997	NO2, PM10	No	Chemiluminescence, BAM	Y(22m)	9m	Yes
New Edinburgh Road	Roadside	269152	661491	NO2	No	Chemiluminescence	Y(30m)	10m	No

2.1.2 Non-Automatic Monitoring Sites

North Lanarkshire Council operates a network of sixty NO₂ diffusion tube sites, located across the council area. The monitoring sites represent public exposure and areas of high pollution concentrations at a variety of kerbside, roadside and urban background locations. The site details are presented in Table 2.2. Maps annotating the locations of the diffusion tube sites are included in Appendix B.

The NO₂ concentrations measured within the Council area since the 2011 Progress Report are presented in Table 2.5.

The QA/QC procedures followed by the Council and the laboratory and details of the bias correction factors used are presented in Appendix A.

Table 2.2: Details of Non-Automatic Monitoring Sites

Site No	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
100	Civic Centre, Motherwell	Roadside	275820	656208	NO ₂	Yes (PM ₁₀)	N	Y 10m (hospital)	2m	Y
101	Shields Road, Motherwell	Roadside	276594	655113	NO ₂	No	N	Y 15m	2m	Y
102	Emily Drive, Motherwell	Urban Background	275437	655696	NO ₂	No	N	Y 15m	2m	N
103	Kethers Lane, Motherwell	Urban Background	273986	656985	NO ₂	No	N	Y 10m	2m	N
104	Coursington Road, Motherwell	Urban Background	276178	657344	NO ₂	No	N	Y 20m	2m	N
105	Craigneuk Road, Carfin	Urban Background	277244	658415	NO ₂	No	N	Y 10m	2m	N
106	Camp Street, Motherwell	Urban Background	275654	275654	NO ₂	Yes (PM ₁₀)	N	Y 10m	2m	N
107	Braehead Farm, Bargeddie	Roadside	270929	663464	NO ₂	No	N	N	50m to A8	N
108	Shawhead, MSA Factory	Roadside	273830	662676	NO ₂	No	N	N	50m to A8	N
109B	Carnboe Landfill, A8 East	Roadside	274274	662961	NO ₂	No	N	Y	10m	Y

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Site No	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
110	New Edinburgh Road (1), M74 Uddingston	Roadside	272789	675735	NO ₂	No	N	30m to 40m to nearest house	2m to Hamilton Road 30m M74	Y
111	New Edinburgh Road (2), M74 Uddingston	Roadside	272789	675735	NO ₂	No	N	Y 15m	2m	Y
112	New Edinburgh Road (3), M74 Uddingston	Roadside	272789	675735	NO ₂	No	N	Y 10m	2m	Y
113	Tinkers Lane, Motherwell	Roadside	274305	274305	NO ₂	No	N	Y 20m	2m	Y
114	Main Street, Overtown	Roadside	280370	653072	NO ₂	No	N	Y 15m	2m	y
115	Ravenscraig By-Pass	Urban Background	276868	657027	NO ₂	No	N	N	2m	N
116	Delburn Street, Motherwell	Urban Background	275981	656111	NO ₂	Yes (PM ₁₀)	N	Y 80m	2m	Y
117	Merry Street, Motherwell	Roadside	275116	657021	NO ₂	Yes (PM ₁₀)	N	N	2m	Y
118	Shawhead roundabout, Coatbridge	Roadside	273432	662965	NO ₂	No	N	Y 50m	2m	Y

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Site No	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
119	Kirkshaws Road, Coatbridge	Roadside	271939	663179	NO ₂	No	N	Y 25m	2m	N
120	Watsonville, Motherwell	Urban Background	275237	656662	NO ₂	Yes (PM ₁₀)	N	Y 10m	2m	Y
121	Flannigan Grove, Bellshill	Roadside	273180	660350	NO ₂	No	N	Y 30m	30m	Y
122	Main Street, Mossend	Roadside	274082	660308	NO ₂	No	N	Y 50m	2m	Y
123	Hamilton Road, Orbiston, Bellshill	Roadside	272687	659512	NO ₂	No	N	Y 20m	2m	N
124	Scotmid, Tannochside	Roadside	270073	661870	NO ₂	No	N	Y 20m	2m	N
125	Main Street, Near Bellshill Academy	Roadside	273767	660281	NO ₂	No	N	Y 5m	5m	y
126	Main Street, Near/at Motherwell Rd Junction	Roadside	273133	660117	NO ₂	No	N	Y 20m	5m	N
127	Main Street, near/at Tesco delivery road	Roadside	273541	660339	NO ₂	No	N	Y 1m	2m	Y
128	Matalan, Wishaw	Roadside	278059	655368	NO ₂	No	N	Y 10m	2m	Y
129	Newmains Police Station	Roadside	282392	656016	NO ₂	No	N	Y 7m	2m	Y

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Site No	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
130	Main Street (Bottom), Wishaw	Roadside	279118	655327	NO ₂	No	N	Y 5m	2m	Y
133	Coatbridge 1, Bank Street	Roadside	272887	664991	NO ₂	No	N	Y 2m	2m	Y
134	Coatbridge 2, Whifflet Court	Roadside	273655	664003	NO ₂	No	N	Y 10m	20 m	N
135	Grahamshill Street, Airdrie	Roadside	277276	665615	NO ₂	No	N	N	2m	Y
136	Airdrie 3, Springwells Crescent	Roadside	277162	665650	NO ₂	No	N	Y 10m	2m	N
137	Auchenkilns, Cumbernauld	Roadside	274164	674130	NO ₂	No	N	Y 30m	2m	Y
138	Chapellhall Main street, (Near shops	Roadside	278037	662798	NO ₂	Yes (PM ₁₀)	N	Y 10m	2m	Y
139	Lauchope Street, Chapelhall Junction	Roadside	278178	663111	NO ₂	Yes (PM ₁₀)	N	Y 10m	2m	Y
140	Coatbridge, Dundy Van Rd	Roadside	273293	664120	NO ₂	No	N	Y 5m	1m	Y
141	Harthill Main Street(1), (Near shops)	Roadside	290652	664493	NO ₂	No	N	Y 10m	2m	Y
142	Salsburgh, (house number 337), R15.	Roadside	283850	663082	NO ₂	No	N	Y 15m	30m	N

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Site No	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
143	Harthill Main Street(2), (Near shops)	Roadside	290482	664386	NO ₂	No	N	Y 10m	2m	Y
144	Lab 1 Constarry Road, Croy 1	Co - Location	272789	675735	NO ₂	No	Y	Y 100m	5m	Y
145	Lab 2 Constarry Road, Croy 2	Co - Location	272789	675735	NO ₂	No	Y	Y 100m	5m	Y
146	Lab 3 Constarry Road, Croy 3	Co - Location	272789	675735	NO ₂	No	Y	Y 100m	5m	Y
147	Bank St, Coatbridge (Nearest house)	Roadside	272947	665037	NO ₂	No	N	Y 20m	2m	Y
148	Main Street, Chapelhall R32	Roadside	278105	663174	NO ₂	Yes (PM ₁₀)	N	Y 15m	2m	Y
149	Main Street, Chapelhall R33	Roadside	278119	663075	NO ₂	Yes (PM ₁₀)	N	Y 15m	2m	Y
150	Eastfield Road, Cumbernauld. (Lamppost R6P783)	Urban Background	275160	676210	NO ₂	Yes (PM ₁₀)	N	Y 25m	2m	N
151	Holytown, Main Street	Roadside	276635	660569	NO ₂	No	N	Y 10m	2m	Y

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Site No	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
152	Coatbridge Road shops, Townhead	Roadside	272391	665824	NO ₂	No	N	Y 10m	2m	Y
153	House Number 72, Townhead Road, Coatbridge	Roadside	271720	666053	NO ₂	No	N	Y 20m	2m	N
154	Sunnyside Road, Coatbridge	Roadside	273042	665176	NO ₂	No	N	Y 20m	2m	Y
156	Stirling Street, Airdrie	Roadside	276005	665406	NO ₂	No	N	N	2m	Y
157	31 Station Road, Muirhead	Roadside	268442	669262	NO ₂	No	N	Y 15m	2m	Y
159	Croftmoraig Avenue	Urban background	270311	671702	NO ₂	Yes	N	Y 10m	2m	N
160	Glenview Crescent	Urban Background	270391	671505	NO ₂	Yes	N	Y 10m	2m	N
47	Layby in Stand	Roadside	276538	668899	NO ₂	No	N	Y 10m	2m	Y
48	Bus Stop, Bron Way, Cumbernauld	Roadside	275920	674203	NO ₂	No	N	Y 10m	2m	N
49	Swimming Pool, Kilsyth	Roadside	271514	678040	NO ₂	No	N	Y 50m	2m	Y
50	House No 1791, Cumbernauld Road, Stepps	Roadside	265198	668024	NO ₂	No	N	Y 25m	2m	Y

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Site No	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
51	House No 131, Cumbernauld Road, Stepps	Roadside	265971	668567	NO ₂	No	N	Y 30m	2m	Y
52	Traffic Lights, A 80 Eastbound, Moodiesburn	Roadside	269966	670412	NO ₂	Yes (PM ₁₀)	N	Y 30m	30m	Y
53	Moodiesburn Lights, Cumbernauld Rd, Westbound	Roadside	269986	670400	NO ₂	Yes (PM ₁₀)	N	Y 10m	2m	Y
54	Gartcosh Lochend Rd & Cb Jct A752	Urban Background	269828	668354	NO ₂	No	N	Y 20m	2m	Y
55	Glenboig Whitelaw Road End	Urban Background	272614	668138	NO ₂	No	N	Y 50m	2m	Y
56	Glenboig Garnqueen Ave 1st Post Left Side	Urban Background	271751	668432	NO ₂	No	N	Y 50m	2m	Y
57	Glenboig Main St Jct Carrick view L/H First Post	Roadside	272030	668564	NO ₂	No	N	Y 10m	2m	Y
58	Glenboig Road Post Nr House No 115	Urban Background	272743	668103	NO ₂	No	N	Y 2m	2m	Y

North Lanarkshire Council

Site No	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Is monitoring collocated with a Continuous Analyser (Y/N)	Relevant Exposure? (Y/N with distance (m) to relevant exposure)	Distance to kerb of nearest road (N/A if not applicable)	Does this location represent worst-case exposure?
59	Mount Ellen Coronation Place Adjacent House Nos 10-16	Urban Background	269356	669173	NO ₂	No	N	20m	2m	Y
61	Under Bridge Central Way E Cumbernauld	Roadside	275778	674440	NO ₂	No	N	10m	2m	Y
62	Central Way West Bound Cumbernauld	Roadside	275920	674511	NO ₂	No	N	10m	2m	Y
63	Central Way West Bound Cumbernauld	Roadside	275642	674271	NO ₂	No	N	10m	2m	Y

2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

Automatic Monitoring Data

Ambient NO₂ concentrations were measured at all of the automatic monitoring sites during 2011.

The annual mean and 1-hour mean NO₂ automatic monitoring data for 2011 and previous years are presented in Tables 2.3 and 2.4 respectively.

Table 2.3 Results of Automatic Monitoring of Nitrogen Dioxide: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring % ^a	Valid Data Capture 2011 % ^b	Annual Mean Concentration $\mu\text{g}/\text{m}^3$				
					2007* ^c	2008* ^c	2009* ^c	2010* ^c	2011 ^c
Chapelhall	Roadside	Yes	90.7	90.7	32.7	36.4	40	37.6	41
Croy	Special – By Quarry	Yes	84.8	84.8	21.6	24.7	24	30.8 ^{\$}	21
Moodiesburn	Roadside	Yes	98.2	98.2	N/A	43.5	37	42.8	25
Shawhead	Roadside	No	99.8	99.8	N/A	N/A	37	40.7	36
New Edinburgh Rd	Roadside	No	94.3	94.3	N/A	N/A	N/A	45.6	32.2

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

^c Means should be “annualised” as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.

*Annual mean concentrations for previous years are optional.

Figure 2.3 Trends in Annual Mean Nitrogen Dioxide Concentrations measures at Automatic Monitoring Sites

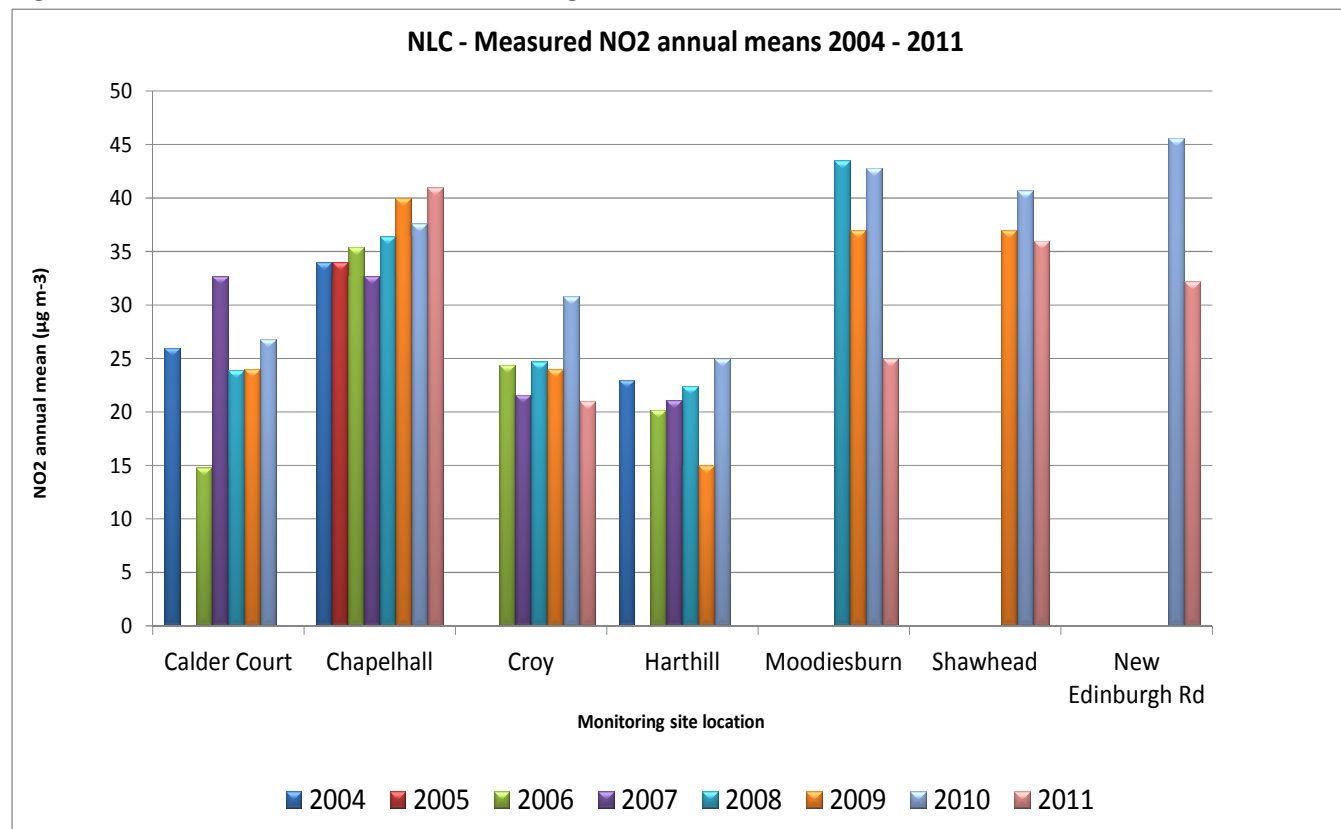


Table 2.4 Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for period of monitoring % ^a	Valid Data Capture 2011 % ^b	Number of Exceedences of Hourly Mean (200 µg/m ³)				
					2007* ^c	2008* ^c	2009* ^c	2010* ^c	2011 ^c
Chapelhall	Roadside	Yes	90.7	90.7	2	0	1(145)	6(170)	2
Croy	Special – By Quarry	Yes	84.8	84.8	0	0	0 (120)	0(172)	0
Moodiesburn	Roadside	Yes	98.2	98.2	N/A	1	0(130)	0(151)	0
Shawhead	Roadside	No	99.8	99.8	N/A	N/A	0(109)	0(149)	0
New Edinburgh Rd	Roadside	No	94.3	94.3	N/A	N/A	N/A	0	0

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

^c If the period of valid data is less than 90%, include the 99.8th percentile of hourly means in brackets

*Number of exceedences for previous years are optional.

Diffusion Tube Monitoring Data

Measured NO₂ concentrations across the diffusion tube network from 2007 to 2011 are presented in Table 2.5. Measured concentrations in excess of the NAQS objective of 40 µg/m³ are highlighted and in bold. A bias adjustment factor of 1.02 was applied based on a local collocation factor. Details of the QA/QC procedures followed by the laboratory and details of the bias correction factors used are presented in Appendix A.

For sites where the data capture is equal to or below 75% the measured concentrations have been annualised following the method described in technical guidance. Further detail of the annualisation and laboratory bias adjustment is provided in Appendix A. Trend charts of historic diffusion tube data at urban background, roadside and kerbside sites are presented in Charts 2.4a, 2.4b and 2.4c respectively.

Table 2.5 Results of Nitrogen Dioxide Diffusion Tubes in 2011

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = XX)
								2011 ($\mu\text{g}/\text{m}^3$)
100	Civic Centre, Motherwell	Roadside	Yes (PM ₁₀)	N	83%	N	N	32.9
101	Shields Road, Motherwell	Kerbside	No	N	92%	N	N	29.2
102	Emily Drive, Motherwell	Urban Background	No	N	92%	N	N	13.6
103	Kethers Lane, Motherwell	Urban Background	No	N	92%	N	N	17.1
104	Coursington Road, Motherwell	Urban Background	No	N	83%	N	N	12.4
105	Craigneuk Road, Carfin	Urban Background	No	N	92%	N	N	17.9
106	Camp Street, Motherwell	Urban Background	Yes (PM ₁₀)	N	92%	N	N	22.8
107	Braehead Farm, Bargeddie	Roadside	No	N	92%	N	N	40.8
108	Shawhead, MSA Factory	Roadside	No	N	83%	N	N	48.9
109B	Camboe Landfill, A8 East	Roadside	No	N	83%	N	N	75.8
110	New Edinburgh Road (1), M74 Uddingston	Kerbside	No	N	83%	N	N	43.4
111	New Edinburgh Road (2), M74 Uddingston	Kerbside	No	N	92%	N	N	35.2
112	New Edinburgh Road (3), M74 Uddingston	Kerbside	No	N	92%	N	N	38.6

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Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = XX)
								2011 ($\mu\text{g}/\text{m}^3$)
113	Tinkers Lane, Motherwell	Kerbside	No	N	75%	Y	N	28.3
114	Main Street, Overtown	Kerbside	No	N	92%	N	N	22.4
115	Ravensraig By-Pass	Urban Background	No	N	92%	N	N	20.7
116	Delburn Street, Motherwell	Urban Background	Yes (PM ₁₀)	N	92%	N	N	28.8
117	Merry Street, Motherwell	Kerbside	Yes (PM ₁₀)	N	92%	N	N	44.0
118	Shawhead roundabout, Coatbridge	Roadside	No	N	92%	N	N	37.5
119	Kirkshaws Road, Coatbridge	Kerbside	Yes (PM ₁₀)	N	92%	N	N	46.2
120	Watsonville, Motherwell	Urban Background	No	NN	92%	N	N	25.3
121	Flannigan Grove, Bellshill	Roadside	No	N	92%	N	N	26.6
122	Main Street, Mossend	Kerbside	No	N	83%	N	N	38.7
123	Hamilton Road, Orbiston, Bellshill	Kerbside	No	N	92%	N	N	26.2
124	Scotmid, Tannochside	Kerbside	No	N	92%	N	N	33.8
125	Main Street, Near Bellshill Academy	Kerbside	No	N	58%	Y	N	26.9
126	Main Street, Near/at Motherwell Rd Junction	Kerbside	No	N	83%	N	N	28.9
127	Main Street, near/at Tesco delivery road	Kerbside	No	N	83%	N	N	24.4
128	Matalan, Wishaw	Kerbside	No	N	92%	N	N	31.2

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Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = XX)
								2011 ($\mu\text{g}/\text{m}^3$)
129	Newmains Police Station	Kerbside	No	N	92%	N	N	37.6
130	Main Street (Bottom), Wishaw	Kerbside	No	N	92%	N	N	18.5
133	Coatbridge 1, Bank Street	Kerbside	No	N	92%	N	N	44.3
134	Coatbridge 2, Whifflet Court	Kerbside	No	N	83%	N	N	28.5
135	Grahamshill Street, Airdrie	Kerbside	No	N	92%	N	N	45.9
136	Airdrie 3, Springwells Crescent	Roadside	No	N	92%	N	N	22.2
137	Auchenkilns, Cumbernauld	Roadside	No	N	83%	N	N	25.9
138	Chapellhall Main street, (Near shops	Kerbside	Yes (PM ₁₀)	N	50%	Y	N	33.0
139	Lauchope Street, Chapelhall Junction	Kerbside	No	N	83%	N	N	48.2
140	Coatbridge, Dundy Van Rd	Kerbside	No	N	75%	Y	N	31.7
141	Harthill Main Street(1), (Near shops)	kerbside	No	N	83%	N	N	22.1
142	Salsburgh, (house number 337), R15.	Roadside	No	N	83%	N	N	27.4
143	Harthill Main Street(2), (Near shops)	Kerbside	No	N	92%	N	N	23.1
144	Lab 1 Constarry Road, Croy 1	Co - Location	No	Y	92%	N	N	23.5
145	Lab 2 Constarry Road, Croy 2	Co - Location	No	Y	92%	N	N	23.9
146	Lab 3 Constarry Road, Croy 3	Co - Location	No	Y	92%	N	N	20.9

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Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = XX)
								2011 ($\mu\text{g}/\text{m}^3$)
147	Bank St, Coatbridge (Nearest house)	Kerbside	Yes (PM ₁₀)	N	83%	N	N	51.3
148	Main Street, Chapelhall R32	Kerbside	Yes (PM ₁₀)	N	92%	N	N	48.3
149	Main Street, Chapelhall R33	Kerbside	Yes (PM ₁₀)	N	92%	N	N	39.6
150	Eastfield Road, Cumbernauld. (Lamppost R6P783)	Urban Background	No	N	75%	Y	N	34.1
151	Holytown, Main Street	Kerbside	No	N	75%	Y	N	26.2
152	Coatbridge Road shops, Townhead	Kerbside	No	N	92%	N	N	36.3
153	House Number 72, Townhead Road, Coatbridge	Kerbside	No	N	92%	N	N	32.4
154	Sunnyside Road, Coatbridge	Kerbside	No	N	92%	N	N	42.6
156	Stirling Street, Airdrie	Kerbside	No	N	92%	N	N	46.4
157	31 Station Road, Muirhead	Roadside	No	N	83%	N	N	30.2
159	Glenview Crescent	Urban background	Yes	N	8%	N	N	39.5*
160	The Cuillins	Roadside	No	N	8%	N	N	32.5*
47	Layby in Stand	Kerbside	No	N	92%	N	N	25.9
48	Bus Stop, Bron Way, Cumbernauld	Kerbside	No	N	83%	N	N	39.8
49	Swimming Pool, Kilsyth	Kerbside	No	N	83%	N	N	23.3
50	House No 1791, Cumbernauld Road, Stepps	Kerbside	No	N	92%	N	N	34.7

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Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture 2011 (Number of Months or %)	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment factor = XX)
								2011 ($\mu\text{g}/\text{m}^3$)
51	House No 131, Cumbernauld Road, Stepps	Kerbside	No	N	92%	N	N	34.1
52	Traffic Lights, A 80 Eastbound, Moodiesburn	Kerbside	Yes (PM ₁₀)	N	83%	N	N	30.8
53	Moodiesburn Lights, Cumbernauld Rd, Westbound	Urban Background	No	N	83%	N	N	28.4
54	Gartcosh Lochend Rd & Cb Jct A752	Urban Background	No	N	83%	N	N	23.3
55	Glenboig Whitelaw Road End	Urban Background	No	N	83%	N	N	15.3
56	Glenboig Garnqueen Ave 1st Post Left Side	Roadside	No	N	83%	N	N	15.5
57	Glenboig Main St Jct Carrick view L/H First Post	Urban Background	No	N	83%	N	N	16.3
58	Glenboig Cb Road Post Nr House No 115	Urban Background	No	N	83%	N	N	18.3
59	Mount Ellen Coronation Place Adjacent House Nos 10-16	Roadside	No	N	83%	N	N	22.3
61	Under Bridge Central Way E Cumbernauld	Roadside	No	N	92%	N	N	47.8
62 A	Central Way West Bound Cumbernauld	Roadside	No	N	75%	Y	N	40.2
63 B	Central Way West Bound Cumbernauld	Roadside	No	N	83%	N	N	39.6

*Site operational for less than 3 months. Distance corrected concentration shown in brackets

Table 2.6 Results of Nitrogen Dioxide Diffusion Tubes (2007 to 2011)

Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) $\mu\text{g}/\text{m}^3$				
			2007* (Bias Adjustment Factor = 1.05)	2008* (Bias Adjustment Factor = 1.11)	2009* (Bias Adjustment Factor = XX)	2010* (Bias Adjustment Factor = XX)	2011 (Bias Adjustment Factor = XX)
100	Roadside	Yes (PM ₁₀)	36	44	39.3	37.1	32.9
101	Roadside	No	18	22	19.5	29.6	29.2
102	UB	No	12	13	13.7	14.4	13.6
103	UB	No	14	14	17.5	16.5	17.1
104	UB	No	13	13	13.0	14.1	12.4
105	UB	No	18	18	16.6	18.0	17.9
106	UB	Yes (PM ₁₀)	24	23	21.7	22.3	22.8
107	Roadside	No	47	57	41.2	43.0	40.8
108	Roadside	No	48	50	44.7	43.2	48.9
109	Roadside	No	39	39	42.4	39.9	Ceased Operation in 2010
109B	Roadside	No	Commenced 2011				75.8
110	Roadside	No	Commenced 2010			40.0	43.4
111	Roadside	No	Commenced 2010			38.6	35.2
112	Roadside	No	Commenced 2010			44.8	38.6
113	Kerbside	No	23	24	23.8	26.9	28.3
114	Roadside	No	Commenced 2010			37.8	22.4
115	UB	No	19	23	17.3	20.5	20.7
116	UB	Yes (PM ₁₀)	29	31	24.2	30.2	28.8
117	Kerbside	Yes (PM ₁₀)	48	59	36.2	41.1	44.0
118	Roadside	No	42	40	37.6	38.3	37.5
119	Kerbside	Yes (PM ₁₀)	41	43	39.5	40.3	46.2
120	UB	No	26	32	22.4	27.0	25.3

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Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) µg/m³					
			2007* (Bias Adjustment Factor = 1.05)	2008* (Bias Adjustment Factor = 1.11)	2009* (Bias Adjustment Factor = XX)	2010* (Bias Adjustment Factor = XX)	2011 (Bias Adjustment Factor = XX)	
121	Roadside	No	26	29	24.8	31.6	26.6	
122	Kerbside	No	38	42	29.5	37.5	38.7	
123	Kerbside	No	27	31	30.1	30.5	26.2	
124	Kerbside	No	32	42	32.2	33.0	33.8	
125	Roadside	No	Commenced 2010				31.7	26.9
126	Roadside	No					35.8	28.9
127	Roadside	No					26.6	24.4
128	Roadside	No					31.1	31.2
129	Roadside	No					36.3	37.6
130	Roadside	No					35.6	18.5
133	Kerbside	No	46	52	49.5	39.7	44.3	
134	Kerbside	No	32	31	33.1	30.0	28.5	
135	Roadside	No	25	29	26.0	41.0	45.9	
136	Roadside	No	23	22	21.6	20.2	22.2	
137	Roadside	No	42	44	33.5	30.4	25.9	
138	Roadside	Yes (PM ₁₀)	Commenced 2010				46.3	33.0
139	Kerbside	No	49	53	46.2	45.5	48.2	
140	Kerbside	No	N/A	N/A	29.8	28.5	31.7	
141	Roadside	No	Commenced 2010				23.1	22.1
142	Roadside	No	27	31	23.6	27.7	27.4	
143	Roadside	No	Commenced 2010				22.7	23.1
144	Roadside	No	21	23	25.8	27.6	23.5	
145	Roadside	No	22	26	26.2	24.2	23.9	
146	Roadside	No	22	26	25.7	24.2	20.9	
147	Kerbside	Yes (PM ₁₀)	49	59	50.4	45.1	51.3	

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Site ID	Site Type	Within AQMA?	Annual mean concentration (adjusted for bias) µg/m³					
			2007* (Bias Adjustment Factor = 1.05)	2008* (Bias Adjustment Factor = 1.11)	2009* (Bias Adjustment Factor = XX)	2010* (Bias Adjustment Factor = XX)	2011 (Bias Adjustment Factor = XX)	
148	Kerbside	Yes (PM ₁₀)	39	40	36.7	37.6	48.3	
149	Kerbside	Yes (PM ₁₀)	35	46	33.2	33.7	39.6	
150	UB	No	32	33	33.2	32.5	34.1	
151	Roadside	No	Commenced 2010				28.2	26.2
152	Roadside	No					40.4	36.3
153	Roadside	No	31	28	28.7	30.9	32.4	
154	Roadside	No	Commenced 2010				42.1	42.6
156	Roadside	No					47.4	46.4
157	Roadside	No					38.0	30.2
159	Roadside	Yes (PM ₁₀)	Commenced 2011					39.5*
160	Roadside	No						32.5*
47	Roadside	No	28	29	26.8	27.0	25.9	
48	Kerbside	No	34	41	35.8	37.4	39.8	
49	Kerbside	No	21	24	21.5	21.9	23.3	
50	Kerbside	No	31	36	29.4	28.5	34.7	
51	Kerbside	No	28	40	34.5	30.6	34.1	
52	Kerbside	Yes (PM ₁₀)	55	85	64.4	55.2	30.8	
53	Kerbside	No	Commenced August 2008			59.5	52.0	28.4
54	UB	No	Commenced 2009			23.9	30.4	23.3
55	UB	No				15.0	19.3	15.3
56	UB	No				14.6	23.6	15.5
57	UB	No				15.8	23.5	16.3
58	UB	No				17.9	21.6	18.3
59	UB	No				21.1	32.0	22.3
61	Roadside	No				53.8	57.9	47.8
62 A	Roadside	No				56.5	49.1	40.2
63 B	Roadside	No				47.7	40.8	39.6

*Less than 3 months data

Figure 2.4 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Urban Background Diffusion Tube Monitoring Sites

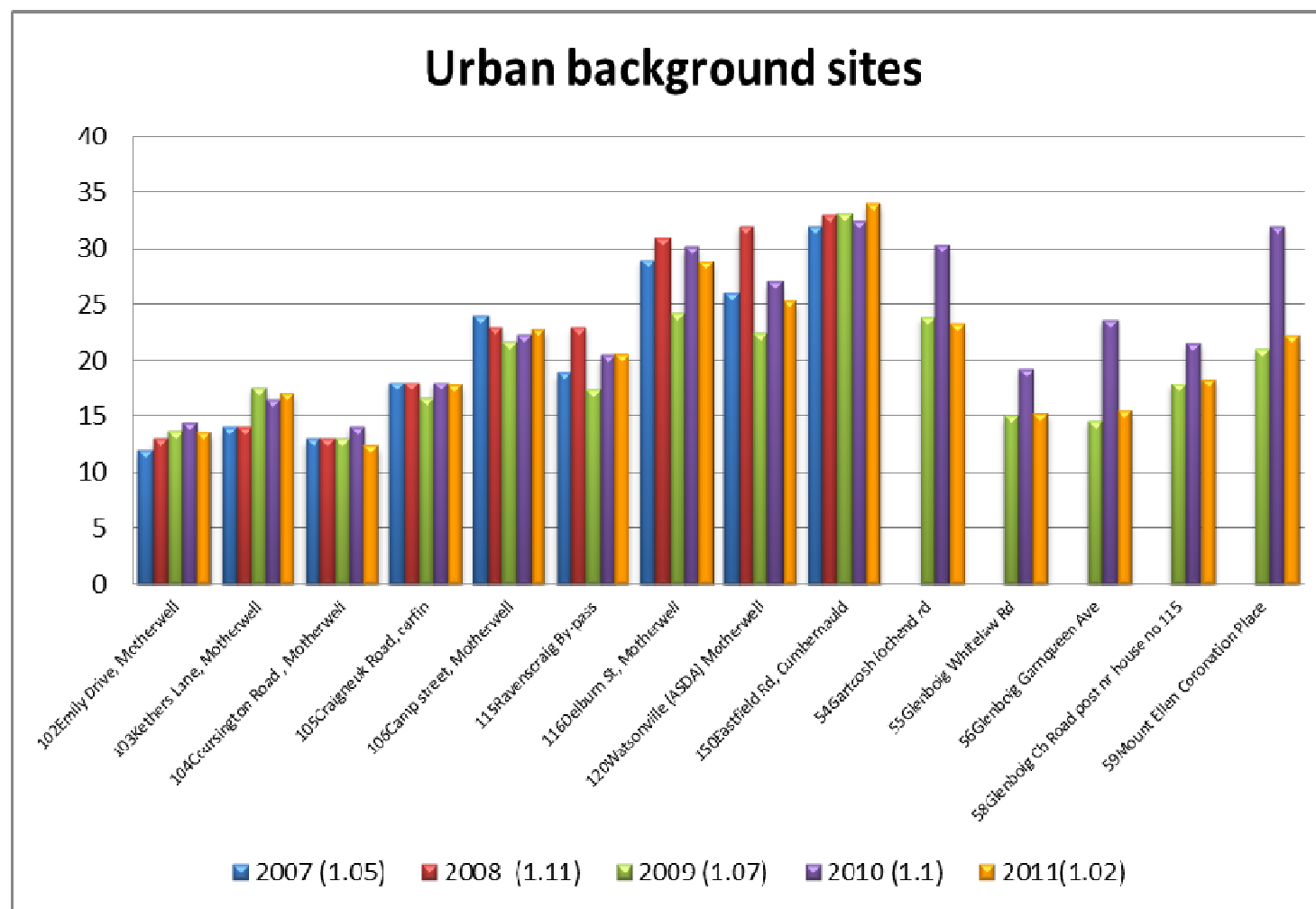


Figure 2.4 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Roadside Diffusion Tube Monitoring Sites

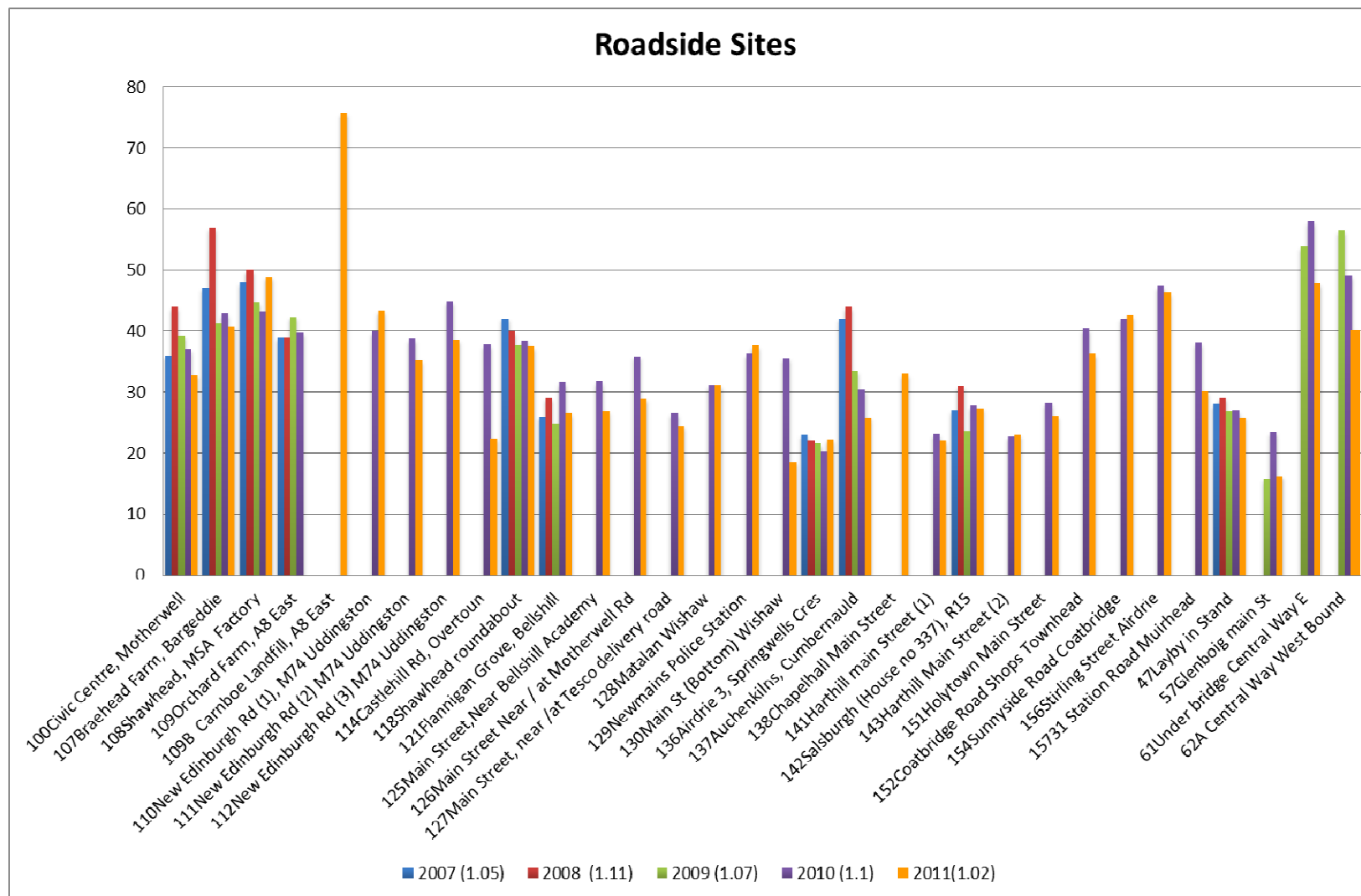
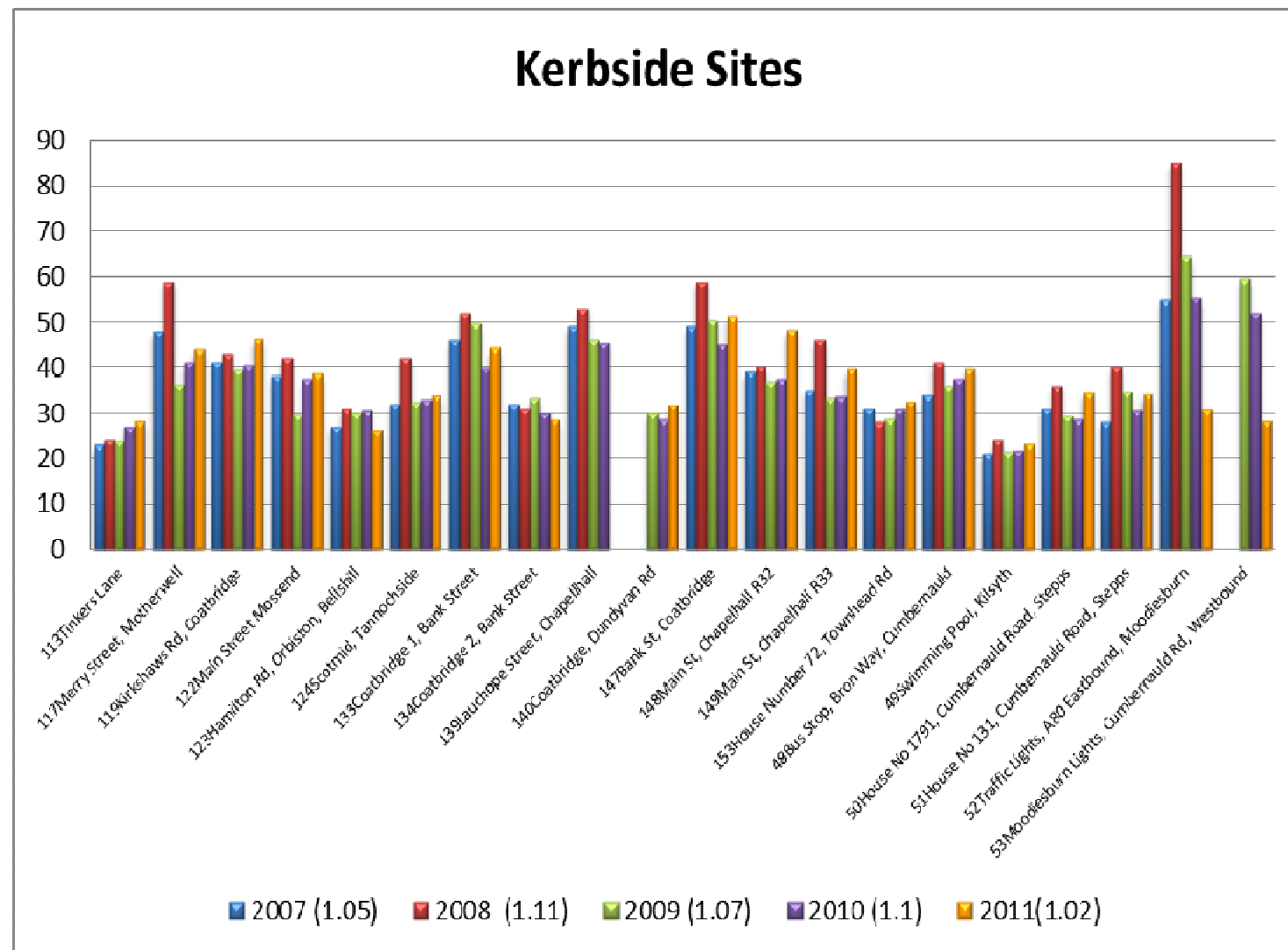


Figure 2.4 Trends in Annual Mean Nitrogen Dioxide Concentrations measured at Kerbside Diffusion Tube Monitoring Sites



The results indicate that the overall trend in measured annual mean NO₂ concentrations is:

- Marginal decrease in measured concentrations at Urban Background sites between 2010 – 2011, in line with longer term gradual, but steady decreasing trends.
- Increase in measured concentrations at Kerbside sites between 2010 - 2011, extending the observed increase in measured concentrations between 2009 - 2010. Recent increase apparent in comparison to previously observed longer term decrease.
- No clear trend is apparent in measured concentrations at Roadside sites.

Exceedences of the NO₂ annual mean objective were measured at the following locations:

- Chapelhall, at both Lauchope Street and Main Street. Both locations are within the current AQMA, declared for exceedences of the PM₁₀ annual mean objective. The Council propose to extend the AQMA declaration to include NO₂.
- Coatbridge, at Bargeddie (107), MSA (108), Carnbroe (109) and Kirkshaws Road (119). All sites are located within 50 m of the edge of the A8, between Ballieston and Eurocentral. A 2011 Further Assessment of NO₂ concentrations in Coatbridge identified the potential exceedences and recommended a variation of the Whifflet AQMA to include areas of relevant exposure at Kirkshaws and in close proximity to the A8.
- Coatbridge, at Bank Street and Sunnyside Road. Automatic monitoring was previously conducted in this area due to measured diffusion tube levels indicating potential exceedences at areas of relevant exposure. Due to difficulties in locating the analyser, the monitoring site was located outside of the area most affected by slow moving traffic, or the canyon on Sunnyside Road. It is proposed to revisit automatic monitoring in this location in 2013.
- New Edinburgh Road, Uddingston. Only one of three co-located monitoring sites exceeded the objective level. The reduced data capture at the site meant a higher average concentration was recorded at the site, in comparison to the other two co-located tubes. Based on the result from the other two tubes, which concur with the conclusions of a recent Detailed Assessment of the

area, it is considered that annual mean concentrations are not in excess of the objective.

- Airdrie, at Grahamshill Street and Stirling Street. Both sites are located within the A73 corridor, north of the Chapelhall AQMA. Measured concentrations indicate potential for exceedences of the annual mean objective at areas of relevant public exposure. It is, therefore, proposed that a Detailed Assessment of air quality be undertaken in this area in 2013.
- Motherwell, Merry Street within the current AQMA for PM₁₀. Further automatic NO₂ monitoring is proposed for 2013.
- Cumbernauld. Measured exceedences of the objective were recorded at Bron Way, Cumbernauld. The monitoring is not undertaken at an area of relevant public exposure.

2.2.2 PM₁₀

PM₁₀ was measured at all of the Council's automatic air quality monitoring sites during 2011. All measured data were ratified by AEA Technology Ltd (AEA) on behalf of Scottish Government. Particulate measurements recorded using TEOM instruments were corrected to account for the volatile component using the VCM method. Particulate measurements recorded using the BAM have been corrected to be gravimetric equivalent, all corrections were calculated by AEA.

Table 2.7 Results of Automatic Monitoring of PM₁₀: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period % ^a	Valid Data Capture 2011 % ^b	Confirm Gravimetric Equivalent (Y or NA)	Annual Mean Concentration µg/m ³				
						2007 ^{*c}	2008 ^{* c}	2009 ^{* c}	2010 ^{* c}	2011 ^c
Chapelhall	Roadside	Y	90.8	90.8	Y	24.9	20.8	19	19	19
Croy	Special – By Quarry	N	83.0	83.0	Y	22	19.0	19	20.5	15
Motherwell	Roadside	Y	82.6	82.6	Y	19.5*	17.6	17	19.3	19
Moodiesburn	Roadside	Y	74.1	74.1	Y	N/A	19.5	20.5	20.2	17
Shawhead	Roadside	N	88.9	88.9	Y	N/A	N/A	18	18.5	19
Calder Court	Urban Background	Y	90.7	90.7	Y	17.9	15	14	14.6	15

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

^c Means should be “annualised” as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.

* Optional

Table 2.8 Results of Automatic Monitoring for PM₁₀: Comparison with 24-hour mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period % ^a	Valid Data Capture 2011 % ^b	Confirm Gravimetric Equivalent	Number of Exceedences of 24-Hour Mean (50 µg/m ³)				
						2007*	2008*	2009*	2010*	2011
Chapelhall	Roadside	Y	90.8	90.8	Y	5	7	4 (45)	0 (41)	6
Croy	Special – By Quarry	N	83.0	83.0	Y	23	17	15 (60)	9	1
Motherwell	Roadside	Y	82.6	82.6	Y	0	4	2	0	5
Moodiesburn	Roadside	Y	74.1	74.1	Y	-	2	2 (37)	3	4
Shawhead	Roadside	N	88.9	88.9	Y	-	-	0 (39)	4	3
Calder Court	Urban Background	Y	90.7	90.7	Y	6	2	0	0	1

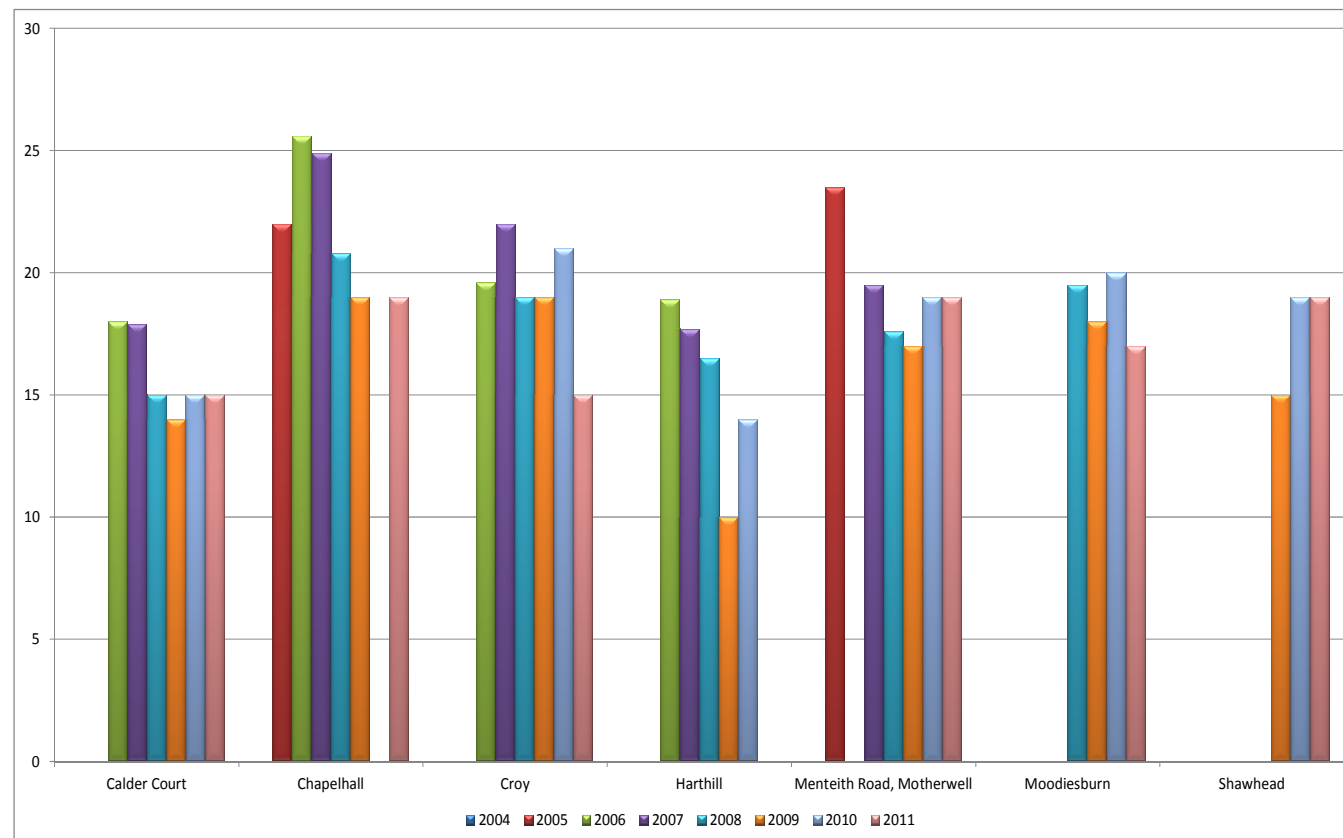
^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

^c if data capture is less than 90%, include the 90th percentile of 24-hour means in brackets

* Optional

Figure 2.5 Trends in Annual Mean PM₁₀ Concentrations



The results indicate that the overall trend in measured annual mean PM₁₀ concentrations is maintaining at locations primarily affected by road traffic. For sites more influenced by fugitive dust emissions, i.e. Croy and Harthill, the measured concentrations are more closely linked to local industrial activity, thus the longer trend is less apparent, rather reflecting site activity.

Measured annual mean concentrations at Chapelhall, Motherwell and Shawhead remain above the NAQS objective level, justifying the continued AQMA's at each location.

At Whifflett, measured concentrations remain below the objective at the monitoring location. Modelling predictions undertaken as part of a 2011 Further Assessment of the Whifflett AQMA, indicate that there remain areas of exceedences within the AQMA, however the areas are smaller than the current AQMA footprint. The 2011 monitoring data supports the Further Assessment conclusions.

Measured concentrations at Moodiesburn in 2011 have fallen below the NAQS objective level, in line with the expected decrease following the opening of the M80 Moodiesburn bypass. A Further Assessment report is in draft proposing the revocation of the Moodiesburn AQMA to reflect the reduction in measured concentrations.

Likewise, measured concentrations in Croy have fallen below the NAQS objective level. The reduction coincides with the mothballing of the quarry and processing plant, indicating the influence of the facility on local PM₁₀ concentrations. Ongoing work on the Croy AQMA has been suspended until further detail is available on future operations at the quarry.

An increased number of measured exceedences of the 24-hour mean PM₁₀ objective was observed in 2011. The number of measured exceedences was less than the permitted seven in each case,

2.2.3 Sulphur Dioxide

North Lanarkshire Council undertake automatic monitoring of sulphur dioxide (SO₂) concentrations at Croy. The results are presented in Table 2.10. All measured SO₂ concentrations are significantly below the NAQS objectives. Monitoring of SO₂. Monitoring of SO₂ ceased at Harthill in May 2010.

Table 2.9 Results of Automatic Monitoring of SO₂: Comparison with Annual Mean Objective

Site ID	Site Type	Within AQMA?	Valid Data Capture for monitoring Period % ^a	Valid Data Capture 2011 % ^b	Number of Exceedences (percentile in bracket µg/m ³) ^c		
					15-minute Objective (266 µg/m ³)	1-hour Objective (350 µg/m ³)	24-hour Objective (125 µg/m ³)
Croy	Special – By Quarry	N	88.6	88.6	2	0	0

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

^c if data capture is less than 90%, include the relevant percentile in brackets

* Optional

2.2.4 Benzene

North Lanarkshire Council do not currently monitor Benzene.

2.2.5 Other pollutants monitored

North Lanarkshire Council do not currently monitor any other pollutants. Monitoring of CO ceased at Harthill in May 2010.

2.2.6 Summary of Compliance with AQS Objectives

North Lanarkshire Council has examined the results from monitoring in the across the Council area.

Continued exceedence of the annual mean PM₁₀ objective was measured within current AQMA's. Exceedences of the annual mean NO₂ objective were also measured within existing AQMA's declared for PM₁₀.

The requirement to undertake a Detailed Assessment of NO₂ concentrations within the A73 corridor in Airdrie has been identified.

3 Road Traffic Sources

The Roads team in North Lanarkshire Council were contacted to provide traffic data to complete the following section. The Council has provided traffic counts for all roads in North Lanarkshire with traffic counts greater than 10,000 vehicles/day. A summary of the data is provided at Appendix B.

North Lanarkshire has previously undertaken detailed review of all roads within the Council area, reported in the Updating & Screenings Assessments in 2003, 2006 and 2009.

Analysis of the data in comparison with previous years data, in conjunction with local knowledge has been used to inform the screening assessment as summarised below.

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

The traffic count data provided only considered routes with traffic flows of greater than 10,000 vehicles per day. Local knowledge, however identified that there were no congested streets identified which have not been previously considered.

North Lanarkshire 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.

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

North Lanarkshire Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

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

North Lanarkshire Council confirms that there are no new/newly identified roads with high flows of buses/HGVs which require further assessment.

3.4 Junctions

North Lanarkshire Council confirms that there are no new/newly identified busy junctions/busy roads which require further assessment.

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

As part of the proposed Ravenscraig redevelopment, near Motherwell, significant modifications are proposed to the existing roads network, including modification to the junction of Windmillhill Street and Airbles Road, within the Motherwell AQMA. The proposed changes are currently being considered through the planning system and will be considered as part of a wider evaluation of the AQMA Action Planning process.

Development proposals remain in place to upgrade the A8, between Ballieston and Eurocentral, to motorway status. Current projections indicate a 2015 construction start date and 2017 completion. The M8 Completion project will effect air quality within the Whifflett AQMA, thus the project will be considered as part of the wider evaluation of the AQMA Action Planning process.

The new Moodiesburn bypass of the M80 opened in 2011. The new road, between Stepps and Mollinsburn, allows traffic to bypass the village of Moodiesburn thus reducing traffic flows through the village. The effect of reduced traffic through the Moodiesburn AQMA have been considered separately in the Moodiesburn Further Assessment study.

No other new roads have been identified that have been constructed or proposed since the last round of review and assessment.

North Lanarkshire Council confirms that there are no newly opened or proposed roads have been identified that are not currently being considered as part of wider assessment of current AQMAs.

3.6 Roads with Significantly Changed Traffic Flows

The traffic flow data provided in Appendix B was considered with reference to historic data for relevant roads. No significant changes to traffic flows were identified.

North Lanarkshire Council confirms that there are no new/newly identified roads with significantly changed traffic flows.

3.7 Bus and Coach Stations

North Lanarkshire Council confirms that there are no relevant bus stations which meet the specified criteria within the local authority area.

4 Other Transport Sources

4.1 Airports

Cumbernauld Airport, a commercial and private airport, is located in Cumbernauld, in the northern area of North Lanarkshire. The airport mainly serves small private aircraft and does not experience significant air movements.

North Lanarkshire Council confirms that there are no significant airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

4.2.1 Stationary Trains

North Lanarkshire 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.

4.2.2 Moving Trains

The Edinburgh to Glasgow mainline passes through areas of North Lanarkshire and there is relevant exposure within 30m at some locations. Screening assessment of the potential impact, in line with LAQM technical guidance however identified that the estimated background annual mean NO₂ concentration is not greater than 25 µg/m³, thus the potential for exceedences of the objectives is limited and there is no requirement to proceed to a Detailed Assessment.

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

4.3 Ports (Shipping)

North Lanarkshire Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

5 Industrial Sources

5.1 Industrial Installations

The Scottish Environment Protection Agency (SEPA) were contacted to determine if there have been any new or significantly changed industrial processes in the area which may impact on air quality.

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

North Lanarkshire 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.

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

North Lanarkshire 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.

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

North Lanarkshire 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.

5.2 Major Fuel (Petrol) Storage Depots

North Lanarkshire Council confirms that there are no major fuel (petrol) storage depots within the Local Authority area.

5.3 Petrol Stations

North Lanarkshire Council confirms that there are no petrol stations meeting the specified criteria within the local authority area.

5.4 Poultry Farms

SEPA public registers were consulted with regard to permitted poultry farms within the North Lanarkshire. No significant poultry farms were identified.

North Lanarkshire Council confirms that there are no new poultry farms meeting the specified criteria.

6 Commercial and Domestic Sources

The Council Planning Services were consulted with regards to any new or changed commercial and domestic sources. No new commercial biomass combustion sources were identified. No new areas of domestic fuel burning were identified.

6.1 Biomass Combustion – Individual Installations

North Lanarkshire Council confirms that there are no new commercial biomass combustion plants in the Local Authority area.

6.2 Biomass Combustion – Combined Impacts

North Lanarkshire confirms that no combined impacts from biomass combustion plant have been identified in the Local Authority area.

6.3 Domestic Solid-Fuel Burning

North Lanarkshire Council confirms that there are no new areas of significant domestic fuel use in the Local Authority area.

7 Fugitive or Uncontrolled Sources

SEPA public registers were consulted in relation to any changed waste, landfill or quarry processes identified in the public registers. There have been no significant changes to existing process emissions and no new fugitive sources identified.

North Lanarkshire Council confirms that there are no potential sources of fugitive particulate matter emissions in the local authority area.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

8.1.1 PM₁₀

Measured PM₁₀ concentrations remain above the annual mean NAQS objective level within the Motherwell, Chapelhall and Whifflett AQMAs. Measured concentrations indicate the extent of the area of exceedence at Whifflett is reduced, and principally at Kirkshaws.

Measured PM₁₀ concentrations at both Croy and Harthill have fallen below the NAQS objective level, reflecting the reduced industrial activity in each AQMA.

Measured PM₁₀ concentrations at Moodiesburn reduced substantially between 2010 and 2011, reflecting the influence of the new Moodiesburn Bypass in improving PM₁₀ concentrations within the AQMA.

An increased number of exceedences of the 24-hour mean objective were recorded in 2011, however the number of exceedences were below the permitted seven at each location.

8.1.2 NO₂

Measured NO₂ concentrations indicate general decrease in concentrations at background sites, but increase at kerbside sites. These trends reflect national trends related to primary NO₂ emissions from road traffic.

Measured NO₂ concentrations exceeding the annual mean objective were measured within both the Motherwell and Chapelhall AQMAs.

In Coatbridge, measured NO₂ concentrations in excess of the annual mean objective were measured in Coatbridge Town Centre (Bank Street and Sunnyside Road). Exceedences were also measured at areas of Shawhead and Kirkshaws, close to the A8.

At each location the measured concentrations are consistent with recent monitored levels.

Exceedences of the annual mean objective were also measured at locations on the A73 corridor in Airdrie.

8.2 Conclusions from Assessment of Sources

No new sources were identified for which there was a need to proceed to a Detailed Assessment

8.3 Proposed Actions

Based on the conclusions outlined above the following actions are proposed:

- Further consideration will be given to both PM₁₀ and NO₂ concentrations within the Whifflett AQMA, in line with recent Further Assessment report.
Consideration to be given to amending the boundary of the AQMA to reflect measured exceedences of annual mean objectives for PM₁₀ and NO₂ at Shawhead and Kirkshaws.
- Consideration will be given to revoking the Moddiesburn AQMA based on the reduction in measured concentrations within the AQMA.
- Consideration will be given to amending the AQMA designations in Motherwell and Chapelhall to include for exceedences of the NO₂ annual mean objective.
- Further automatic monitoring will be undertaken in Coatbridge Town Centre, close to the Bank Street and Sunnyside Street junction, and as close to the locations of queuing traffic as possible.
- A Detailed Assessment will be undertaken of NO₂ and PM₁₀ concentrations on the A73 corridor through Airdrie.
- Monitoring will continue at all other monitoring locations during 2012/13. A Progress Report will be prepared in April 2013 presenting the data findings.
- An updated Action Plan, covering all of the Council's AQMAs is currently in draft and will be published in 2013.

Appendices

Appendix A: QA/QC Data

Appendix A: QA:QC Data

Factor from Local Co-location Studies (if available)

The laboratory analysis of the passive diffusion tubes used by the Council is undertaken by Glasgow Scientific Services. Glasgow Scientific Services is a UKAS accredited laboratory with documented Quality Assurance/Quality Control (QA/QC) procedures for diffusion tube analysis. The laboratory prepares the diffusion tubes using the 20% triethanolamine (TEA) in water method.

Glasgow Scientific Services public analyst participates in the AEA inter-comparison scheme, with bias correction factors calculated and applied annually. The laboratory analyses results from co-location studies at various locations.

The laboratory co-location factors are presented in Table A.1.

Site Name	Study duration	Tube precision	Bias correction factor
Marylebone Road Intercomparison	11	G	0.86
West Dunbartonshire Council	12	G	0.77
West Dunbartonshire Council	11	G	0.82
Glasgow City Council	9	G	1.11
Glasgow City Council	12	P	0.95
Glasgow City Council	12	S	1.01
East Ayrshire Copuncil	12	P	1.13
Overall factor from Glasgow Scientific Services co-location studies			0.94

*Diffusion_Tube_Bias_Factors-v03_12

Factor from Local Co-location Studies (if available)

North Lanarkshire Council do not undertake any local co-location measurements.

Discussion of Choice of Factor to Use

In the absence of local co-location studies the laboratory bias adjustment factor has been applied to local diffusion tube monitoring data.

PM Monitoring Adjustment

North Lanarkshire Council monitor PM₁₀ using two types of analyser:

- Beta-attenuation monitor (BAM); and
- Tapered Element Oscillating Microbalance (TEOM) with a Filter Dynamics Measurement System(FDMS).

Both the BAM and TEOM analysers are maintained by Horiba and undergo regular calibration. The TEOM (FDMS) is maintained by Air Monitors Ltd.

The beta-attenuation monitors (BAMs) used by the Council have a heated inlet which has been found to cause evaporation of some semi-volatile particles thereby reducing the measured PM₁₀ concentration. All data have been provided ratified and gravimetric equivalent by AEA technology

The TEOM FDMS is equivalent to the European Reference Sampler and the results are therefore fully comparable to the AQS objectives, with no need for adjustment.

Short-term to Long-term Data adjustment

The Council has not undertaken any short-term monitoring of pollutants which require adjustment to calculate long-term mean concentrations.

QA/QC of automatic monitoring

Quality Assurance/Quality Control (QA/QC) audits are carried out by AEA Technology Ltd twice a year at all three sites.